United States Department of Agriculture
Forest Service

R5-MB-272

The Smith River National Recreation Area Restoration and Motorized Travel Management

Draft Environmental Impact Statement

Gasquet Ranger District, Six Rivers National Forest, Del Norte County, California

April, 2014

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The Smith River National Recreation Area Restoration and Motorized Travel Management

Draft Environmental Impact Statement

Del Norte County, California

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Abstract: This Draft Environmental Impact Statement (DEIS) describes the environmental effects of a proposal by the Smith River National Recreation Area (NRA) of the Six Rivers National Forest to: add approximately 44 miles of motorized trails, eight miles of maintenance level (ML) 2 and 3 roads open to motorized use, and seven miles of ML 1 roads closed to motorized travel that were previously identified as unauthorized routes (UARs). Changes to the existing National Forest Transportation System (NFTS) include upgrading three miles of ML 1 roads to ML 2 roads; downgrading 19 miles of ML 2 roads to ML 1 roads; designating 4 miles mixed-use roads; and decommissioning 55 miles of ML 1 and 2 roads. These changes to the NFTS would result in an overall increase of 15 miles of motorized access, and provide additional access to approximately 13 dispersed recreation sites. This project also proposes to restore the drainage patterns on 79 miles of UARs. Investments in the NFTS to reduce associated resource risks include the following: barricade 72 miles of UARs, seasonal gate closures to 11 miles of the NFTS, and stormproof 122 miles of NFTS roads and motorized trails. This proposal would require non-significant Forest Plan amendment to change the Recreation Opportunity Spectrum (ROS) for 1.1 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of a UAR as an ML 2 road. This proposal is referred to as Alternative 3, the modified proposed action.

These actions are needed in order to implement the 2005 Travel Management Rule (36 CFR Part 212, Subpart B) while providing for administrative access, a diversity of motor vehicle recreation opportunities and motorized access to dispersed recreation opportunities while reducing risk to ecological and cultural resources on the Six Rivers National Forest. The DEIS discloses environmental impacts associated with this proposal, a no action alternative, and three additional action alternatives developed to meet the purpose and need, and respond to issues raised by the public. Of the alternatives under consideration at this stage, Alternative 6 is preferred by the responsible official.

Reviewers should provide the Forest Service with their comments during the review period of the DEIS. This will enable the Forest Service to analyze and respond to the comments, and use the information acquired in the preparation of the final environmental impact statement, thus avoiding undue delay in the decision-making process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978).

Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. City of Angoon v. Hodel (9th Circuit, l986) and Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

The opportunity to comment ends 60 days following publication of the notice of availability (NOA) in the Federal Register. This project is subject to comment pursuant to 36 CFR 218, Subparts A and B. Only those who submit timely project-specific written comments during a public comment period are eligible to file an objection. Individuals or representatives of an entity submitting comments must sign the comments or verify identity upon request.

Send comments to: Tyrone Kelley, Forest Supervisor, 1330 Bayshore Way, Eureka, CA 95501-3834. Comments may also be sent electronically to comments-pacificsouthwest-six-rivers@fs.fed.us with “Smith River NRA Restoration and Motorized Travel Management” in the subject line.

The acceptable format for electronic comments is: Microsoft Word

Summary

The Smith River NRA of the Six Rivers National Forest proposes to: add 44 miles of motorized trails, eight miles of ML 2 and 3 roads open to motorized use, and seven miles of ML 1 roads closed to motorized use; upgrade three miles of ML 1 roads to ML 2 roads open to motorized use; downgrade 19 miles of ML 2 roads to ML 1 roads; designate four miles mixed-use roads; and decommission 55 miles of ML 1 and 2 roads, and; change of season-of-use on 11 miles of the National Forest Transportation System (NFTS). These changes to the NFTS would result in an overall increase of 15 miles of motorized access, and provide additional access to approximately 13 dispersed recreation sites. This project also proposes to restore of drainage patterns and block access to motorized vehicles on 79 miles of unauthorized routes (UARs). Investments in the NFTS to reduce associated resource risks include the following: barricade 142 miles of closed and decommission roads and UARs, and stormproof 122 miles of ML 1 and 2 roads and motorized trails. This proposal would require a Forest Plan amendment to change the Recreation Opportunity Spectrum (ROS) for 1.1 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of a UAR as an ML 2 road. This proposal is referred to as Alternative 3, the modified proposed action. The preferred alternative is Alternative 6.

The area affected by the proposal includes the Gasquet Ranger District, including the Smith River NRA, exclusive of lands within congressionally-designated Wilderness Areas, and is referred to collectively as the Smith River NRA. The project excludes UARs and NFTS roads and motorized trails that occur within Traditional Cultural Properties (TCPs). This action is needed to: provide administrative access to National Forest System (NFS) lands, motor vehicle access to dispersed recreation opportunities (camping, hunting, fishing, hiking, horseback riding, etc.), and provide a diversity of motorized recreation opportunities (4X4 vehicles, motorcycles, all terrain vehicles, sports utility vehicles, passenger vehicles, etc.), and to reduce risks associated with the NFTS and UARs to ecological and cultural resources.

Significant Issues

External scoping identified the following significant issues and these issues were used to assist in development of the action alternatives. The significant issues include the following:

Table 1. List of significant issues

Issue Topic	Cause and Effect
1. Access and Recreation Opportunity	Concerns were raised that the proposed action may not provide adequate access to dispersed recreation sites; the proposed closing of NFTS roads and trails, and not adding or keeping more NFTS roads and trails may reduce motorized recreation opportunity, increase user conflict, and decrease motorized access to the Forest; and closing roads and trails may reduce access to historic mining sites accessible by motorized vehicles. Alternatives 4 and 6 were created to address this issue.
2. Inventoried Roadless Areas (IRAs)	Concerns were raised that the proposed addition of motorized trails may affect the IRA characteristics of these areas including opportunities for solitude, undisturbed landscapes and primitive, nonmotorized recreation. The proposed action adds 3.1 miles of additional motorized trails in these pristine areas. Opportunities for solitude and primitive nonmotorized experiences would be negatively impacted by the noise and disturbance of vehicles. Motorized trails may change the character of these otherwise undisturbed landscapes. Alternative 5 was created to address this issue.

Issue Topic	Cause and Effect
3. Resource Impacts	Many commenters expressed concerns about impacts to a variety of natural resources including water quality, wildlife, and soils for example. In particular, impacts to botanical resources (Threatened and Endangered, and Region 5 Forest Service Sensitive species) may result from allowing motorized use and/or ineffective mitigation on routes proposed for designation. Impacts to botanical resources may result from the introduction and spread of noxious weeds due to motorized use. Port-Orford –Cedar (POC) may be threatened by the potential introduction and spread of *Phytophthora lateralis*, POC root disease, due to allowing motorized use and/or ineffective mitigations on routes. Alternative 5 was developed to address this issue.
4. Traditional Cultural Properties (TCPs)	Many commenters expressed concerns that changes to the NFTS within TCPs may impact sacred sites and cultural values of regional tribes. In response to the issue of impacts to TCP, the geographic extent of the project's scope was modified to exclude inventoried UARs, and NFTS roads and motorized trails within TCPs in order to protect sacred sites and cultural values related to those areas. The modified project scope applies to all project alternatives. The proposed action was eliminated from detailed study as it exceeds the modified geographic scope.

Alternatives Considered in Detail

Five alternatives; the No Action, and four action alternatives were developed to meet the purpose and need and respond to the significant issues listed above. Alternative 2, the Proposed Action that was publicly scoped in April 2012, has been eliminated from detailed study based on comments received from the public concerning changing the existing NFTS within TCPs nominated or listed on the National Register of Historic Places. The five alternatives considered in detail for this analysis are listed in Table 2 below. Complete details of the alternatives are found in Chapter 2 of this document.

Table 2. List of alternatives considered in detail

Alternative	Description
Alternative 1: No Action Alternative	The No Action alternative provides a baseline for comparing the other alternatives. This alternative maintains the status quo. Under the No Action alternative, current management plans would continue to guide management of the project area. No changes would be made to the current NFTS. The agency would take no affirmative action on any unauthorized routes. • Does not add new NFTS facilities (Roads and Motorized Trails) • Does not decommission roads • Does not restore drainage patterns on unauthorized routes • Does not authorized stormproofing measures on NFTS facilities • Does not authorize new Port-Orford-cedar mitigations.

Alternative 3: Modified Proposed Action	Alternative 3 is the proposed action (Alternative 2) modified in geographic scope to exclude inventoried unauthorized routes and NFTS roads and trails within Traditional Cultural Properties. Alternative 3 is referred to as the modified proposed action and includes the following actions.
	• Address motorized recreation and access to dispersed sites
	  o Overall addition of 15 miles of motorized access on NFTS
	  o Designate mixed-use on 3.9 miles of road 17N49
	  o Add 13 routes to dispersed sites
	• Reduce risk to resources
	  o Restore 79 miles of UARs
	  ▪ Barricade 72 miles of UARs
	  o Stormproof 122 miles of roads and motorized trails
	  o Seasonal gate closure on 11 miles of roads and motorized trails
	• Change 1 acre of semiprimitive nonmotorized to semiprimitive motorized in the Recreation Opportunity Spectrum (ROS). Forest Plan Amendment required.

Alternative	Description

Alternative 4	Alternative 4 responds to issues concerning impacts on motorized recreation opportunities. This alternative was developed to provide increased opportunities for motorized recreation and access to dispersed sites. Specifically, this alternative adds more motorized trails and level 2 roads to address motorized recreation opportunity; adds more motorized trails accessing dispersed recreation sites (including short inventoried unauthorized routes); maintains more maintenance level 2 roads; and designates parking along 17N49.
	• Address motorized recreation and access to dispersed sites
	  o Overall add 51 miles of motorized access on NFTS
	  o Designate mixed-use on 0.4 miles of road 17N49
	  o Add 54 routes to dispersed sites
	  o Designate parking at five sites along 17N49
	• Reduce risk to resources
	  o Restore 71 miles of UARs
	  ▪ Barricade 65 miles of UARs
	  o Stormproof 114 miles of roads and motorized trails
	  o Seasonal gate closure on 42 miles of roads and motorized trails
	• Change 6 acres of semiprimitive nonmotorized to semiprimitive motorized in the ROS. Forest Plan Amendment required.

Alternative 5	Alternative 5 responds to issues concerning impacts to forest resources and inventoried roadless areas (IRAs). This alternative was developed to reduce the number and miles of roads and motorized trails open for motorized travel with specific attention given to protecting nonmotorized recreation opportunities in IRAs and increased level of protection for Port-Orford-cedar, and botanical resources. Specifically, this alternative does not add motorized trails in IRAs; does not add inventoried unauthorized routes to the NFTS with a high resource risk and low need; does not keep roads on the NFTS with high resource risks and low need; reduces motorized access to stands of Port-Orford-cedar; reduces motorized access to areas with Threatened and Endangered and Region 5 Sensitive botanical species; barricades all inventoried unauthorized routes not proposed for addition to the NFTS; and restores drainage patterns on short inventoried unauthorized routes.
	• Address motorized recreation and access to dispersed sites
	  o Add 12 routes to dispersed sites
	• Reduce risk to resources
	  o Overall reduction of 94 miles of motorized access on NFTS
	  o Restore 135 miles of UARs
	  ▪ Barricade 135 miles of UARs
	  o Stormproof 121 miles of roads and motorized trails
	  o Seasonal gate closure on 8 miles of roads and motorized trails
	• Change 1 acre of semiprimitive nonmotorized to semiprimitive motorized in the ROS. Forest Plan Amendment required.

Alternative 6: Preferred Alternative	Alternative 6 is similar to Alternative 3; however, it makes limited changes to address key issues identified through public scoping related to dispersed recreation and restoration of drainage patterns. Alternative 6 adds short inventoried UARs to popular dispersed recreation sites to the NFTS; restores drainage patterns on short inventoried UARs to dispersed recreation sites not added to the NFTS; barricades inventoried UARs not added to the NFTS; and designates parking and mixed-use along road 17N49.
	• Address Motorized Recreation and Access to Dispersed Sites
	  o Overall addition of 16 miles of motorized access on NFTS
	  o Designate mixed-use on 0.4 miles of road 17N49
	  o Add 50 routes to dispersed sites
	  o Designate parking at 4 sites along 17N49
	• Reduce Risk to Resources
	  o Restores 101 miles of UARs
	  ▪ Barricade 101 miles of UARs
	  o Stormproof 122 miles of roads and motorized trails
	  o Seasonal Gate Closure on 52 miles of roads and motorized trails
	• Change 6 acres of semiprimitive nonmotorized to semiprimitive motorized in the ROS. Forest Plan Amendment required

Summary of Environmental Consequences

The table below summarizes the environmental consequences by providing an average ranking of each alternative by resource area. Detailed information can be found in Chapter 3.

Table 3. Summary of effects and ranking of alternatives by resource

Resource Area	Rankings of Alternatives, averaged across indicators[a]				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Aquatic Biota	1	3	2	5	4
Botanical Resources	1	3	2	5	4
Cultural Resources	2	3	1	5	4
Noxious Weeds	1	3	3	5	5
Recreation Resources	2	1	4	4	5
Soil Resource	1	3	2	5	4
Terrestrial Wildlife	1	3	2	5	4
Visual Resources	1	4	3	5	4
Water Resources	1	3	2	5	4
Port-Orford-cedar	1	3	2	5	4
Inventoried Roadless Areas	1	3	2	5	3
Fire and Fuels	5	3	4	2	3
Geology	1	3	1	5	4
Transportation Facilities	3	2	1	5	4

a - A score of 5 indicates the alternative has the least impact for the specified resource; a score of 1 indicates the alternative is the most impact for specified resource. See Chapter 3 for more details.

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Chapter 1. Purpose and Need and Proposed Action

Document Structure

The Forest Service has prepared this Environmental Impact Statement in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Impact Statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

- Chapter 1. Purpose and Need for Action: This chapter briefly describes the proposed action, the need for that action, and other purposes to be achieved by the proposal. This section also details how the Forest Service informed the public of the proposed action and how the public responded.
- Chapter 2. Alternatives, including the Proposed Action: This chapter provides a detailed description of the agency's proposed action as well as alternative actions that were developed in response to comments raised by the public during scoping. The end of the chapter includes a summary table comparing the proposed action and alternatives with respect to their environmental impacts.
- Chapter 3. Affected Environment and Environmental Consequences: This chapter describes the environmental impacts of the proposed action and alternatives.
- Chapter 4. Consultation and Coordination: This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.
- Appendices: The appendices provide more detailed information to support the analyses presented in the environmental impact statement.
- Index: The index provides page numbers by document topic.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Six Rivers National Forest Supervisors Office, 1330 Bayshore Way, Eureka, CA 95501-3834.

Background

The 1990 Smith River NRA Act restricted motorized travel to designated routes. On November 2, 2005 the Forest Service published the Travel Management Rule (36 CFR 212) which established policies and procedures to ensure that the use of motorized vehicles on public lands would be controlled to protect the resources, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands. The Rule consists of two parts, Subpart A and Subpart B.

Subpart A requires the administrative units to conduct a travel analysis process (TAP) to evaluate the road and trail system in order to: identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands; identify roads for decommissioning, including priorities, and; evaluate unneeded roads that might be converted to other uses.

The 2005 Smith River NRA road analysis process (RAP) identified the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest system lands. The Smith River RAP developed risk and need assessments for ML 1 and 2 roads, and UARs which resulted in management recommendations for each road or route. In addition, the RAP identified the following: road-associated environmental and public safety risks; site-specific priorities and opportunities for road improvements, decommissioning, and restoration of drainage patterns; areas with special

resource values; routes that are potential candidates for road or trail designation; and developed specific information that may be needed to support project-level decisions. The results of this analysis were reviewed in preparation of this scoping document and updated when conditions were known to have changed. The product of this analysis, referred to as the Risk-Need Table, is located in the project file and is available upon request, or on the Six Rivers National Forest website.

Subpart B involves the designation of roads and trails for motor vehicle use, including designation by vehicle class and season of use. The Travel Management Rule requires the clear identification of roads and trails open for motor vehicle use by means of a motor vehicle use map (MVUM).

The 1990 Smith River NRA Act restricted motorized travel to designated routes, i.e. existing NFTS roads and motorized trails. In 2009, the Forest published the MVUM for the Smith River NRA, in compliance with Subpart B of the Travel Management Rule. The MVUM displays the current designated system of roads and motorized trails open for motorized travel on the NRA pursuant to the Smith River NRA Act and 36 CFR 212.51.

Changes to the NFTS, based on recommendations derived from the RAPs and public involvement, were pursued through an Environmental Assessment in 2007. The Decision Notice for Smith River Road Management and Route Designation Project was signed in April of 2007, but was appealed and reversed. A second Decision Notice was issued in September 2007, which removed nine routes from inventoried roadless areas (IRAs) identified for addition to the NFTS in the April decision. This decision was also appealed and reversed on issues related to the designation of routes within IRAs.

In 2010, the Six Rivers National Forest entered into an interagency agreement with the U.S. Institute for Environmental Conflict Resolution Program who then contracted with Center for Collaborative Policy, in order to collaborate with appellants and interested stakeholders. The purpose was to bring interested parties together to share relevant information, discuss interests relative to travel management, and to work together to develop recommendations to carry forward in a proposed action that would make changes to the NFTS and subsequent MVUM.

Three meetings and one field trip were held on April 15, July 22, October 6, and November 6, 2010 respectively. Participants included Tribal representatives, Del Norte County elected officials, representatives from two off-highway vehicle clubs, representatives from three environmental groups, and other interested individuals.

The management actions identified in the April 2007 Decision Notice was the starting point for the group to begin discussing relevant issues and concerns. The group decided to develop recommendations on the nine UARs that represented the difference between the first and second decision. After field review and discussions, the collaborative group recommended all or portions of eight of the nine UARs, referred to as key routes, be carried forward in the proposed action. The collaborative group's recommendation, which includes the actions defined in the April 2007 Decision Notice as amended by recommendations on nine key routes, as well as monitoring, was incorporated in the proposed action. In some cases, updates to the proposed action were necessary so that it would: 1) be within the legal and regulatory framework of the Forest to implement; 2) be based on up-to-date corporate data; and 3) comply with Forest Service policy and direction. Recommendations about the key routes were carried forward in the proposed action as designed by the collaborative group.

In February of 2010, the Smith River NRA scoped the proposed action in anticipation of completing an Environmental Assessment. The District received over 600 scoping comments. Due to the level of interest on the project and the controversy over the project's effects, the Forest Supervisor decided to pursue the

environmental analysis of the project through an environmental impact statement (EIS), which would determine if there are any significant effects.

Scope of the Analysis

The scope of the analysis is limited to UARs and NFTS roads that were inventoried and analyzed in the Travel Analysis Process (TAP), described in the Background section of this document. Short segments of UARs leading to dispersed sites identified through the public scoping process, and inventoried and analyzed by Forest staff are also considered in this analysis. The project encompasses Gasquet Ranger District and the Smith River NRA, exclusive of lands within congressionally designated wilderness areas, and is referred to collectively as the Smith River NRA. The project excludes inventoried UARs and NFTS roads and motorized trails that occur within traditional cultural properties (TCPs).

State, County, and Smith River NRA ML 3, 4, and 5 roads are all main access roads on the NRA that accommodate passenger cars, and are not being considered in this analysis, with the exception of 17N49 which is an ML 3 road that is proposed for mixed-use. Also not considered in this analysis are roads that were closed under previous NEPA decisions. No new construction would occur under this proposal, meaning lands previously undisturbed will not be considered for addition to the NFTS as roads or motorized trails. The analysis will be limited to the effects of the actions identified in the alternatives.

The parameters for limited changes to the NFTS roads and motorized trails follow:

Considerations for additions to the NFTS are limited to inventoried UARs. Inventoried UARs are considered for addition only when: they have high recreational value; they were inventoried and identified by the public and/or the agency; and they do not have resource concerns or other conflicts (or resource concerns can be readily mitigated).

Routes proposed for addition may either: provide access to dispersed recreation opportunities; contribute to the diversity of motorized recreation opportunities; or, provide access for administrative purposes.

The only routes considered for additional motorized access are those outside of research natural areas. Routes within Recreation Opportunity Spectrum (ROS) classification of semiprimitive nonmotorized are considered on a case-by-case basis for additional access only if the corresponding Forest Plan amendment would be non-significant. In most cases, dead-end routes, routes leading to, or ending in private property, and redundant (or duplicate) routes are not considered. Consideration within inventoried roadless areas is limited to the addition of motorized trails.

Considerations for removal of roads from the NFTS are limited to ML 1 and 2 roads when they: are not needed for administrative purposes; or do not contribute to the diversity of recreation opportunities; and/or, have resource risks that cannot be reduced to an acceptable level through mitigations.

Considerations for changes to existing NFTS roads are limited to proposing mixed-use (both highway legal vehicles and non-highway legal vehicles allowed) on 17N49, which is currently maintained for passenger cars.

Where the road segments will continue to be maintained for passenger cars, the following is required: segments must provide loops and/or linkages within or between the existing and proposed NFTS motorized trail networks, including mixed-use roads; segments must be no more than three miles long; vehicle operators must hold a valid driver’s license; and use is subject to California Vehicle Code Regulations (CVC) for “Combined-use Highways.”

The parameters for restoring drainage patterns on UARs follow:

> Restoring drainage patterns on UARs are limited to: those not proposed for NFTS; and/or, where the inventory and analysis identified a moderate to high resource risk that could be reduced to an acceptable level.

The parameters for stormproofing NFTS roads and motorized trails follow:

> Considerations for stormproofing NFTS roads and motorized trails are limited to: where the inventory and analysis identified a moderate to high resource risk; and, the road or motorized trail is needed for administrative access, or provides a diversity of recreation opportunities.

The end product of this Travel Management planning effort will be the publication of a MVUM for the Gasquet Ranger District, which will be reviewed annually to determine the need to update. The MVUM will identify the NFTS roads and motorized trails open for public use, by vehicle type and season of use, where applicable, in accordance with 36 CFR Part 212, Subpart B. Only those actions within the capability of the Forest have been brought forward by the responsible official and proposed in accordance with the purpose and need for action.

The infrastructure of a national forest will always have room for improvement and the Six Rivers National Forest welcomes suggestions for improving the transportation system. Such suggestions are considered within the context of the overall mission of the Six Rivers National Forest and will be considered as the availability of staff and funding allow. Many suggestions were received during public scoping for improving the NFTS by 1) designation of additional routes not considered in detail in this DEIS; 2) mixed-use on additional segments of NFTS passenger car roads; and 3) the addition of UARs not considered in detail in this DEIS. These ideas and concerns have been captured and may be considered in future programs of work.

Purpose and Need for Action

The underlying need(s) for this proposal include:

1. There is a need for limited changes to the Six Rivers National Forest NFTS to:

- Provide motor vehicle access to dispersed recreation opportunities (camping, hunting, fishing, hiking, horseback riding, etc.). A substantial portion of known dispersed recreation activities are not typically located directly adjacent to NFTS roads or NFTS motorized trails. Some dispersed recreation activities depend on foot or horseback access, and some depend on motor vehicle access. Those activities accessed by motor vehicles are typically accessed by short spurs that have been created primarily by the passage of motor vehicles. Many such UARs are not currently part of the NFTS. Without adding them to the NFTS and designating them on a MVUM, the regulatory changes noted above would make continued use of such routes illegal and would preclude access by the public to many dispersed recreation activities.
- Provide a diversity of motorized recreation opportunities (4X4 vehicles, motorcycles, ATVs, SUVs, passenger vehicles, etc.). It is Forest Service policy to provide a diversity of road and trail opportunities for experiencing a variety of environments and modes of travel consistent with the National Forest recreation role and land capability (FSM 2353.03(2)). There is a need to consider limited changes to the NFTS.
- Provide for administrative access to the Forest. Multiple use management of the Forest requires that transportation facilities provide access to the Forest and connectivity to other transportation networks across the District.

- Implement recommendations identified in the Travel Analysis Process (TAP) in order to:
    - . Reduce risk to ecological and cultural resources. Unmanaged roads and UARs present risks to ecological resources by providing vectors to introduce disease or spread weeds, delivering sediment to streams through erosional events and impacting aquatic habitat. Cultural resources located along roads are at risk for looting and vandalism. This project will reduce the risk to ecological and cultural resources associated with the NFTS and UARs.
    - Reduce costs associated with maintenance of the NFTS
- Implementation of Subpart B of the Travel Management Rule which requires that the public be allowed to participate in the revision of designations, and 36 CFR 212.54, which requires the Forest to coordinate with other government organizations in the revision of designation of the NFTS. While the Smith River NRA Act of 1990 limited off-highway motorized recreation to designated routes, and the MVUM issued in 2009 reflects the designated transportation system, this project will make changes to the MVUM to incorporate public input on the NFTS on the NRA.

In making any limited changes to the National Forest Transportation System, the Six Rivers National Forest will be considering criteria contained in Subpart B of the Travel Management Rule, which include the following:

a. Impacts to natural and cultural resources.

b. Public safety.

c. Access to public and private lands.

d. Availability of resources for maintenance and administration of roads trails and areas that would arise if the uses under consideration are designated.

e. Minimizing damage to soil, watershed, vegetation, and other forest resources.

f. Minimizing harassment of wildlife and significant disruption of wildlife habitat.

g. Minimizing conflicts between motor vehicles and existing or proposed recreational uses of NFS lands or neighboring federal lands.

h. Minimizing conflicts among different classes of motor vehicle uses of NFS lands or neighboring federal lands.

i. Compatibility of motor vehicle use with existing conditions in populated areas, taking into account sound, emissions, and other factors.

When making any limited changes to NFTS roads, the Six Rivers National Forest will also consider the following:

1. Speed, volume, composition and distribution of traffic on roads.

2. Compatibility of vehicle class with road geometry and road surfacing.

3. Maintaining valid existing rights of use and access (rights-of-way).

Modified Proposed Action

The Proposed Action, Alternative 2, was eliminated from detailed study based on comments received from the public concerning changing the existing NFTS within traditional cultural properties (TCPs) nominated or listed on the National Register of Historic Places that may impact sacred sites and cultural values of regional tribes. Alternative 3, the Modified Proposed Action, is the Proposed Action excluding the roads and unauthorized routes that occur within TCPs. The following is a description of Alternative 3, the Modified Proposed Action.

Address motorized recreation and access to dispersed sites

- Overall add 15 miles of motorized access on the NFTS
- Designate 3.9 miles of mixed-use on road 17N49
- Add 13 UARs to dispersed sites

Reduce risk to resources

- Restore 79 miles of UARs
    - Barricade 72 miles of UARs
- Stormproof 122 miles of roads and motorized trails
- Seasonal gate closure on 11 miles of NFTS roads and motorized trails

A detailed description of the modified proposed action can be found in Chapter 2 of this EIS. Maps depicting the proposed action can be found in the catalogue of maps located at the end of this document.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action, the alternatives, and their environmental consequences, in order to determine whether to implement the modified proposed action as described, select a different alternative or take no action at this time.

Forest Plan Direction

The Modified Proposed Action and alternatives are guided by the Six Rivers Forest Land and Resource Management Plan (Forest Plan), as amended (USDA Forest Service 1995). The Forest Plan outlines management direction related to roads and motorized trails, as well as resource protection and watershed restoration related to road and motorized trail use and management. The resource goals, desired conditions, standards and guidelines, and the management area direction outlined below are found in Chapter 4 of the Forest Plan[1].

Resource Goals, Desired Conditions, and Standards and Guidelines

This section presents the goals, direction and Forest-wide standards and guidelines relevant to the project. Forest-wide standards and guidelines are applied across all management areas to set the minimum or maximum level for implementation within which management practices will be carried out to achieve the goals and direction.

[1] Forest Plan page numbers cited reference the hardcopy (e.g. non-electronic) version of the Forest Plan.

Aquatic and Riparian Ecosystems

The Forest Plan includes direction for managing and protecting aquatic and riparian ecosystems, with specific standards and guidelines for managing roads and vehicle access to protect fisheries and other aquatic biota, water quality, and riparian vegetation (pages IV-106 to IV-111). Also included in this section of the Forest Plan is the direction for key watersheds. The Smith River basin is designated as a key watershed. Watershed analyses are required in key watersheds, and must be completed before initiating actions within a key watershed.

As part of the Northwest Forest Plan Aquatic Conservation Strategy, key watersheds are intended to provide a system of large refugia that are crucial to at-risk fish stocks and provide high water quality. Guidelines for managing key watersheds are found in this section, including the specific requirement of "no net gain" in road miles. Forest standard and guideline 9-17 (page IV-111) states that watershed restoration should focus on removing and upgrading roads.

Forest Service Sensitive Plant Species

Projects will be assessed through a biological evaluation to determine if management activities are likely to adversely affect sensitive plant resources. After completion of the evaluation, proposed actions will be prohibited if they are found likely to jeopardize the continued existence of the species or the maintenance of viable population throughout their existing range. (page IV-83 standard and guideline 6-2).

Federally Listed Species

MacDonald's rockcress is federally listed as endangered and is managed under the Endangered Species Act. All known populations and their occupied habitat will be protected from negative impacts associate with forest management activities (page IV-83 standard and guideline 6-1).

Transportation and Facilities

The Forest Plan states the Forest goals to provide a safe, efficient and cost-effective transportation system as well as provide public access for the use and enjoyment of its natural resources. Forest standard and guidelines 13-1 through 13-15 guide management for roads, trails and facilities. (pages IV-115 and 116).

Recreation

Forest standards and guidelines for recreation (pages IV-122 and 124) include the goal to develop designated motorized recreation routes on existing roads and trails, and expand opportunities by creating partnerships with user groups and other agencies. The Forest Plan standards and guidelines18-21 to 18-27 are specifically designed for motorized recreation. The first five standards and guidelines on page IV-124 are particularly relevant to the proposed action:

18-21 OHV use is restricted to designated routes.

18-22 Level 2 roads are open to motorized recreation vehicles (including OHVs) unless otherwise designated closed.

18-23 Roads and trails emphasized for motorized recreation will be signed.

18-24 Road, trail, or area use may be further restricted or prohibited by order of the Forest Supervisor if necessary to provide for public safety, prevent resource damage, or otherwise serve the public interest.

18-25 Closed roads will be evaluated for obliteration, restoration, and rehabilitation.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (ROS) is a system for classifying and managing recreation based on a combination of the physical setting, the social setting, and the managerial setting.

Pest Management and Port-Orford-Cedar

The goal of the management of Port-Orford-cedar root disease (pages IV-129-130) is to minimize resource damage from insects, disease, plants, and animals to help achieve resource objectives, and to minimize resource damage through integrated pest control. The Forest Plan directs the Forest conduct a formal analysis and prescription for controlling the spread of *Phytophthora lateralis* for any activity that has a potential for spreading this disease to Port-Orford-cedar (POC). standards and guidelines for the management of POC root disease are included in standard and guideline 20-6 to 20-10. Of particular importance to this project is an element of standard and guideline 20-7 which states that transportation plans will evaluate the risk of spread of disease through road upgrades, seasonal closures, permanent closures, maintenance and decommissioning.

Lands

Of particular relevance to this project is standard and guideline 15-5 (page IV-118), which states that rights-of-way needed for public access must be acquired in advance of scheduled programs.

Cultural Resources

The Forest goals related to cultural resources include identifying, evaluating, and providing for public appreciation of cultural resources on National Forest lands. The Forest also maintains a well-balanced heritage resource program in the areas of prehistory, history, ethnography, and contemporary values. It also includes the recognition of the contemporary values of the American Indians who use the Forest and provide positive resolution where other resource uses conflict with those values. Standards and guidelines within the Forest Plan for cultural resources are identified in 12-1 to 12-4 (page IV-114).

Management Areas

A management area represents lands that will be managed in a uniform manner, through a set of management area prescriptions unique to that area. The following management areas and associated direction occur within the project area.

Management Area 5 – Research Natural Areas:

Research natural areas are part of a national network of field ecological areas designated for non-manipulative research, observation, and to study and maintain biological diversity on National Forest System lands. The objectives of establishing research natural areas are: (1) to preserve a wide spectrum of pristine, representative areas that typify target vegetation types and/or types considered of scientific interest; (2) to serve as control areas for comparing landscapes manipulated by humans; (3) to serve as baseline areas for measuring long-term ecological change; and (4) to preserve and maintain genetic diversity and to provide a laboratory for the study of ecological succession. Management actions proposed in a research natural area will be coordinated with the Pacific Southwest Research Station.

Management Area 8 - Special Habitat (Late-successional Reserve):

Late-successional reserves are to be managed to protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl. These reserves are designed to maintain functional,

interacting, late-successional and old growth ecosystems. Standards and guidelines for recreational uses state to use adjustment measures such as education, use limitations, traffic control devices, or increased maintenance when dispersed and developed recreation practices retard or prevent attainment of Late-successional reserve objectives. In addition, motor vehicle use would be restricted to designated routes. Road and trail density would be at low to moderate levels. High standard roads would generally not occur, and ML 1 or 2 roads would occur (Forest Plan IV-42 to IV-43).

Management Area 9 - Riparian Reserves:

Under the Aquatic Conservation Strategy, riparian reserves are used to maintain and restore riparian structures and functions to streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. The riparian reserves would also serve as connectivity corridors between late-successional reserves.

Management Area 10 – Special Interest Areas, Botanical Area:

Botanical areas are classified under 36 CFR 294.1 and managed for the full complement of the species and plant communities as well as the natural processes that support these elements. These areas include some of the best examples of indigenous and sensitive plant concentrations, sensitive plant habitat, conifer diversity and unique plant communities on the Forest.

Myrtle Creek Botanical Area

This botanical area was established to represent an ecotone between the redwood forest type and the mixed evergreen forest, and to display the cultural history of the area.

North Fork Smith River Botanical Area

This botanical area was established because of the large number of rare and endemic plant species, distinctive plant habitats, and plant communities.

Bear Basin Botanical Area

This botanical area harbors forest communities of exceptional conifer diversity.

Broken Rib Ecological Area

The Ecological Area was established because of its high botanical and ecological diversity.

Management Area 2

Wild River:

This management area includes segments of the Smith River and adjacent corridors of land classified as wild under the National Wild and Scenic Rivers Act of 1968. Goals include preserving the wild river qualities. The wild designation was reserved for rivers that are free-flowing and generally inaccessible except by trail. The desired condition is for the river to appear essentially primitive, with little or no evidence of human activity. Standards and guidelines related to this project for this management area include:

Recreation

- Manage primarily for ROS class semiprimitive nonmotorized. Simple comfort and convenience facilities, such as fireplaces, may be provided as necessary within the river area.
- Motorized travel on land will occur only on existing routes; no new routes will be constructed.

Transportation and Facilities Management

- No new roads or facilities for motorized travel will be constructed. Minor existing structures may be allowed if compatible with the essentially primitive and natural values of the viewshed.

Scenic River:

This management area includes segments of the Smith River and adjacent corridors of land classified as scenic under the National Wild and Scenic Rivers Act of 1968. The basic distinctions between a wild and a scenic river area are degree of development, type of land use and road accessibility. The goals are to maintain and enhance the outstandingly remarkable values for which the rivers are designated and provide recreational opportunities that do not adversely impact or degrade those values. The desired condition for scenic river segments is that it appears to be in a natural forest condition as seen from the river. The river area will appear largely primitive, and shorelines will be largely undeveloped. Standards and guidelines related to this project for this management area include:

Recreation

- Maintain existing ROS class of semiprimitive nonmotorized and semiprimitive motorized. Larger scale public use facilities, such as moderate size campgrounds, public information centers, and administrative headquarters are allowed if such structures will be visually screened from the river.

Transportation and Facilities Management

- Roads may occasionally bridge the river area. Short stretches of conspicuous roads and longer stretches of inconspicuous roads are allowed within the river corridor.

Recreational River:

This management area includes segments of the Smith River and adjacent corridors of land classified as recreational under the National Wild and Scenic Rivers Act of 1968. The recreational classification applies to those river segments which are readily accessible by public roads and have experienced substantial human modification to the scenery. The desired condition is that it should remain generally natural and riverine in appearance. Standards and guidelines related to this project for this management area include:

Recreation

- Manage for ROS classes of roaded natural, semiprimitive motorized, and semiprimitive nonmotorized. Campgrounds and picnic areas may be established in close proximity to the river.

Transportation and Facilities Management

- Roads and trails may be constructed. Bridge crossings and numerous river access points may occur.

Management Area 7 - Smith River National Recreation Area (Smith River NRA)

The Smith River NRA was established in November of 1990, by SB 2566/HB 4309. The primary goals are to emphasize, protect, and enhance the unique biological diversity; anadromous fisheries; and the wild, scenic, and recreational potential of the Smith River while providing sustained yields of forest products. The Smith River NRA Act legislated specific statutes. The Smith River NRA Management Plan (Appendix A of the Forest Plan) provides direction to guide compliance with those statutes.

Smith River NRA Management Plan

The following describes which sections of the Smith River NRA Management Plan are relevant to this proposed action. Much of the Plan underscores the basis of the purpose and need of the proposed action.

Management Areas

While specific management direction is identified for each of the eight management areas (pages 20-39), management direction that is common to all management areas and related to the proposed action follows.

- Provide for a broad-range of recreation uses and provide recreational and interpretive services and facilities (including trails and campgrounds) for the public.
- Provide and maintain adequate public access, including vehicular roads for general recreational activities such as camping, hiking, hunting and fishing.
- Improve the anadromous fishery and water quality, including (but not limited to), stabilizing landslides, improving fish spawning and rearing habitat, and placing appropriate restrictions or limitations on soil-disturbing activities.
- Permit the use of off-highway vehicles only on designated routes.
- Provide for the long-term viability and presence of Port-Orford-cedar and ensure its continued present economic and noneconomic uses through implementation of management strategies developed by the Forest Service.
- Provide for the restoration of landscapes damaged by past human activity consistent with the Smith River NRA Act.
- Access to motorized trails is limited to the dry season only (normally May through October).

The North Fork Management Area contains directions for OHV use stating that this area also contains most of the historic mines and mining roads found in the Smith River NRA. The abundant access of these roads provide, along with the unusually erosion resistant soils, provide an excellent opportunity for managed OHV use. Specific direction states that the Smith River NRA shall provide and maintain facilities for information services and recreation activities which are compatible with the wild, scenic, or recreational river designations, including: hiking, camping, white water boating, off-highway vehicle use on designated trails, and hunting.

Ten Year Plan

The Recreation Plan (page 40) recommends the Forest designate routes for OHV use and facilities.

The Fisheries and Riparian Plan states that all fisheries and riparian work will be coordinated to:

- Maintain the function of corridors and manage for watershed-stream integrity by correcting road and culvert failures, controlling landslides and fine sediment sources, and maintaining sources of large woody debris for channel stability and stream habitat complexity.

Under the Soil and Watershed Improvements and Activities plan (page 44), the following is prescribed.

Conduct road inventory, evaluation, and reclamation:

- Conduct a comprehensive inventory of all roads within the NRA.

- Evaluate each road with regard to use or potential use for recreation, timber management, access to private land, and for the road system's effects on watershed, wildlife, and recreational values.
- Determine long-term management of each road. Develop a schedule for closure and reclamation of unneeded or inappropriate roads.

Monitor soil and water resources. Such monitoring efforts will include the following activities:

- Monitor impact of OHV use on water quality in areas with designated OHV routes.

Evaluate flood risk:

- Conduct a flood risk rating of all road drainage structures.
- Develop a plan for "flood proofing" all roads.

Principle Laws and Regulations

The National Environmental Policy Act of 1969 (NEPA): NEPA requires that all major federal actions significantly affecting the human environment be analyzed to determine the magnitude and intensity of those impacts and that the results be shared with the public and the public given opportunity to comment. The regulations implementing NEPA further require that to the fullest extent possible, agencies shall prepare environmental impact statements concurrently with and integrated with environmental analyses and related surveys and studies required by the Endangered Species Act of 1973, the National Historic Preservation Act of 1966, and other environmental review laws and executive orders. Principle among these are the Multiple Use and Sustained Yield Act of 1960, the National Forest Management Act of 1976 as expressed through the Six Rivers National Forest Land and Resource Management Plan, the Clean Air Act of 1955, the Clean Water Act of 1948, and the Forest and Rangeland Renewable Resources Planning Act of 1974.

Travel Management Rule (36 CFR 212, 251, 261, and 295): The Smith River National Recreation Area Restoration and Motorized Travel Management EIS is designed specifically to implement the requirements of the November 5, 2005, Rule for Travel Management, Subpart B.

Smith River National Recreation Area (NRA) Act Section four of the Smith River NRA Act of 1990 (Public Law 101-612) describes the purpose of the establishment of the Smith River NRA:

> For the purposes of ensuring the preservation, protection, enhancement, and interpretation for present and future generations of the Smith River watershed's outstanding wild and scenic rivers, ecological diversity, and recreation opportunities while providing for the wise use and sustained productivity of its natural resources, there is hereby established the Smith River National Recreation Area.

The Smith River NRA Act mandates a need to provide for recreation opportunities that are of the type and levels consistent with preservation, protection, and enhancement.

The first four provisions of Section 5 of the Smith River NRA Act serve as a basis for the purpose and need of this project. They are:

- Provide for a broad range of recreation uses and provide recreational and interpretive services and facilities (including trails and campgrounds) for the public.
- Provide and maintain adequate public access, including vehicular roads for general recreational activities such as camping, hiking, hunting, and fishing.

- Improve the anadromous fishery and water quality, including (but not limited to) stabilizing landslides, improving fish spawning and rearing habitat, and placing appropriate restrictions or limitations on soil disturbing activities.
- Permit the use of off-road vehicles only on designated routes.

These four provisions in total include recreation opportunities and access, fish and watershed protection and restoration, and management of off-road vehicles. The proposed action is designed to meet these four provisions by managing motorized recreation opportunities at a level and manner that are appropriate and consistent with fish and watershed resource protection.

Public Involvement

A Notice of Intent (NOI) to prepare an Environmental Impact Statement for the Smith River National Recreation Area Restoration and Motorized Travel Management EIS Project was published in the Federal Register on April 20, 2012. The notice asked that comments on the proposed action be received by June 5, 2012. In addition, as part of the public involvement process, the Forest Service mailed the scoping summary and proposed actions maps to 176 interested individuals and organizations along with a cover letter requesting the public to identify their issues and concerns with the project. Two public meetings, one at the Lighthouse Inn in Crescent City and the other at the Gasquet Mountain School in Gasquet, were held to inform the public about the project, clarify any specific questions the public had, solicit comments, and assist the public in understanding the information displayed on the proposed action maps or contained in the proposed action summary. Approximately 627 comments on the proposed action were received.

In August of 2013, the Forest hosted a public meeting to share the results of public scoping. The meeting included a presentation on the significant issues and proposed alternatives, and provided an opportunity to have informal dialogue about these topics with resource specialists. All the issues identified in discussions with resource specialists had been identified through scoping, i.e., no new issues were identified by the public that had not been identified through scoping. Information gleaned from discussions with the public was used to refine the Alternative descriptions and maps in the Draft Environmental Impact Statement.

County Coordination

The Travel Management Rule (CFR 212.53) states that the responsible official shall coordinate with appropriate Federal, State, county and other local governmental entities and tribal governments when designating National Forest System roads, National Forest System trails, and areas on National Forest System lands pursuant to this subpart.

The modified proposed action is based on recommendations provided in part by representatives on the Del Norte County Board of Supervisors in the collaborative process in 2010. Since then, the Forest identified a strategy to continue coordination efforts with Del Norte County through a series of two-by-two meetings which included: Del Norte County Board of Supervisors, Mike Sullivan and Gerry Hemmingson; Del Norte County Sheriff; the Forest Supervisor and Gasquet District Ranger. The purpose of the meetings is to create an open dialogue where the travel management process is understood and issues of concern are identified early. In addition to the two-by-two meetings, the Forest considered the direction identified in the Del Norte County General Plan (January 28, 2003) and found that the proposed action is consistent with the goals and policies in the Plan which are relevant to the project.

Issues

Comments from the public, other agencies, local government representatives, and regional Native American tribes were used to formulate issues concerning the proposed action. The Forest Service separated the issues into two groups: significant and non-significant. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…". A list of non-significant issues and reasons why they were found non-significant may be found in the Scoping Report on the project website, or in the project record at the Six Rivers National Forest Supervisor's Office in the project record located at 1330 Bayshore Way, Eureka, CA 95501.

As for significant issues, the Forest Service identified the following issues during scoping:

1. Issue: Closing roads and trails impacts motorized recreation opportunities.

Discussion: Concerns were raised that the proposed action does not provide adequate access to dispersed recreation sites; the proposed closing of NFTS roads, and not adding or keeping more NFTS roads and motorized trails will reduce motorized recreation opportunity, increase user conflict, and decrease motorized access to the Forest; and closing roads and trails reduces access to historic mining sites accessible by motorized vehicles. Alternatives 4 and 6 were created to address this issue.

2. Issue: Designating motorized trails in inventoried roadless areas (IRA) impacts nonmotorized recreation opportunity and inventoried roadless area character.

Discussion: Concerns were raised that the proposed addition of motorized trails will affect the IRA characteristics of these areas including opportunities for solitude, undisturbed landscapes and primitive, nonmotorized recreation. The proposed action adds 3.1 miles of additional motorized trails in these areas. Opportunities for solitude and primitive nonmotorized experiences would be negatively impacted by the noise and disturbance of vehicles. Motorized trails change the character of these otherwise undisturbed landscapes. Alternative 5 was created to address this issue.

3. Issue: Public motorized use of roads and trails will impact forest resources.

Discussion: Many commenters expressed concerns about impacts to a variety of natural resources including water quality, wildlife, and soils for example. In particular, impacts to botanical resources (threatened and endangered, and Region 5 Forest Service sensitive species) will result from allowing motorized use, and/or ineffective mitigation on routes proposed for designation. Impacts to botanical resources will result from the introduction and spread of noxious weeds due to motorized use. Port-Orford-cedar is threatened by the potential introduction and spread of *Phytophthora lateralis*, Port-Orford-cedar root disease, due to allowing motorized use and/or ineffective mitigations on routes. Alternatives 5 and 6 were developed to address this issue.

4. Issue: Changing the existing NFTS within Traditional Cultural Properties (TCPs) nominated or listed on the National Register of Historic Places may impact sacred sites and cultural values of regional tribes.

Discussion: Commenters expressed concerns that changes to the NFTS within TCPs may impact sacred sites and cultural values of regional tribes. The geographic scope of the project was modified to exclude TCPs and the proposed action was eliminated from detailed study in response to this issue.

Chapter 2. Alternatives, Including the Proposed Action

Introduction

This chapter describes and compares the alternatives considered for the Smith River NRA Restoration and Motorized Travel Management DEIS. It describes both alternatives considered in detail and those eliminated from detailed study. The end of this chapter presents the alternatives in tabular format so that the alternatives and their environmental impacts can be readily compared.

Based on the issues identified through public comment on the proposed action, the Forest Service developed three action alternatives that achieve the purpose and need differently than the proposed action. In addition, the Forest Service is required to analyze a No Action alternative. The no action, proposed action (modified), and other action alternatives are described in detail below. The agency's preferred Alternative is Alternative 6.

The chapter is divided into four parts:

- Part 1 describes how the alternatives were developed.
- Part 2 presents the alternatives considered in detail.
- Part 3 presents the alternatives that were considered, but eliminated from detailed analysis. It includes the rationale for eliminating these alternatives.
- Part 4 compares the alternatives based on their actions, and environmental, social, and economic consequences. This section includes a comparative display of the projected effects of the alternatives.

How the Alternatives were developed

The four action alternatives, including the modified proposed action, were developed to meet the purpose and need and address a range of issues as described in Chapter 1. During the planning stages of the travel management project for the Smith River NRA, members of the public recommended changes to the existing National Forest Transportation System (NFTS) and recommendations for restoration opportunities. More information on the public involvement during project development is located in the Background section of this document. The proposed action was publicly scoped from April 20, 2012 to June 5, 2012. The public comments received from the scoping period were analyzed to identify significant issues. Alternatives were crafted to respond to the significant issues. Some comments addressed issues with specific routes. The disposition of these routes fell into two categories: routes brought forward for detailed study in one or more alternatives and routes eliminated from detailed study. These decisions were made by the responsible official based upon consideration of the purpose and need, the project's scope, law, policy, regulatory framework, and compliance with the Forest Plan.

Refining Alternatives Submitted by the Public during Scoping

During the public scoping process, alternatives were submitted for consideration by individuals, government organizations, off-highway vehicle user groups, and environmental organizations. After the scoping period concluded, the Forest Service reviewed and gave due consideration to their proposals. The resulting alternatives incorporate the proposals and information offered by the public when it responded to the purpose and need, addressed a significant issue, was consistent with law, policy and regulation, and complied with the Forest Plan.

Also important in this process was the information gathered by the Forest Service in their consultation and discussions with tribal representatives, local counties, and Forest staff. State and Federal agencies advised the process through numerous informal contacts.

Del Norte County Coordination

Since the issuance of the proposed action, the Forest met with Del Norte County officials on five occasions in two-by-two meetings to discuss the status of the project, the concerns of the County, and how the Forest is addressing concerns related to this project. Specifically, the County Board of Supervisors and the Sheriff's office requested that the Forest considering adding routes to approximately 100 dispersed recreation sites, and designating parking along 17N49 to allow for safe staging. Given that addressing access to dispersed recreation sites responds the purpose and need of the project, and public safety is one of the criteria required for consideration directed by the Travel Management Rule subpart B, the Forest invested resources in inventorying and analyzing UARs to the identified dispersed sites, and parking sites for inclusion in the alternatives. Routes to dispersed recreation sites identified through the county coordination effort contributed to the development of Alternatives 4, 5, and 6. Designated parking is included in Alternatives 4 and 6 for consideration.

Alternatives Considered in Detail

Four action alternatives (Alternatives 3, 4, 5, 6) and a no action alternative (Alternative 1) are analyzed in detail in this DEIS. The no action alternative serves as a baseline for comparison among the alternatives, and is required by the implementing regulations of the National Environmental Policy Act (NEPA).

Each alternative assumes that other adjacent federal lands will be managed according to the existing management plans and applicable Federal laws. Each alternative also assumes that activities on state and private lands will meet applicable State and Federal land use regulations.

Monitoring and Condition Surveys

Monitoring is critical for evaluating the effectiveness of management decisions and the accuracy of analysis assumptions and conclusions. Monitoring of road, trail and area conditions is required each year. Road and motorized trail condition surveys are conducted using a random sample and must meet national standards. Project specific monitoring is identified for water quality, soil and water resources, botanical resources, noxious weeds, and Port-Orford-cedar in Appendix B of this document.

If road or motorized trail condition surveys determine motor vehicle use on a National Forest is directly causing or will directly cause considerable adverse effects on public safety or soil, vegetation, wildlife, wildlife habitat, or cultural resources associated with that road or trail, the responsible official, in accordance with 36 CFR 212.52(2) shall immediately take corrective actions. These actions may include but are not limited to, reduction in the amount of OHV use, signing, or barriers to redistribute use, closure to causative vehicle type(s), or total closure, and structural solutions, such as culverts. Closure is accomplished through authority of the Forest Supervisor.

Season of Use

Seasons of use are identified for roads and motorized trails where appropriate to protect resource values from potential spread of Port Orford-cedar root disease or wet weather associated damage. Use of motorized trails on the Smith River NRA is limited to the dry season, normally May through October. These dates are based on Forest Plan direction and corroborated with district personnel who currently close the associated gates based on rainfall and soil conditions.

The Forest Plan provides more conservative dates for the entire forest. Appendix K – Port-Orford-Cedar Action Plan, provision E-7A of the Engineering and Road Management Disease Control Strategies provides for the restriction of management activities to the dry season, June 1 through September 30.

Port-Orford-Cedar Root Disease

Seasonal closure to reduce risk of spread of Port-Orford-cedar (POC) root disease is based on a hierarchical decision tree. If the subject route is in a watershed containing un-infested POC, additional factors are considered to assess risk of transmitting the disease, see details in the section for Port-Orford-cedar (page 198). For routes with high risk, a seasonal closure and the counterpart season-of-use are proposed.

Descriptions of the Alternatives

This section describes each of the 5 alternatives considered in detail. The management actions considered within the alternatives are described in four parts as follows:

1 - Changes to NFTS

- **Additions** Some action alternatives include unauthorized routes (UARs) proposed for addition to the NFTS, and identify vehicle class and, if appropriate, season-of-use for those proposed additions. Additions are considered in order to respond to the need to provide administrative access, motor vehicle access to dispersed recreation opportunities and, a diversity of motorized recreation opportunities. For the purpose of this analysis, each of these UARs is identified by a unique number. Each road and UAR is individually addressed in Appendix A.
- **Upgrade to ML2 (Additional Motorized Access)** In some cases, a road is designated as ML 1 (closed to motorized use) but is currently drivable and identified as having a high recreation need. Upgrading these roads to ML 2 provides for access by high-clearance vehicles. Upgrading to ML 2 provides public access and allows the Forest to manage and control the current use to reduce resource risk. Upgrading may involve road surface improvements, such as installing, repairing or replacing culverts, rolling dips or waterbars where resource risks warrant (see Stormproof under Resource Risk Mitigations).
- **Downgrading to ML1 (Removal of Motorized Access)** Downgrading to ML 1 is primarily aimed at the reduction of maintenance costs on low-use roads. Downgrading to ML 1 will close the road for motorized use (no vehicle class allowed) but would maintain the option of future administrative use. Downgrading and managing as ML 1 may involve removing culverts and other drainage features and leaving the road in a hydrologically maintenance-free condition (see Stormproof under Resource Risk Mitigations).
- **Motorized Mixed-Use Designation (Street and Non-Street Legal Vehicles Allowed)** This changes the allowed vehicle class of a road from highway legal only to include all vehicles, including non-highway legal vehicles, on passenger car roads (ML 3 and higher). Mixed-use designation (also referred to as combined use) is subject to the approval of the California Highway Patrol and the Forest Service's Region 5 Office.
- **Season-of-use –** Changes to season-of-use designations on NFTS roads are considered where damage to soil or aquatic resources, harassment of wildlife, spread of Port Orford-cedar root disease may otherwise occur.
- **Convert Road to Motorized Trail –**Roads not required for administrative access that provide for a diversity of motorized recreation opportunity or access to dispersed recreation sites are converted to motorized trails.

- **Decommission** The action alternatives include decommissioning of existing NFTS roads. Decommissioned roads are left in a maintenance-free condition (i.e. remove drainage structures, re-establish natural drainage patterns), and are not drivable by motor vehicles, and are not part of the NFTS. Decommissioning of roads is considered in order to respond to a variety of criteria, including responding to changes in administrative access needs, minimizing damage to forest resources; minimizing harassment to wildlife; and reducing maintenance costs. For roads that are currently non-drivable and present a low risk, removing the road from the NFTS may simply involve an amendment to the NFTS database; however in other cases, when a road is still drivable and, or there is a moderate or high resource risk, actions associated with decommissioning listed below may be required.
    - **Waterbar–** Water dispersion treatments are designed to stop water from concentrating on the travelway surface, reduce the potential for stream diversions (i.e., prevent water from flowing down the road or trail), which reduces the potential for off-site sediment delivery to water resources.
    - **Remove Culvert and Associated Fill –** This action is aimed at eliminating the need for road maintenance, re-establishing pre-road construction drainage patterns, and storing the stream crossing road fill at stable locations, away from streams.
    - **Barricade –** This includes the placement of a barrier (often earthen mounds or large rock) at the entrance to a road or route. The objective is to prevent motorized use and promote passive restoration of the travelway.

2 - Restoration of Drainage Patterns on Unauthorized Routes:

The action alternatives include restoring travelway drainage patterns. Restored routes are not part of the NFTS. The objective is to leave the route in a condition that provides for a free draining travelway surface, promote revegetation and minimize damage to soil and water resources during storm events. Restoration of travelway drainage patterns is considered in order to respond to a variety of resource concerns, including reducing damage to forest resources. Depending on slope location, type of stream crossings, and diversion potential of a road or route, restoring drainage patterns on UARs may require as little as a simple barricade or as much as the use of heavy equipment to correct drainage problems. The specific actions needed are based on the site-specific conditions and may include the following treatments.

- **Waterbar or Rolling Dip–** Water dispersion treatments are designed to stop water from concentrating on the travelway surface, reduce the potential for stream diversions (i.e., prevent water from flowing down the road or trail), which reduces the potential for off-site sediment delivery to water resources.
- **Remove Culvert and Associated Fill –** This action is aimed at eliminating the need for road maintenance, re-establishing pre-road construction drainage patterns and storing the stream crossing road fill at stable locations, away from streams.
- **Barricade –** This includes the placement of a barrier (often earthen mounds or large rock) at the entrance to a road or route. The objective is to prevent motorized use and promote passive restoration of the travelway.

3 - Resource Risk Mitigations:

Resource risk mitigations apply to NFTS current and proposed roads and motorized trails to reduce risk and impacts to botanical, wildlife, or aquatic species, and water quality on system roads and trails. When resource risks were identified as high or moderate in the travel analysis process, mitigations are required to reduce the risk to an acceptable level.

- **Seasonal Gate Closure –** Enforcing the season of use on motorized trails and roads through the installation of a gate is one of the management actions identified as a method to reduce the risk of spread of *Phytophthora lateralis* root disease to Port-Orford-cedar populations. Seasonal gate closure dates vary depending on location and existing ground conditions, but in general, the dates range from October to May.
- **Gravel -** Reinforce existing gravel on routes or add new gravel along sections of road near POC to reduce vehicle contact with mud and the spread of *Phytophthora lateralis* root disease to uninfested Port-Orford-cedar populations.
- **Route Delineation –** Placement of a physical barrier to travel, such as large boulders or other imported material, in close proximity to the motorized trail prism, designed to keep vehicular traffic on the designated route.
- **Posted Speed Limits –** Posting speed limits to reduce travel speed is aimed at reducing dust generation and the potential for inhaling dust that may contain naturally occurring asbestos.
- **Public Information –** This is aimed at increasing public awareness about the potential exposure to naturally occurring asbestos while traveling on newly added NFTS roads and motorized trails, and the risk associated with exposure. Information may be made available in maps and literature available at the Ranger District office, or through signage posted on newly added NFTS roads and motorized trails.
- **Stormproof –** This is a suite of management actions applied to NFTS roads and motorized trails to reduce water quality and sedimentation risks through culvert and road surface improvements, including redesigning of culverts for fish passage.
    - **Install Culvert, or Rolling Dip –** These water dispersion, and, or containment treatments are all designed to minimize stream diversion potential (i.e., prevent water from plugged culverts flowing down grade along the road or motorized trail), protecting the travel route, as well as reducing the potential for off-site sediment delivery. The term culvert includes cross drains and stream crossings.
    - **Repair/Replace Culvert –** This action includes upsizing culverts to pass the 100-year flood flow and associated debris.
    - **Remove Culvert and Associated Fill –** When applied to NFTS roads remaining on the system, this action is limited to ML 1 roads. This action is aimed at eliminating the need for road maintenance, re-establishing pre-road construction drainage patterns and storing the stream crossing road fill at stable locations, away from streams.

4 - Connected Actions:

In the context of this project, connected actions are interdependent parts of a larger action and depend on the larger action for their justification.

- **Change in ROS** All action alternatives require a change in the ROS in order to designate existing UAR(s) that accesses dispersed recreation in the vicinity of Blackhawk Bar. The current ROS designation is semiprimitive nonmotorized and is proposed to change to semiprimitive motorized. The use levels and long-term general popularity of Blackhawk Bar warrant a special-case consideration of a non-significant Forest Plan amendment to the ROS designation, in order to provide public access to this area.

Alternative 1

The No Action Alternative provides a baseline for comparing the other alternatives. Under the No Action Alternative, no changes would be made to the NFTS. Current management plans would continue to guide project area management. Unauthorized routes would continue to have no status as NFTS facilities and drainage patterns would not be restored. The current MVUM would continue providing direction on motorized use on NFTS roads and motorized trails on the Gasquet Range District and the Smith River NRA.

The no action alternative is described as follows:

- **Changes to NFTS:** No additional access to dispersed recreation sites or miles of motorized recreation is considered under this alternative.
  - **Additions to the NFTS**: No roads or motorized trails are added
  - **Upgrading ML 1 (closed):** No roads are upgraded
  - **Downgrading ML 2 (open):** No roads are downgraded
  - **Converting roads to motorized trails**: No roads are converted to motorized trails
  - **Designating mixed-use roads**: No roads are designated as mixed use
  - **Changing season-of-use**: No changes to the season-of-use designations occur
  - **Decommissioning**: No roads are decommissioned
- **Restoring drainage patterns:** No restoration of drainage patterns on UARs occurs
  - **Barricades** – No barricades are placed on closed roads or UARs
- **Resource risk mitigations**
  - **Seasonal Gate Closure** – No additional seasonal gates are added
  - **Stormproofing** – No stormproofing occurs on ML 1 and 2 roads and motorized trails
- **Connected Actions**
  - **Change in Recreation Opportunity Spectrum (ROS):** No change in the ROS occurs

A complete listing of existing roads and inventoried UARs is located in Appendix A under Alternative 1.

Table 4. Alternative 1 - summary of actions

Action		Existing Status	Proposed Status	Miles	Segments
Changes to NFTS	Add to NFTS	UAR	Motorized Trail	0	0
			ML 1 (closed)	0	0
			ML 2 (open)	0	0
			ML 3 (open)	0	0
	Upgrade	ML 1 (closed)	ML 2 (open)	0	0
	Downgrade	ML 2 (open)	ML 1 (closed)	0	0
		ML 3 (open)	ML 1 (closed)	0	0
	Decommission	ML 1 (closed)	Non-system (closed)	0	0
		ML 2 (open)	Non-system (closed)	0	0
	Designate Mixed-Use	ML 3 (open)	ML 3 and Mixed Use	0	0
	Convert to Motorized Trail	ML 1 (closed)	Motorized Trail	0	0
		ML 2 (open)	Motorized Trail	0	0
	Designate Parking	UAR	Parking Site	NA	0
Restoration of Drainage Patterns		UAR	Free draining, closed to motorized travel	0	0
Barricade		ML 1, Decommissioned Roads, and Restored UARS		0	0
Seasonal Gate Closures		NFTS Roads and Motorized Trails		0	0
Stormproofing		NFTS Roads (ML 1 and 2) and Motorized Trails		0	0
Change Recreation Opportunity Spectrum (ROS)		semiprimitive nonmotorized	semiprimitive motorized	NA	0 Acres

Alternative 3

Alternative 3, the Modified Proposed Action, is the proposed action recommended by the collaborative group that was publicly scoped in April 2012, however, the geographic extent was modified to exclude inventoried UARs, and NFTS roads and motorized trails within traditional cultural properties (TCPs) from the project area in response to a significant issue.

Changes to the NFTS, itemized in Table 5, would result in an overall addition of 15 miles of motorized access, and provide additional access to approximately 13 dispersed recreation sites. Restoration of drainage patterns would occur on 79 miles of UARs. Alternative 3 also includes investments in the NFTS to reduce associated resource risks, including the following: barricade 72 miles of restored UARs, seasonal gate closure on11 miles of roads and motorized trails, and stormproof 122 miles of NFTS roads and motorized trails.

Alternative 3 adds 307 feet (0.1 mi) of UAR 15N36N.1 as an ML 2 road currently in the semiprimitive nonmotorized ROS class. This action will require a non-significant Forest Plan amendment to change 1 acre of semiprimitive nonmotorized ROS class to semiprimitive motorized ROS class.

Alternative 3 is described as follows.

- **Changes to NFTS**
  - **Add to the NFTS**
    - 44 miles of motorized trails
    - 8 miles of ML 2 and 3 (open) roads
    - 7 miles of ML 1, (closed) roads
  - **Upgrade** 3 miles of ML 1 (closed) roads to ML 2 (open) roads
  - **Downgrade** 19 miles of ML 2 (open) roads to ML 1 (closed) roads
  - **Designate Mixed Use** on 4 miles of ML 3 road
  - **Decommission** 55 miles of ML 1 and 2 roads
- **Restore drainage patterns:** 79 miles on UARs
- **Resource risk mitigations**
  - **Barricades** –72 miles of unauthorized routes not added to the NFTS
  - **Seasonal Gate Closure** – 11 miles of ML 1 and 2 roads and motorized trails
  - **Stormproofing** – 122 miles of ML 1 and 2 roads and motorized trails
- **Connected Actions**
  - **Change in ROS (Forest Plan Amendment) –** 1 acre of semiprimitive nonmotorized would be converted to semiprimitive motorized to allow for the addition of UAR 15N36N.1 as an ML 2 road to provide motorized access near Blackhawk Bar, a popular dispersed recreation site.

The following table displays a summary of the actions proposed in this alternative. A complete listing of roads, motorized trails, and UARs considered by alternative is located in Appendix A.

Table 5. Alternative 3 - summary of actions

Action		Existing Status	Proposed Status	Miles	Segments
Changes to NFTS	Add to NFTS	UAR	Motorized Trail	44.0	45
			ML 1 (closed)	7.3	5
			ML 2 (open)	7.1	15
			ML 3 (open)	0.4	4
	Upgrade	ML 1 (closed)	ML 2 (open)	2.6	3
	Downgrade	ML 2 (open)	ML 1 (closed)	18.5	18
		ML 3 (open)	ML 1 (closed)	0	0
	Decommission	ML 1 (closed)	Non-system (closed)	34.9	69
		ML 2 (open)	Non-system (closed)	20.4	44
	Designate Mixed-Use	ML 3 (open)	ML 3 and Mixed-Use	3.9	1
	Convert to Motorized Trail	ML 1 (closed)	Motorized Trail	0	0
		ML 2 (open)	Motorized Trail	0	0
	Designate Parking	UAR	Parking Site	NA	0
Restoration of Drainage Patterns		UAR	Free draining, closed to motorized travel	79.2	162
Barricade (Restored UARs)		UARs	Restored UARs	71.8	142
Seasonal Gate Closures		NFTS Roads and Motorized Trails		10.5	6
Stormproof		NFTS Roads (ML 1 and 2) and Motorized Trails		122.3	71
Change Recreation Opportunity Spectrum (ROS)		semiprimitive nonmotorized	semiprimitive motorized	NA	1.1 Acres

Alternative 4

Alternative 4 responds to issues concerning impacts on motorized recreation opportunities. This alternative was developed to provide increased opportunities for motorized recreation and access to dispersed sites. Specifically, this alternative adds more motorized trails and ML 2 roads; adds more motorized trails accessing dispersed recreation sites (including short inventoried UARs); maintains more ML 2 roads; and designates parking along 17N49.

Changes to the NFTS, itemized in Table 6, would result in an overall addition of 51 miles of motorized access, and provide additional access to approximately 54 dispersed recreation sites. Restoration of drainage patterns would occur on 70 miles of UARs. Alternative 4 also includes investments in the NFTS to reduce resource risks, including the following: barricade 65 miles of restored UARs, seasonal gate closures on 42 miles of roads and motorized trails, and stormproof 97 miles of NFTS roads and motorized trails.

Alternative 4 adds three UAR segments currently in the semiprimitive nonmotorized ROS class in the vicinity of Blackhawk Bar, which will require a non-significant Forest Plan amendment. These routes include 15N36N.1 (0.1 mi) and 15N36N.1B (0.2 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi) proposed as motorized trail. Alternative 4 requires 6 acres of semiprimitive nonmotorized to be converted to semiprimitive motorized.

Alternative 4 is described as follows.

- **Changes to NFTS**
  - **Add to the NFTS**
    - 58 miles of motorized trails
    - 12 miles of ML 2 and 3 (open) roads
    - 4 miles of ML 1 (closed) roads
  - **Upgrade to ML 2** 11 miles of ML 1 (closed) roads to ML 2 (open) roads
  - **Downgrade to ML 1** 16 miles of ML 2 (open) roads to ML 1 (closed) roads
  - **Designate Mixed-use** on 0.4 miles of ML 3 roads
  - **Convert Road to Trail** on 8 miles of ML 1 and 2 roads
  - **Decommission:** 57 miles of ML 1 and 2 roads
- **Restore Drainage Patterns:** 70 miles on unauthorized routes
  - **Barricades** 66 miles of UARs not added to the NFTS
- **Resource risk mitigations**
  - **Seasonal Gate Closure** 42 miles of ML 1 and 2 roads and motorized trails
  - **Stormproofing** 97 miles of ML 1 and 2 roads and motorized trails
- **Connected actions**
  - **Change in ROS (Forest Plan Amendment) –** Convert 6 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of the following UARs: 15N36N.1 (0.1 mi) and 15N36N.1B (0.2 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi) proposed as motorized trail to provide motorized access to multiple dispersed recreation sites near Blackhawk Bar.

The following table displays a summary of the actions proposed in this alternative. A complete listing of roads, motorized trails, and UARs considered by alternative is located in Appendix A.

Table 6. Alternative 4 - summary of actions

Action		Existing Status	Proposed Status	Miles	Segments
Changes to NFTS	Add to NFTS	UAR	Motorized Trail	58.0	91
			ML 1 (closed)	3.6	5
			ML 2 (open)	12.0	20
			ML 3 (open)	0.4	4
	Upgrade	ML 1 (closed)	ML 2 (open)	11.1	10
	Downgrade	ML 2 (open)	ML 1 (closed)	15.6	16
		ML 3 (open)	ML 1 (closed)	0.0	0
	Decommission	ML 1 (closed)	Non-system (closed)	41.7	78
		ML 2 (open)	Non-system (closed)	15.0	36
	Designate Mixed-Use	ML 3 (open)	ML 3 and Mixed-use	0.4	1
	Convert to Motorized Trail	ML 1 (closed)	Motorized Trail	7.4	7
		ML 2 (open)	Motorized Trail	0.5	1
	Designate Parking	UAR	Parking Site	NA	5
Restoration of Drainage Patterns		UAR	Free draining, closed to motorized travel	70.4	161
Barricade		UAR	Restored UAR	65.5	145
Seasonal Gate Closures		NFTS Roads and Motorized Trails		42.5	20
Stormproof		NFTS Roads (ML 1 and 2) and Motorized Trails		113.9	74
Change Recreation Opportunity Spectrum (ROS)		semiprimitive nonmotorized	semiprimitive motorized	NA	5.9 Acres

Alternative 5

Alternative 5 responds to issues concerning impacts to forest resources and inventoried roadless areas (IRAs). This alternative was developed to reduce the number and miles of roads and motorized trails open for motorized travel with specific attention given to protecting nonmotorized recreation opportunities in IRAs and increased level of protection for Port Orford-cedar, and other botanical resources. Specifically, this alternative does not add motorized trails in IRAs; does not add inventoried UARs to the NFTS with a high risk and low need; does not keep routes on the NFTS with high resource risks and low need; reduces motorized access to stands of Port Orford-cedar; reduces motorized access to areas with Threatened and Endangered and Region 5 Sensitive botanical species; barricades all inventoried UARs not proposed for addition to the NFTS; and restores drainage patterns on short inventoried UARs.

Changes to the NFTS, itemized in Table 7, would result in an overall reduction of 94 miles of motorized access, but would provide additional access to approximately 12 dispersed recreation sites. Restoration of drainage patterns would occur on 135 miles of UARs. Alternative 5 also includes investments in the NFTS to reduce resource risks and include the following: barricade 135 miles of restored UARs, seasonal gate closure of 8 miles of roads and motorized trails, and stormproof 121 miles of ML 1 and 2 roads and motorized trails.

Alternative 5 adds 307 feet (0.1 mi) of UAR 15N36N.1 as an ML 2 road currently in the semiprimitive nonmotorized ROS class. This action will require a non-significant Forest Plan amendment to change 1 acre of semiprimitive nonmotorized ROS class to semiprimitive motorized ROS class.

Alternative 5 is described as follows.

- **Changes to NFTS**
  - **Add to the NFTS**
    - 11 miles of motorized trails,
    - 3 miles of ML 2 and 3 (open) roads
    - 6 miles of ML 1 (closed) roads
  - **Upgrade to ML1** 4 miles of ML 1 (closed) roads to ML 2 (open) roads
  - **Downgrade to ML2** 97 miles of ML 2 (open) roads to ML 1 (closed) roads
  - **Decommission** 54 miles of ML 1 and 2 roads
- **Restore drainage patterns** 135 miles of restoration of drainage patterns on unauthorized routes
  - **Barricades** 135 miles of unauthorized routes not added to the NFTS
- **Resource risk mitigations**
  - **Seasonal Gate Closure** 8 miles of ML 1 and 2 roads and motorized trails
  - **Stormproof** 121 miles of ML 1 and 2 roads and motorized trails.
- **Connected actions**
  - **Change in ROS (Forest Plan Amendment) –** Convert 1 Acre of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of UAR 15N36N.1 (0.1 mi) as an ML 2 road to provide motorized access near Blackhawk Bar, a popular dispersed recreation site.

The following table displays a summary of the actions proposed in this alternative. A complete listing of roads, motorized trails, and UARs considered by alternative is located in Appendix A.

Table 7. Alternative 5 - summary of actions

Action		Existing Status	Proposed Status	Miles	Segments
Changes to NFTS	Add to NFTS	UAR	Motorized Trail	11.0	16
			ML 1 (closed)	6.2	5
			ML 2 (open)	2.4	10
			ML 3 (open)	0.4	4
	Upgrade	ML 1 (closed)	ML 2 (open)	4.2	5
	Downgrade	ML 2 (open)	ML 1 (closed)	97.1	64
		ML 3 (open)	ML 1 (closed)	0	0
	Decommission	ML 1 (closed)	Non-system (closed)	39.4	76
		ML 2 (open)	Non-system (closed)	15.0	36
	Designate Mixed-Use	ML 3 (open)	ML 3 and Mixed-Use	0	0
	Convert to Motorized Trail	ML 1 (closed)	Motorized Trail	0	0
		ML 2 (open)	Motorized Trail	0	0
	Designate Parking	UAR	Parking Site	NA	1
Restoration of Drainage Patterns		UAR	Free draining, closed to motorized travel	135.1	283
Barricade		UAR	Restored UAR	134.6	282
Seasonal Gate Closures		NFTS Roads and Motorized Trails		7.5	4
Stormproof		NFTS Roads (ML 1 and 2) and Motorized Trails		120.9	81
Change Recreation Opportunity Spectrum (ROS)		semiprimitive nonmotorized	semiprimitive motorized	NA	1.1 Acres

Alternative 6

Alternative 6 is similar to Alternative 3; however, it makes limited changes to address key issues identified through public scoping related to dispersed recreation and restoration of drainage patterns on UARs. Alternative 6 adds short inventoried UARs to popular dispersed recreation sites to the NFTS; restores drainage patterns on short inventoried UARs to dispersed recreation sites not added to the NFTS; barricades inventoried UARs not added to the NFTS; and designates parking along road 17N49.

Changes to the NFTS, itemized in Table 8, would result in an overall additional16 miles of motorized access, and provide additional access to approximately 50 dispersed recreation sites. Restoration of drainage patterns would occur on 101 miles of UARs. Alternative 6 also includes investments in the NFTS to reduce associated resource risks, including the following: barricade 101 miles of restored UARs, seasonal gate closures on 52 miles of roads and motorized trails, and stormproof 122 miles of ML 1 and 2 roads and motorized trails.

Alternative 6 adds three UAR segments currently in the semiprimitive nonmotorized ROS class in the vicinity of Blackhawk Bar, which will require a non-significant Forest Plan amendment. These routes include 15N36N.1 (0.1 mi) and 15N36N.1B (0.2 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi) proposed as motorized trail. Alternative 4 requires 6 acres of semiprimitive nonmotorized to be converted to semiprimitive motorized.

Alternative 6 is described as follows.

- Changes to NFTS
  - **Add to the NFTS**
    - 42 miles of motorized trails
    - 5 miles of ML 2 and 3 (open) roads
    - 7 miles of ML 1 (closed) roads
  - **Upgrade to ML2** 4 miles of ML 1 (closed) roads to ML 2 (open) roads
  - **Downgrade to ML1** 21 miles of ML 2 (open) roads to ML 1 (closed) roads
  - **Convert to Motorized Trail** 0.4 miles of roads to motorized trails
  - **Designate Mixed-Use** on 0.4 miles of ML 3 road
  - **Decommission** 54 miles of ML 1 and 2 roads
- **Restore drainage patterns:** 101 miles on unauthorized routes
  - **Barricades** 101 miles of unauthorized routes
- **Resource risk mitigations**
  - **Seasonal Gate Closure** 52 miles of ML 1 and 2 roads and motorized trails
  - **Stormproofing** 122 miles of ML 1 and 2 roads and motorized trails.
- **Connected Actions**
  - **Change in ROS (Forest Plan Amendment)–** Convert 6 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of the following UARs: 15N36N.1 (0.1 mi) and 15N36N.1B (0.2 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi) proposed as motorized trail to provide motorized access to multiple dispersed recreation sites near Blackhawk Bar.

The following table displays a summary of the actions proposed in this alternative. A complete listing of roads, motorized trails, and UARs considered by alternative is located in Appendix A.

Table 8. Alternative 6 - summary of actions

Action		Existing Status	Proposed Status	Miles	Segments
Changes to NFTS	Add to NFTS	UAR	Motorized Trail	42.5	77
			ML 1 (closed)	7.4	6
			ML 2 (open)	4.1	17
			ML 3 (open)	0.4	4
	Upgrade	ML 1 (closed)	ML 2 (open)	4.2	5
	Downgrade	ML 2 (open)	ML 1 (closed)	20.5	22
		ML 3 (open)	ML 1 (closed)	0	0
	Decommission	ML 1 (closed)	Non-system (closed)	39.4	76
		ML 2 (open)	Non-system (closed)	15.0	36
	Designate Mixed-Use	ML 3 (open)	ML 3 and Mixed-Use	0.4	1
	Convert to Motorized Trail	ML 1 (closed)	Motorized Trail	0.4	2
		ML 2 (open)	Motorized Trail	0	0
	Designate Parking	UAR	Parking Site	NA	4
Restoration of Drainage Patterns		UAR	Free draining, closed to motorized travel	101.1	219
Barricade		UAR	Restored UAR	100.7	218
Seasonal Gate Closures		NFTS Roads and Motorized Trails		51.6	18
Stormproof		NFTS Roads (ML 1 and 2) and Motorized Trails		122.5	77
Change Recreation Opportunity Spectrum (ROS)		semiprimitive nonmotorized	semiprimitive motorized	NA	5.9 Acres

Design Criteria common to All Action Alternatives

Project design features were developed in order to reduce or prevent the adverse impacts of the proposed actions, and to meet laws, regulations and direction. The project design features apply to all action alternatives, and are mandatory actions.

Water Quality

To reduce the risk of sediment delivery to streams, all applicable best management practices will be implemented. Best management practices are located in Appendix E of this document.

Restoration, decommissioning and upgrading work will occur when stream flow is at a minimum, typically during the summer months. Streams will be dewatered where necessary prior to any activity involving heavy equipment. Specific dewatering methods (pipe, pump, etc.) will be determined on a site-by-site basis.

Native or straw mulch will be applied to all disturbed ground prior to seasonal rain or summer thunderstorms to minimize surface erosion.

Decommissioned or restored stream channel sideslopes and channel bottom gradients will be designed to blend with the natural channel above and below to minimize potential for unexpected channel adjustments.

Large rocks will be placed in the restored stream channels where needed to protect newly created sideslopes and reduce the potential for post-treatment channel adjustments.

Replacement of stream crossings (upgrading) culverts will be designed to accommodate the 100-year flood event and have no diversion potential.

Wildlife

Northern Spotted Owl

Based on consultation with the Fish and Wildlife Service, except for specific roads that pose a high risk to aquatic resources scheduled for upgrades or decommissioning, noise generating activities (use of heavy equipment machinery or chainsaws) within 500 feet of unsurveyed or occupied suitable northern spotted owl nesting and roosting habitat will not occur between February 1 and July 9, unless surveys determine the site to be unoccupied.

Road upgrades and decommissioning activities occur on existing roads and the primary disturbance to northern spotted owl occurs from loud and sustained noise generating activities. No suitable nesting or roosting habitat will be removed. No large snags would be felled unless they pose a hazard to public or staff safety. All hazard trees would be felled and left on site. To minimize impacts to northern spotted owl from noise-generating activities on high priority roads, no activities will occur between February 1 and July 9 within 500 feet of occupied northern spotted owl activity centers (nest site) unless surveys determine the birds are non-nesting.

Marbled Murrelet

Based on consultation with the Fish and Wildlife Service, except for roads that pose a high risk to aquatic resources roads, noise-generating activities (use of heavy equipment machinery and chainsaws) within 500 feet of unsurveyed low-quality suitable marbled murrelet nesting habitat will not occur between March 24 and August 5. In addition, work between August 5 and September 15 will not begin until 2 hours after sunrise and stop 2 hours before sunset unless surveys determine the site to be unoccupied.

Road upgrades and decommissioning activities occur on existing roads and the primary disturbance to marbled murrelet occurs from loud, sustained, noise generating activities. No suitable nesting habitat will be removed.

Noxious Weeds

Project design features to prevent the introduction and spread of noxious weeds include the cleaning of equipment and transport vehicles prior to entering a work site and insuring that materials such as mulch and gravel imported into the project area are free of noxious weed seeds.

Port-Orford-Cedar

All heavy equipment and transport vehicles will be cleaned prior to entry to a work site to reduce the risk of spread of Port-Orford-cedar root disease.

Season of Use

Access to motorized trails is limited to the dry season only (normally May through October).

Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required to rigorously explore and objectively evaluate all reasonable 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 provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may be outside the scope of the project, not in support of the purpose and need of the project, or duplicative of the alternatives considered in detail. Therefore, a number of alternatives were considered, but eliminated from detailed consideration for reasons summarized below.

Alternative 2

The Proposed Action, as described in the NOI published on April 20, 2012, was eliminated from detailed study based on comments concerning changing the existing NFTS within Traditional Cultural Properties (TCPs) nominated or listed on the National Register of Historic Places may impact sacred sites and cultural values of regional tribes. The modified proposed action is carried forward as Alternative 3.

Close All Roads except those Needed for Administrative Purposes

Some commenters requested that all roads be closed except those required for administrative purposes. This alternative was eliminated from detailed study as it did not support important elements of the project's purpose and need, which is to provide a diversity of motorized recreation opportunity and dispersed recreation access. This alternative would have unduly limited the motorized recreation opportunities and access to dispersed recreation sites.

Ban should be Ruled on Motorized Use and Off Road Vehicles

Some commenters requested that the project ban motorized use. This alternative was eliminated from detailed study because the Forest Service does not regulate motorized use but rather manages opportunities for motorized use.

Prohibit Logging in the Smith River Area

Prohibiting logging does not meet the purpose and need of the project and therefore is beyond the scope of the project and eliminated from detailed study. This project is focused on the making changes to the transportation system to provide for motorized recreation and administrative access, and restoring of

drainage patterns of UARs to reduce risks to ecological and cultural resources. Vegetation management activities identified in this project are limited to reducing resource risk associated with the NFTS, for example, treatment of noxious weed sites.

Management of Pappas Flat

Commenters identified many ideas for improving the management of this site. Improvements to Pappas Flat are outside of the geographic scope of the project and therefore suggestions related to the management of this site are eliminated from detailed study.

Do Not Add Routes or Keep Roads with High or Moderate Risks

Commenters requested that roads or unauthorized routes with high or moderate risk ratings identified in the transportation analysis process, not be kept on, or added to the NFTS. This alternative was explored and it was found to not meet the purpose and need for action. While this alternative would protect natural resources and reduce maintenance costs, it would not provide needed administrative access and motorized recreation opportunities. It was therefore eliminated from detailed study. High and moderate resource risks associated with roads kept on the system or UARs added to the system are required to be reduced to an acceptable level through mitigation actions.

Keep All NFTS Roads

Many commenters did not want any existing roads to be closed, and suggested that if the Forest could not maintain them then the local users would maintain them. This alternative did not meet the purpose and need which includes reducing maintenance costs, and ecological and cultural risk associated with the transportation network. Roads that provided administrative access and recreation opportunities where risks could be mitigated were identified for maintaining as part of the NFTS.

Motorized use in the High Plateau and Diamond Creek Drainages

Some commenters requested that the Forest allow motorized use in the High Plateau area and Diamond Creek drainages, which were closed to motorized use in 2001 under a previous decision. The commenters suggested that conditions may have changed which would warrant consideration of adding motorized trails and/or roads in this area. The Forest pursued a formal reconsideration of the environmental analysis and decision to determine if conditions had changed. Based on the review of the environmental assessment and field review by Forest staff, the Forest Supervisor concluded that the decision to close 18N13 and 18N09 to motorized vehicle travel is still needed to protect the area from the spread of Port-Orford-cedar root disease. A copy of the Supplemental Information Report is located in the project record and available upon request. This alternative was therefore eliminated from detailed study.

Citizen Recreation Alternative

Numerous commenters who provided comments during the scoping period for the proposed action identified themselves as affiliated with and, or in coordination with the Blue Ribbon Coalition and provided support for the development of a pro-recreation Citizen’s Recreation Alternative. Elements of the six points of the Citizen’s Recreation Alternative have been incorporated in the Proposed Action or Alternatives. Most commenters also identified specific routes desired for inclusion in the NFTS. Desired routes were analyzed for inclusion in an alternative on a route-by-route basis. Many of these were included in Alternative 4, and, or Alternative 6; however, other routes were eliminated from detailed study because they did not meet the purpose and need, were beyond the scope of the project, or did not comply with law, policy, the regulatory framework, or the Forest Plan. The results of the route-by-route analysis are located in the Scoping Report, which is part of the project record and available upon request.

Consideration of More Mixed Use

The Blue Ribbon Coalition also requested that all maintenance level 3 roads be evaluated for mixed-use designations. The scope of the project excludes maintenance level 3, 4 and 5 roads, excepting the proposal for mixed use designation on Forest Road 17N49. This alternative is beyond the scope of the project and is eliminated from detailed study. See the section titled Scope of Analysis for more information.

Adoption of Routes Transecting Private Property

The Blue Ribbon Coalition states that "the Forest should not arbitrarily reject a popular historic OHV route simply because segments of it end or transect private property. FSM Sec. 7715.62 gives direction to review undocumented "acquired rights" and other rights on a case-by-case basis." The Forest reviewed property rights, easement records, and jurisdiction of routes proposed for addition on a case-by-case basis. The results of the review are captured in the scoping report located in the project record, and available upon request. In cases where the United States had an easement, those routes were then recommended for an alternative given that they supported the purpose and need, were within the scope of the project, and did not have high or moderate resource risks that could not be mitigated. In cases where a route transects private lands and the United States does not possess an easement or other right-of-way, the route was eliminated from detailed study (i.e., not considered for inclusion to the NFTS). The federal government, unlike state and county governments, does not have the authority to pursue adjudication of prescriptive rights over routes with historic use. The Forest Service may only acquire rights-of-way through purchase, exchange, donation, or eminent domain (condemnation), in accordance with the Federal Land Policy and Management Act (PL 94-579, Sec. 205(a)). Without right-of-way acquisition by one of those means, the Forest Service has no right-of-way for either administrative or public access. In other words, the Forest did review all legal easement rights on a case-by-case basis for inclusion in an alternative.

Rainfall Based Wet Weather Closure

Develop a rainfall-based wet weather closure plan and avoid long closures. The Forest explored using a rainfall basis or ground condition basis to trigger motorized trail closure for use in conjunction with established dates for a more flexible allowed season-of-use responsive to ground conditions and potential resource damage. However closure orders are now limited to emergencies, not on-going management needs. The Travel Management Rule subpart b (36 CFR 212.56) also requires that MVUM display "the times of year for which use is designated", hence dates must be set and not based on realtime precipitation events as required by law; therefore, developing a rainfall based wet weather closure plan is beyond the scope of analysis.

Do not Consider Adding Trails to What was Previously Proposed

Some commenters requested that additional routes not be considered for addition to the NFTS. This alternative was eliminated from detailed study as the National Environmental Policy Act (cite) requires federal agencies to rigorously explore and objectively evaluate all reasonable alternatives (40 CFR 1502.14). Adding more motorized opportunities is a reasonable alternative that responds to the purpose and need, is within the scope of the project and within the Forest's authority to do. By not considering an alternative that adds more motorized opportunities would have violated the National Environmental Policy Act.

The McGrew Trail

A commenter requested that the Forest implement a wet weather closure on the southern terminus of the McGrew trail. The McGrew trail is accessed via a County road. County roads are not managed by the Forest. The McGrew trail is located on, and managed by the Rogue River Siskiyou National Forest,

seasonal gate closures would be analyzed and implemented by the Rogue River Siskiyou National Forest. This project is limited in scope to Gasquet Ranger District and the Smith River NRA. This alternative is eliminated from detailed study because it exceeds the scope of the project.

Comparison of Alternatives

Table 9 provides a brief summary of the alternative actions, and Table 10 provides a summary of the environmental impacts by alternative in a comparative format.

Table 9. Comparison of alternatives

Action		Existing Status	Proposed Status	Alt 1	Alt 3	Alt 4	Alt 5	Alt 6
				Miles				
Changes to NFTS	Add to NFTS	UAR	Motorized Trail	0	44.0	58.0	11.0	42.5
			ML 1 (closed)	0	7.2	3.6	6.2	7.4
			ML 2 (open)	0	7.1	12.0	2.4	4.1
			ML 3 (open)	0	0.4	0.4	0.4	0.4
	Upgrade	ML 1 (closed)	ML 2 (open)	0	2.6	11.1	4.2	4.2
	Downgrade	ML 2 (open)	ML 1 (closed)	0	18.5	15.6	97.1	20.5
		ML 3 (open)	ML 1 (closed)	0	0	0	0	0
	Decommission	ML 1 (closed)	Non-system (closed)	0	34.9	41.7	39.4	39.4
		ML 2 (open)	Non-system (closed)	0	20.4	15.0	15.0	15.0
	Designate Mixed-Use	ML 3 (open)	ML 3 and Mixed-Use	0	3.9	0.4	0	0.4
	Convert to Motorized Trail	ML 1 (closed)	Motorized Trail	0	0	7.4		0.4
		ML 2 (open)	Motorized Trail	0	0	0.5	0	0
	Designate Parking	UAR	Parking Site	NA	NA	NA	NA	NA
Restoration of Drainage Patterns		UAR	Free draining, closed to motorized travel	0	79.2	70.4	135.1	101.1
Barricade		UAR	Restored UAR	0	71.8	65.5	134.6	100.7
Seasonal Gate Closures		NFTS Roads and Motorized Trails		0	10.5	42.6	7.5	51.6
Stormproof		NFTS Roads (ML 1 and 2) and Motorized Trails		0	122.3	113.9	120.9	122.5
Change in ROS		semiprimitive nonmotorized	semiprimitive motorized	**Acres**				
				0	1.1	5.9	1.1	5.9
Additional Access Dispersed Sites (Routes are proxy for access to dispersed recreation sites)				**Number of Routes**				
				0	13	54	12	50

Summary of Environmental Consequences

The table below summarizes the environmental consequences by providing an average ranking of each alternative by resource area. Detailed information can be found in Chapter 3.

Table 10. Summary of effects and ranking of alternatives by resource

Resource Area	Rankings of Alternatives, averaged across indicators[a]				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Aquatic Biota	1	3	2	5	4
Botanical Resources	1	3	2	5	4
Cultural Resources	2	3	1	5	4
Noxious Weeds	1	3	3	5	5
Recreation Resources	2	1	4	4	5
Soil Resource	1	3	2	5	4
Terrestrial Wildlife	1	3	2	5	4
Visual Resources	1	4	3	5	4
Water Resources	1	3	2	5	4
Port-Orford cedar	1	3	2	5	4
Inventoried Roadless Areas	1	3	2	5	3
Fire and Fuels	5	3	4	2	3
Geology	1	3	1	5	4
Transportation Facilities	3	2	1	5	4

a - A score of 5 indicates the alternative has the least impact for the specified resource; a score of 1 indicates the alternative is the most impact for specified resource. See Chapter 3 for more details.

Chapter 3. Affected Environment and Environmental Consequences

Introduction

This chapter summarizes the physical, biological, social, and economic environments that are affected by the proposed action and alternatives, and the effects on that environment that would result from implementation of each of the alternatives. This chapter also presents the scientific and analytical basis for comparison of the alternatives presented in Chapter 2.

The "Affected Environment" section under each resource topic describes the existing, or baseline condition, against which environmental effects were evaluated and from which progress toward the desired condition can be measured. Environmental consequences form the scientific and analytical basis for comparison of alternatives, including the proposed action, through compliance with standards set forth in the Forest Plan, as amended. The environmental consequences discussion centers on direct, indirect, and cumulative effects, along with applicable mitigation measures. Effects can be neutral, beneficial, or adverse. The "Irreversible and Irretrievable Commitments of Resources" section is located at the end of this chapter. These terms are defined as follows:

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

Analysis Process

The environmental consequences presented in Chapter 3 address the impacts of the actions proposed under each alternative. The effects findings in this chapter are based on site-specific analyses of each road, and unauthorized route (UAR) proposed for addition to the National Forest Transportation System (NFTS), changes in vehicle class or maintenance level, decommissioning of roads, and/or restoration of drainage patterns on UARs. Readers seeking information concerning actions associated with a specific road, trail or area are directed to Appendix A, where details concerning mitigation measures are documented.

For ease of documentation and understanding, the effects of the alternatives are described separately for four actions and then combined to provide the total direct and indirect effects of each alternative (see below). The combination of these actions is then added to the past, present and reasonably foreseeable actions in the cumulative effects analysis. The impacts of the following actions are addressed in sum total in this chapter while the actions on individual routes are addressed in Appendix A. For most resources, one or more resource indicators are used to measure the direct and indirect effects of each alternative. Both short and long-term impacts are presented. The four actions common to all action alternatives are:

1. Changes to the existing NFTS including addition of new facilities (roads and motorized trails), decommission roads, change in Maintenance Level, designation of mixed-use, and season-of-use designation
2. Restoration of UARs
3. Resource risk mitigations
4. Change in Recreation Opportunity Spectrum (ROS)

Cumulative Effects

According to the Council on Environmental Quality (CEQ) NEPA regulations, “cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7).

The cumulative effects analysis area is described under each resource including private and other public lands that lie within the Forest boundary. Past activities are considered part of the existing condition and are discussed in the “Affected Environment (Existing Conditions)” and “Environmental Consequences” section under each resource.

In order to understand the contribution of past actions to the cumulative effects of the alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a 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. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the Council on Environmental Quality 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.” For these reasons, the analysis of past actions in this section is based on current environmental conditions.

Appendix C lists present and reasonably foreseeable future actions potentially contributing to cumulative effects.

Affected Environment Overview

There are many aspects of the affected environment that are shared by all resources. In order to avoid repeating these shared elements of the affected environment in each resource section the following general elements of the affected environment are provided.

Unmanaged motor vehicle use has resulted in unplanned roads and trails, erosion, watershed and habitat degradation, and impacts to cultural resource sites. On some NFS lands, prior to the passage of the Smith River NRA Act of 1991, managed as open to cross-country motor vehicle travel, repeated use resulted in unplanned, UARs. Other lands acquired into the NFS, originally managed for other purposes, such as mining, also resulted in what are referred to as UARs. These routes were generally developed without

environmental analysis or public involvement, and do not have the same status as NFTS roads motorized trails included in the NFTS.

Assumptions and Limitations

The following assumptions and limitations were applied in the effects analysis in each section:

- No NEPA decision is necessary to continue use of the NFTS as currently managed under the No Action alternative. These decisions were made previously.
- The route mileages listed in the alternative descriptions in Chapter 2 are based on the Six Rivers National Forest INFRA infrastructure database, and are representative of the routes on the ground. However, due to minor inaccuracies and discrepancies between the various GIS map layers, which are not survey-grade map products, and the analysis tools used, route mileages used in the analysis of environmental consequences in Chapter 3 are not always the same as the INFRA mileages. The analysis data presented should be considered approximate, but are adequate for general quantitative analysis and useful in evaluating both the effects to the resources (semi-quantitative), and as a comparative tool between alternatives. These minor discrepancies do not change or invalidate any analysis or comparison results derived from their use.
- UARs are not NFTS facilities. Proposals to add these to the NFTS require a NEPA decision.
- Temporary roads, trails and areas built to support emergency operations or temporarily authorized in association with contracts, permits or leases are not intended for public use. They are not NFTS facilities (e.g. they are unauthorized for public use). Any proposal to add these temporary roads to the NFTS will require a NEPA decision.
- Any UARs not included in the Modified Proposed Action or Alternatives are not precluded from consideration for addition to the NFTS in future travel management actions.
- The Agency will continue to make changes to the NFTS on an ‘as needed’ basis. It will also continue to make decisions about temporary roads or trails on an ‘as needed’ basis associated with contract, permit, lease or other written authorization.
- Any activity associated with contract, permit, lease or other written authorization is exempt from designation under the Travel Management Rule (36 CFR 212.51 (a) (8) and should not be part of the proposal (i.e. fuelwood permits, motorized SUP permits, mining activity etc.). Such actions are subject to separate NEPA analysis.
- “Designation” is an administrative act which does not trigger NEPA. Designation technically occurs with printing of the MVUM. NEPA is not required for printing a map.
- For travel management, the federal action triggering NEPA is any change to current restrictions or prohibitions regarding motorized travel by the public (i.e. changing management - changing vehicle class or season-of-use, and any additions or deletions of facilities (roads, trails or areas) to the NFTS.
- Previous decisions on the NFTS do not need to be revisited to implement the Travel Management Rule (TMR) or the MVUM. That is, the NFTS contains existing facilities (roads and motorized trails) that either underwent NEPA or predate NEPA. Allowing continued motorized use of the facilities in the NFTS in accordance with existing laws and regulations, does not require NEPA.
- Dispersed recreation activities that may occur after the motor vehicle stops (i.e. camping, hunting, fishing, hiking) are not part of the scope of the proposed action. The action and the analysis focus on motor vehicle use.

- Travel analysis is a pre-NEPA planning exercise for transportation planning which informs travel management. The agency continues to follow existing policy related to transportation planning and analysis. For example, some Roads Analysis Process requirements in FSM 7700 and 7710 are still applicable.
- The system will be maintained to standard and all additions or changes to the NFTS will meet standards prior to availability for public use.

Law Enforcement Assumptions Common to Effects Analyses

Enforcement of the laws and regulations related to travel management will be enforced equally in authority and weight as with all other Federal laws and regulations. As with any change in a regulation on NFS lands, there is usually a transitional period for the public to understand the changes. Once the MVUM is updated, the implementation of the established dedicated network of motorized trails with signs and user education programs will reduce the number of violations as the users understand and comply with the rules. Providing motorized recreation opportunities in popular, key areas will help relieve pressure to travel off of designated routes. Public education and enforcement of travel management restrictions will successfully limit most public motorized use to designated routes. Implementation of additional mitigation measures, such as education, enforcement, and engineering efforts, is expected to effectively manage motorized use in areas prone to violation. Appendix G provides more information about law enforcement.

Water Quality

Introduction

Protection of water quality and quantity is an important part of the mission of the Forest Service (Forest Service Strategic Plan for 2007 to 2012, July 2007). Management activities on National Forest System (NFS) lands must be planned and implemented to protect the hydrologic functions of forest watersheds, including the volume, timing, and quality of streamflow. The use of roads, trails, and other areas on national forests for public operation of motor vehicles has potential to affect these hydrologic functions through interception of runoff, compaction of soils, and detachment of sediment (e.g., Foltz, 2007). Management decisions to add new routes to the National Forest Transportation System (NFTS), and make changes to the existing NFTS must consider effects on watershed functions. Because these roads and motorized trails already exist on the landscape, this project will have no effect on water quantity and the remaining analysis is focused on impacts to water quality. The important water quality parameter that most influence the beneficial uses for the affected watersheds is sediment.

This section describes the areas potentially affected by the alternatives and existing resource conditions. This analysis includes twenty 6th field watersheds located within the Smith River National Recreation Area and the Gasquet Range District of the Six Rivers National Forest (referred to in the rest of this document as the Smith River NRA). Mainstem Rivers within the analysis area include North, Middle and South Forks of the Smith River.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action as it affects water resources includes:

Clean Water Act of 1948 (as amended in 1972 and 1987) establishes as federal policy the control of point and non-point pollution and assigns the States the primary responsibility for control of water pollution. Compliance with the Clean Water Act by national forests in California is achieved under state law (see below).

Non-point source pollution on national forests is managed through the Regional Water Quality Management Plan (USDA Forest Service, Pacific Southwest Region, 2000), which relies on implementation of prescribed best management practices (BMPs). The Water Quality Management Plan includes one BMP for OHV use (4-7) and 28 BMPs related to road construction and maintenance (2-1 to 2-28) (See Appendix F). All NFS roads and trails open to OHV use are required to comply with these local and national BMPs.

Of particular relevance for motor vehicle travel management, BMP 4-7 requires each forest to: (1) identify areas or routes where OHV use could cause degradation of water quality, (2) identify appropriate mitigation and controls, and (3) restrict OHV use to designated routes. This BMP further requires forests to take immediate corrective actions if considerable adverse effects are occurring or are likely to occur.

The California Water Code consists of a comprehensive body of law that incorporates all state laws related to water, including water rights, water developments, and water quality. The laws related to water quality (sections 13000 to 13485) apply to waters on the national forests and are directed at protecting the beneficial uses of water. Of particular relevance for the proposed action is section 13369, which deals with nonpoint-source pollution and best management practices.

The Porter-Cologne Water-Quality Act, as amended in 2006, is included in the California Water Code. This act provides for the protection of water quality by the State Water Resources Control Board and the Regional Water Quality Control Boards, which are authorized by the U.S. Environmental Protection Agency to enforce the Clean Water Act in California.

The Northwest Forest Plan (NWFP) Aquatic Conservation Strategy (ACS) includes standards and guidelines that apply to the 6 forests included entirely or partially within the NWFP. Components of the Aquatic Conservation Strategy include riparian reserves, key watersheds, watershed analysis and watershed restoration. The Smith River Basin is listed as a key watershed. Watershed analysis is required in key watersheds, for roadless areas in non-key watersheds and riparian reserves before determining how the proposed action meets the Aquatic Conservation Strategy objectives. A watershed analysis was completed for the Smith River Basin in 1995. The Aquatic Conservation Strategy standards and guidelines require that a watershed analysis be completed that determines the influence of each road on Aquatic Conservation Strategy objectives, and that roads be designed to minimize impacts on riparian and aquatic resources. Construction of new roads in wetlands is prohibited. No net increase in the amount of roads is permitted in key watersheds. Adding unauthorized routes to the NFTS in meadows or wetlands constitutes road construction, and should be avoided. Stream crossings are required to be designed to pass a 100-year flood and allow for passage of aquatic fauna.

USFS REGION 5 Best Management Practices for OHV use and road construction and maintenance (from Regional Water Quality Management Plan, 2000). Water Quality Monitoring of Off-Highway Vehicle (OHV) Use According To a Developed Plan (PRACTICE: 4-7 pg. 101).

Objective: To provide a systematic process to determine when and to what extent OHV use will cause, or is causing adverse effects on water quality.

Explanation: Each Forest's OHV plan will:

a. Identify areas or routes where OHV use could cause degradation of water quality.
b. Establish baseline water quality data for normal conditions as a basis from which to measure change.
c. Identify water quality standards and the amount of change acceptable.

d. Establish monitoring methods and frequency.

e. Identify controls and mitigation appropriate in management of OHVs.

f. Restrict OHV use to designated routes.

Implementation: Monitoring results are evaluated against the OHV plan objectives for water quality and the Forest Plan objectives for the area. These results are documented, along with the actions necessary to correct identified problems.

USDA National Best Management Practices Motorized and Nonmotorized Trails (Rec-4).

Objective: Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling soil erosion, erosion of trail surface materials, and water quality problems originating from construction, maintenance, and use of motorized and nonmotorized trails.

Explanation: The Travel Management Rule restricts motor vehicle use to designated routes to better manage motor vehicle use and protect National Forest resources.

Applicable Practices:

- Use suitable public relations and information tools and enforcement measures to encourage the public to conduct motorized vehicle use activities within designated areas in a manner that will avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.
- Located and maintain designated motor vehicle use to minimize adverse effects to soil, water quality, and riparian resources.
- Designate season of use periods to avoid adverse impacts to soils.
- Designate class of vehicle suitable for soil and terrain or to protect National Forest resources.
- Place restrictions on motor vehicle use off designated routes for dispersed camping to minimize or mitigate adverse effects to soil, water quality, and riparian resources.

If considerable adverse effects are occurring, or are likely to occur, immediate corrective action will be taken. Corrective actions may include, but are not limited to, reduction in the amount of motorized trail use, signing, or barriers to redistribute use, partial closure of areas, rotation of use on areas, closure to causative vehicle type(s), or total closure, and structural solutions, such as culverts and bridges. Closure is accomplished through authority of the Forest supervisor.

Water Quality Effects Analysis Methodology

1. Direct and indirect effects of adding facilities (currently unauthorized roads and trails) to the NFTS, including necessary mitigations to protect water resources, seasons of use and vehicle class.

Short-term timeframe: 1 year.

Long-term timeframe: 10-30 years

Spatial boundary: Smith River NRA and Gasquet Ranger District boundaries.

Indicators: (1) Miles of routes added by water quality risk rating (low, moderate, high) (2) Number of added route-stream crossings.

Methodology and Assumptions: All routes included in the proposed action were investigated on the ground by qualified earth scientists. Field review of routes documented the number and condition of road-

stream crossings, existing road-related erosion, delivery potential and hydrologic connection to stream channels. A water quality risk rating (high, moderate, low) system was developed to summarize the route-specific data collected in the field. The assumption was made that routes in the high watershed risk rating, would continue to erode and result in off-site impacts. The table below outlines the assumptions and methods used to determine risk to water resources of adding unauthorized routes to the NFTS.

Table 11. Water quality risk rating - assumptions and methods used to determine rating of roads and unauthorized routes included in the proposed action

High Risk Characteristics	Moderate Risk Characteristics	Low Risk Characteristics
Actively eroding (evidence of soil movement). Sediment delivers to streamcourse. More than 1 undersized perennial or intermittent stream crossing culvert with diversion potential. Not regularly maintained due to road barrier or overgrown travelway.	More than 1 undersized spring or ephemeral stream crossing culvert with diversion potential. No erosion (no evidence of soil movement). Potential for sediment delivery to streamcourse. Route is reviewed regularly for road maintenance needs.	No active road-related erosion (No evidence of soil movement). No sediment delivery potential to streamcourse. No stream crossings. Road is regularly maintained.

Rationale: Published studies (see Reference section) have documented that routes located in riparian reserves or cross stream channels can negatively impact water quality.

2. Direct and indirect effects of changes to the NFTS (currently authorized roads), including removing facilities from the NFTS, changing maintenance levels of authorized roads and adding wet weather road closures.

Short-term timeframe: 1 year.

Long-term timeframe: 10-30 years

Spatial boundary: Smith River NRA and Gasquet Ranger Districts boundaries.

Indicators: (1) Miles of routes removed by watershed risk rating (high, moderate, low) (2) Number of route-stream crossings removed.

Methodology and Assumptions: All routes included in the proposed action were investigated on the ground by qualified Forest Service and private contractor earth scientists. Field review of routes documented the number and condition of road-stream crossings, existing road-related erosion, delivery potential and hydrologic connection to stream channels. A watershed risk ratings (high, moderate, low) system was developed to summarize the route-specific data collected in the field. The assumption was made that routes in the high watershed risk rating, would continue to erode and result in off-site impacts until restorative treatments are applied.

No action includes all routes (authorized and unauthorized) in project area.

3. Direct and indirect effects of active restoration of unauthorized routes (currently unauthorized roads and trails).

Short-term timeframe: 1 year.

Long-term timeframe: 10-30 years

Spatial boundary: Smith River NRA and Gasquet Ranger Districts boundaries.

Indicators: (1) Miles of routes restored by water quality risk rating (high, moderate, low) (2) Number of route-stream crossings restored.

Methodology and Assumptions: All routes included in the proposed action were investigated on the ground by qualified Forest Service and private contractor earth scientists. Field review of routes documented the number and condition of road-stream crossings, existing road-related erosion, delivery potential and hydrologic connection to stream channels. A water quality risk ratings (high, moderate, low) system was developed to summarize the route-specific data collected in the field. The assumption was made that routes in the high watershed risk rating, would continue to erode and result in off-site impacts until restorative treatments are applied.

4. Cumulative Effects

Short-term timeframe: not applicable; cumulative effects analysis will be done only for the long-term time frame.

Long-term timeframe: 10-30 years.

Spatial boundary: All 6th field watersheds that contain unauthorized and authorized routes on the Smith River NRA. There are 22 6th field watersheds in the project area. To date, 7th field watersheds (which are nested in 6th watersheds) have not been completely delineated across the Forest. Analyzing at the smaller 7th field scale may give a more refined measure of cumulative effects as it relates to the threshold of concern, however, preliminary results suggest that the cumulative effects at the 6th field watershed scale are well below the threshold of concern.

Indicator(s): Equivalent roaded areas in acres.

Methodology: The Forest Service in Region 5 has adopted the equivalent roaded acres model as a method of addressing cumulative watershed effects. This model is designed as a preliminary indicator for managers to determine whether or not past and present land management disturbances in a given watershed approach or exceed a threshold of concern. Acres of management disturbances such as; harvesting, road construction, grazing, wildfires on public and private lands were tallied for the past 20 to 30 years and assigned an equivalent roaded acreage. Where equivalent roaded acres approach or exceed a given watershed's threshold of concern, further field work would be necessary to ascertain whether cumulative watershed effects are present and if land management activities would adversely add to those effects and result in detrimental impacts to beneficial uses. See Appendix D, Cumulative Watershed Effects Analysis, Assumptions and equivalent roaded acres coefficients used in the Travel Management Assessment, for more information concerning the equivalent roaded acres model.

Rationale: The equivalent roaded acres cumulative effects model is the standard for Region 5, allows for an evaluation of all land-management activities on NFS lands, and provides for inclusion of reasonably foreseeable future activities.

Figure 1. Effects analysis boundaries

Affected Environment

The Smith River NRA and Gasquet Ranger District (collectively referred to as the NRA) encompass 22 6th field watersheds (See Figure 1 and Table 12). None of these watersheds are listed as water quality impaired under section 303(d) of the Clean Water Act. The Smith River basin is listed as a Key Watershed.

There are over 650 miles of wild and scenic river designations within the project area (refer to Table 13) and most support populations of anadromous salmonids.

Table 12. Watershed cumulative effects analysis area

6th Field Watershed Name	Watershed Acres
Craigs Creek	11,493
Diamond Creek	21,280
Eightmile Creek	15,244
Goose Creek	25,840
Hardscrabble Creek-Smith River	17,784
Hunter Creek	19,103
Hurdygurdy Creek	19,124
Jones Creek	15,740
Lower Middle Fork Smith River	27,288
Lower North Fork Smith River	35,516
Lower South Fork Smith River	27,542
Middle South Fork Smith River	33,097
Patrick Creek	14,775
Rock Creek	10,293
Rowdy Creek	21,826
Siskiyou Fork Smith River	17,501
Smith River-Frontal Pacific Ocean	25,513
Turwar Creek	20,409
Upper Middle Fork Smith River	24,167
Upper South Fork Smith River	28,481

Table 13. Existing wild and scenic river land allocations on the NRA

River Designation	Characteristics	Total Stream Miles
Recreational River	Readily accessible by public roads, substantial human modifications to the scenery.	416
Scenic River	Accessible in places by public roads, largely undeveloped, high scenic quality.	69
Wild River	Essentially primitive, little or no evidence of human activity.	167

Water Resources Risks of National Forest Transportation System Roads and Unauthorized Routes

Roads within the NRA are a primary threat to water quality as they are the leading source of management-related sediment inputs to streams. There are over 300 miles of National Forest Transportation System (NFTS) roads within the NRA and approximately 155 miles of known unauthorized routes. Roads have the potential to adversely affect water quality when stream crossings (culverts) plug, fail or divert, resulting erosion and downstream sedimentation of watercourses resulting in substantial water quality risks (Furniss et al. 1997). Roads can intercept rainfall directly on the surface and intercept subsurface water moving down the hillslope; they concentrate flow, either on the surface or in adjacent ditch; and they divert or reroute water from flow paths that it would take were the road not present (Gucinski et al. 2001). The locations of roads determine the degree of potential impacts, making some more environmentally sensitive than others. The closer a route is to a stream channel, the higher the risk of negative effects to that stream. The greatest risk of sediment moving into streams occurs where routes cross streams.

Road-related erosion and subsequent sediment delivery to channels can increase turbidity and suspended sediment above natural levels and impact aquatic biota and downstream human uses. Road erosion and sediment delivery are typically associated with winter-storm events, where a rapid increase in stream flow can exceed the capacity of culverts and road ditches, resulting in culvert failures, stream diversions, debris slides and road prism slumps. Major winter storms in 1964, 1972, 1977, 1982, 1997 and 2005 all resulted in road and culvert failures and sediment input to streams. Because the mean annual precipitation in the basin varies from 60-100 inches in the valley and 90-140 inches at higher elevations there is the potential each year for large storm events and road failures to occur.

The risks roads pose to water quality is increased by the fact that road maintenance funding has been declining; while the maintenance needs of our road system continues to increase. Therefore, there is a need to restructure our current level of road miles to a more affordable level to better maintain and protect water quality and fisheries habitat, while still providing adequate access for public and administrative use of the Smith River NRA. Maintaining and improving water quality and fisheries habitat within these watersheds can be accomplished through minimizing future risk of sedimentation from roads by stormproofing needed roads and decommissioning unneeded roads. The water quality risk rating analysis developed for this project revealed approximately 82 percent (251 miles) of NFTS roads analyzed pose a low or moderate risk to water quality and 18 percent (57 miles) were rated as high risk.

Unauthorized routes mapped in the project area are a combination of abandoned Forest Service roads, which were primarily intended for temporary use related to timber harvesting or fire suppression activities, exploratory mining routes and user-created cross-country routes. Many of these unauthorized routes are native surfaced roads that have no drainage structures other than water bars. Unsurfaced routes that cross streams generally have a higher risk of delivering sediment. The water quality risk rating analysis for all mapped unauthorized routes in the project area revealed approximately 84 percent (130 miles) of unauthorized routes in the project area pose a low or moderate risk to water quality, and 16 percent (25 miles) were rated as a high risk.

Environmental Consequences

This analysis is focused on the effects of three actions: (1) additions of travel routes to the National Forest Transportation System (NFTS), (2) removal and restoration of roads from the NFTS, (3) active restoration of routes not added or roads removed from the NFTS. See the Water Resource effects methodology section above regarding how this analysis was conducted. The alternatives presented below differ in terms of miles of unauthorized routes added to the NFTS. However, there is no difference between alternatives

of the amount of routes that currently exist on the ground. Adverse effects of unauthorized use by vehicles include long-term damage to water resources due to alteration of drainage patterns, stream crossing diversions, and soil compaction. Without active restoration, these effects will persist for years or decades following any prohibition of motor vehicle use.

Alternative 1 – No action

This alternative would not permit any routes to be added or removed from the NFTS. No restoration or resource protection activities would be implemented.

Direct and indirect Effects Indicators

Indicators: (1) Miles of routes by water quality risk rating (high, moderate, low) (2) Number of route-stream crossings.

Routes added to the NFTS:

There are no direct or indirect effects of adding motorized routes to the existing NFTS because with this alternative, no motorized routes would be added to the NFTS.

Changes to existing NFTS:

There are no direct or indirect effects of changing the existing NFTS because with this alternative, no changes would occur. No road restoration (this includes decommissioning of NFTS roads and restoration of UARs) or road stormproofing (activities associated with improving road drainage and culvert capacity) would occur on approximately 124 miles of high and moderate risk roads which have a total of 91 road-stream crossings.

Restoration of unauthorized routes:

There are no direct or indirect effects of restoring unauthorized routes because no restorative actions would be implemented. Under Alternative 1 (no action), the restoration of approximately 53 miles high and moderate risk unauthorized routes would not be implemented. There are approximately 50 route-stream crossings associated with these routes.

Sediment production from vehicle use of native surfaced routes will likely continue and hydrologically sensitive areas (route-stream crossings) will continue to be impacted. Continued use is not likely to alter peak or low stream flows because the density of these unauthorized routes is low and spread across 22 sub watersheds (6th field). It is difficult to predict where cross-country travel may occur in the future, any attempts to measure effects associated with future proliferation of routes is very speculative. Most forest visitors will stay on existing routes. However, there will be no treatment or mechanism to deter the further proliferation of routes or use in hydrologically sensitive areas.

In the short term (1 year), there would be little recovery, as the unauthorized routes would still be accessible. Long term recovery of hydrologically sensitive areas would be unlikely as use would still not be restricted.

Alternative 2 – Proposed Action

This alternative was dropped from detail analysis because it exceeded the scope of the project.

Alternative 3 – The Modified Proposed Action

This alternative proposes to add currently unauthorized routes to the NFTS; remove or stormproof NFTS roads, changing maintenance levels on selected NFTS roads, restoration of unauthorized routes not added to the NFTS, and authorizing localized mixed-use.

Direct and indirect Effects Indicators

Indicators: (1) Miles of routes by water quality risk rating (low, moderate or high). (2) Number of route-stream crossings.

Routes added to the NFTS:

Alternative 3 will add approximately 44 miles of unauthorized routes. About 37 miles (84 percent) were rated as low risk to water quality, 5 miles (11 percent) moderate and 2 miles (5 percent) were rated as high risks. There are roughly 19 stream crossings associated with these routes.

Mitigation measures to lessen the impacts to water resources would occur on all high and moderate risk routes proposed to be added as motorized trails. Mitigations include; waterbar installation, culvert replacement, and route definition (signage or physical barriers to restrict use to only designated routes). All mitigation measures would be completed prior to use by the public. Implementation of these mitigation measures is expected to lower these higher risk routes to moderate or low risk to water quality. Direct and indirect affects in the short term (1 year) are limited. No new ground disturbance would occur as the routes already exist. The only new ground disturbance would be the installation of waterbars to improve drainage and road barriers or other obstacles to limit use of designated travel way. These activities would occur only on the existing travel way, which is already a disturbed site. In the long term (25-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Changes to existing NFTS:

Alternative 3 proposes to remove (decommission) approximately 55 miles of road from the NFTS. Approximately 37 miles (69 percent) were rated as a low risk to water quality, 7 miles (12 percent) as a moderate risk, and 11 miles (19 percent) as a high risk. There are roughly 58 route-stream crossings associated with high and moderate risk roads. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to water quality, mitigation measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate. Long-term benefits will take effect once the treatment sites have recovered and stabilized (Switalski 2004). Based on studies conducted on the Six Rivers National Forest, the amount and duration of direct and indirect sedimentation impacts associated with road decommissioning post treatment erosion is estimated to be about 1-3 percent of the total fill volume excavated over a 5 year period (Furniss, Clifton, and Ronnenberg 2007). In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Under this alternative, approximately 33 miles of NFTS roads would be designated as maintenance level 1. Of these 33 miles, 18 miles (54 percent) were rated as a low risk to water quality, 6 miles (21 percent) as a moderate risk, and 9 miles (25 percent) as a high risk. There are roughly 28 stream crossings associated with these roads. Treatments for roads designated as maintenance level 1 would be similar to that of roads to be removed from the NFTS. The difference is that these roads may someday be added back on the NFTS, but would require a new NEPA decision. Until such time, all culverts and other drainage structures would be removed and the associated fill stored in stable locations, where appropriate. Road drainage would be restored to natural pathways, disturbed sites mulched and seeded with native grasses, and vehicle barriers installed. Post treatment impacts (short and long term) and recovery rates would be the same as those described above. Approximately 2.6 miles of level 1 NFTS roads would be

changed to maintenance level 2. These roads are all pose a low risk to water quality and have no stream crossings. Actions to upgrade these to a maintenance level 2 would be confined to regular road maintenance activities (road grading and clearing) and would have no short or long term adverse effects to water quality.

There are approximately 81 miles of maintenance level 2 roads recommended for stormproofing with a high or moderate watershed risk. These represent the total number of high or moderate risk roads proposed for maintenance level 2 designations. There are roughly 200 stream crossings associated with these roads. Stormproofing includes non-routine maintenance actions that are intended to improve the roads resiliency to withstand larger storm events. Common treatments include installing larger diameter culverts at stream crossings, constructing rolling dips, outsloping and spot rocking the travelway. Road stormproofing activities associated with this alternative are expected to reduce the amount of fine sediment that is delivered to streams from surface erosion. These activities are also expected to reduce the impacts of mass-wasting events through reducing the potential for stream channel diversion, replacing undersized culverts, and hardening of road surfaces. Also, routine maintenance activities would occur on all NFTS roads and motorized trails. Routine maintenance includes culvert and ditch cleaning, blading and grading of travel way, clearing and trimming of vegetation in travelway. All activities would occur within the existing travelway, no new ground disturbance is expected.

Because work would be conducted on existing roads, the amount and duration of adverse effects to water quality are expected to be minor and short-term. In the long term, the potential for road-related sedimentation as a result of these activities are expected to be reduced because the overall hydrologic function of treated roads would be improved. For these reason, there would be no short or long term adverse effects to water quality.

Restoration of Unauthorized Routes:

This alternative would also restore approximately 79 miles of unauthorized routes. Of these 79 miles to be restored, approximately 50 miles (60 percent) were rated as a low risk to water quality, 14 miles (18 percent) as a moderate risk and 14 miles (18 percent) were as a high risk. There are roughly 66 stream crossings associated with these routes. Restoration actions include; placing vehicle barriers, installing waterbars and culvert removal. Route-stream crossings would be treated to improve overall hydrologic function and restore more natural drainage patterns. The expected short and long-term effects of these actions are the same as described for roads to be removed from the NFTS.

Mixed-use:

Designating approximately 3.5 miles as mixed-use and increasing the maintenance level (from level 2 to 3) on Forest Route 17N49 (Gasquet Mountain Road) will have no adverse effect to water quality. The road poses a low risk to water quality and there are 3 stream crossings associated with this segment. These actions do not require any additional ground disturbance and therefore there would be no adverse direct, indirect or cumulative effects to water quality. Raising the maintenance to level of 17N49 will increase the regularity of culvert cleaning, ditch clearing and travel way blading. Regular road maintenance helps to prevent excessive road damage that may adversely affect water quality.

Alternative 4

This alternative responds to the issues raised by the public concerning the perception of the limited opportunities for motorized recreation within the project area. Compared to Alternative 3, this alternative adds more motorized trails and roads to the NFTS, more road maintenance and stormproofing on level 2 roads, and designates parking areas along Forest Road 17N49 (Gasquet Mountain Road). Removing roads from the NFTS and restoration of unauthorized routes are also included.

Direct and indirect Effects Indicators

Indicators: (1) Miles of routes by water quality risk rating (low, moderate or high). (2) Number of route-stream crossings.

Routes added to the NFTS:

Alternative 4 will add approximately 65 miles of unauthorized routes to the NFTS as motorized trails. Of these motorized trails to be added; approximately 52 miles (80 percent) were rated as low risks to water quality, 8 miles (12 percent) as moderate risks and 5 miles (8 percent) as high risks. There are roughly 38 stream crossings associated with these routes.

Mitigation measures to lessen the impacts to water resources would occur on all high and moderate risk routes proposed to be added as motorized trails. Mitigations include; waterbar installation, culvert replacement, and route definition (signage or physical barriers to restrict use to only designated routes). All mitigation measures would be completed prior to use by the public. Implementation of these mitigation measures is expected to lower these higher risk routes to moderate or low risk to water quality. Direct and indirect affects in the short term (1 year) are limited. No new ground disturbance would occur as the routes already exist. The only new ground disturbance would be the installation of waterbars to improve drainage and road barriers or other obstacles to limit use of designated travel way. These activities would occur only on the existing travel way, which is already a disturbed site. In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Changes to existing NFTS:

Alternative 4 proposes to remove (decommission) approximately 54 miles of road from the NFTS. Of these proposed to be removed, approximately 36 miles (68 percent) were rated as a low risk to water quality, 6 miles (12 percent) as a moderate risk, and 11 miles (20 percent) were rated as a high risk. There are roughly 60 route-stream crossings associated with these roads. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored in stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to water quality, mitigation measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate. Long-term benefits will take effect once the treatment sites have recovered and stabilized (Switalski 2004). Based on studies conducted on the Six Rivers National Forest, the amount and duration of direct and indirect sedimentation impacts associated with road decommissioning post treatment erosion is estimated to be about 1-3 percent of the total fill volume excavated over a 5 year period (Furniss, Clifton and Ronnenberg 2007). In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Under this alternative, approximately 25 miles of NFTS roads would be designated as maintenance level 1. Of these 25 miles, approximately 13 miles (52 percent) were rated as a low risk to water quality, 5 miles (20 percent) as a moderate risk, and 7 miles (28 percent) as a high risk. There are roughly 20 stream crossings associated with these roads. Treatments for maintenance level 1 roads would be similar to that of roads to be removed from the NFTS. The difference is that these roads may someday be added back on the NFTS, but would require a new NEPA decision. Until such time, all culverts and other drainage structures would be removed and the associated fill stored in stable locations, where appropriate. Road drainage would be restored to natural pathways, disturbed sites mulched and seeded with native grasses,

and vehicle barriers installed. Post treatment impacts (short and long term) and recovery rates would be the same as those described above.

There are approximately 97 miles of maintenance level 2 roads recommended for stormproofing. These represent the total number of high or moderate risk roads proposed for Level 2 designation. There are roughly 230 stream crossings associated with these roads. Stormproofing includes non-routine maintenance actions that are intended to improve the roads resiliency to withstand larger storm events. Common treatments include installing larger diameter culverts at stream crossings, constructing rolling dips, outsloping and spot rocking the travelway. Road stormproofing activities associated with this alternative are expected to reduce the amount of fine sediment that is delivered to streams from surface erosion. These activities are also expected to reduce the impacts of mass-wasting events through reducing the potential for stream channel diversion, replacing undersized culverts, and hardening of road surfaces. Also, routine maintenance activities would occur on all NFTS roads and motorized trails. Routine maintenance includes culvert and ditch cleaning, blading and grading of travel way, clearing and trimming of vegetation in travelway. All activities would occur within the existing travelway, no new ground disturbance is expected. Because work would be conducted on existing roads, the amount and duration of adverse effects to water quality are expected to be minor and short-term. In the long term, the potential for road-related sedimentation as a result of these activities are expected to be reduced because the overall hydrologic function of treated roads would be improved.

Restoration of Unauthorized Routes:

This alternative would also restore approximately 68 miles of unauthorized routes. Of these 68 miles to be restored, approximately 42 miles (61 percent) were rated as a low risk to water quality, 12 miles (18 percent) as a moderate risk, and 14 miles (21 percent) as a high risk. There are approximately 50 stream crossings associated with these routes. Restoration actions include; placing vehicle barriers, installing waterbars and culvert removal. Route-stream crossings would be treated to improve overall hydrologic function and restore more natural drainage patterns. Short and long-term effects of these actions are the same as discussed above (roads removed from the NFTS).

Mixed-use:

Designation of mixed-use on 17N49 will have no effect to water quality. This action does not require any additional ground disturbance and therefore there would be no direct, indirect or cumulative effects to water quality. The five parking area designations associated with this alternative are pre-existing and would require some minor blading and grading to make the areas suitable for use. The ground disturbance associated with designating the area would be minimal. The total area designated is less than 1/2 acre and are all located on the ridge top, away from any surface water. For these reasons, designation and use of the parking areas will have no short term or long term adverse effects to water quality.

Alternative 5

This alternative responds to the issues raised by the public concerning the potential for adverse impacts to forest resources and inventoried roadless areas. When compared to Alternative 3 (Modified Proposed Action), this alternative increases protection of Port-Orford-cedar (POC) and other sensitive botanical resources. No unauthorized routes would be designated within inventories roadless areas. Alternative 5 also proposes closure and restoration of hydrologic function for unauthorized routes not added to the NFTS. No mixed-use of 17N49 is proposed but the parking areas as described in Alternative 4 would be brought forward in this alternative.

Direct and indirect Effects Indicators

Indicators: (1) Miles of routes by water quality risk rating (low, moderate or high). (2) Number of route-stream crossings.

Routes added to the NFTS:

Alternative 5 will add approximately 11 miles of unauthorized routes. Of these routes added; 9 miles (85 percent) were rated as low risk to water quality, 2 miles (15 percent) as moderate risk, and zero miles (0 percent) as a high risk. There are roughly 7 stream crossings associated with these routes.

Mitigation measures to lessen the impacts to water resources would occur on all moderate risk routes proposed to be added as motorized trails. Mitigations include; waterbar installation, culvert replacement, and route definition (signage or physical barriers to restrict use to only designated routes). All mitigation measures would be completed prior to use by the public. Implementation of these mitigation measures is expected to reduce ratings from moderate to low risks to water quality. Direct and indirect affects in the short term (1 year) are limited. No new ground disturbance would occur as the routes already exist. The only new ground disturbance would be the installation of waterbars to improve drainage and road barriers or other obstacles to limit use of designated travel way. These activities would occur only on the existing travel way, which is already a disturbed site. In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Changes to existing NFTS:

Alternative 5 proposes to remove (decommission) approximately 55 miles of road from the NFTS. Of these, approximately 37 miles (67 percent) were rated as a low risk to water quality, 7 miles (13 percent) as a moderate risk, and 11 miles (20 percent) high risk. There are approximately 69 route-stream crossings associated with these roads. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to water quality, mitigation measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate. Long-term benefits will take effect once the treatment sites have recovered and stabilized (Switalski 2004). Based on studies conducted on the Six Rivers National Forest, the amount and duration of direct and indirect sedimentation impacts associated with road decommissioning post treatment erosion is estimated to be about 1-3 percent of the total fill volume excavated over a 5 year period (Furniss, Clifton and Ronnenberg 2007). In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Under this alternative, the maintenance level of approximately 113 miles of NFTS roads would be designated as level 1 roads. Of these, approximately 43 miles (38 percent) were rated as a low risk to water quality, 44 miles (39 percent) as a moderate risk, and 26 miles (23 percent) were rated as a high risk to water quality. There are roughly 41 stream crossings associated with these roads. Treatments for roads changed to level 1 would be the same as roads proposed to be removed from the NFTS. The difference is that these roads, in the future and under a separate decision, could be added back on the NFTS. Until such time, all culverts and other drainage structures would be removed and the associated fill stored at stable locations, where appropriate. Road drainage would be restored to natural pathways, disturbed sites mulched and seeded with native grasses, and vehicle barriers installed. Post treatment impacts (short and long term) and recovery rates would be the same as those described for roads removed (decommissioned).

There are approximately 22 miles of level 2 roads recommended for stormproofing. These represent the total number of roads that pose a high or moderate risk to water quality and are proposed for level 2 designations. There are roughly 73 stream crossings associated with these roads. Stormproofing includes non-routine maintenance actions that are intended to improve the roads resiliency to withstand larger storm events and minimize the potential for adverse impacts to water quality. Common treatments include installing larger diameter culverts at stream crossings, constructing rolling dips, outsloping and spot rocking the travelway. Road stormproofing activities associated with this alternative are expected to reduce the amount of fine sediment that is delivered to streams from surface erosion. These activities are also expected to reduce the impacts of mass-wasting events through reducing the potential for stream channel diversion, replacing undersized culverts, and hardening of road surfaces. Also, routine maintenance activities would occur on all NFTS roads and motorized trails. Routine maintenance includes culvert and ditch cleaning, blading and grading of travel way, clearing and trimming of vegetation in travelway. All activities would occur within the existing travelway, no new ground disturbance is expected. Because work would be conducted on existing roads, the amount and duration of adverse effects to water quality are expected to be minor and short-term. In the long term, the potential for road-related sedimentation as a result of these activities are expected to be reduced because the overall hydrologic function of treated roads would be improved.

Restoration of Unauthorized Routes:

This alternative proposes to restore approximately 135 miles of unauthorized routes. Of these, approximately 95 miles (72 percent) were rated as a low risk to water quality, 20 miles (14 percent) as a moderate risk, and 20 miles (14 percent) as a high risk. There are roughly 58 stream crossings associated with these routes. Restoration actions include; placing vehicle barriers, installing waterbars and culvert removal. Route-stream crossings would be treated to improve overall hydrologic function and restore more natural drainage patterns. Short and long-term effects of these actions are the same as discussed above for roads removed (decommissioned).

Mixed-use:

No mixed-use is proposed in Alternative 5. One parking area designation associated with this alternative is pre-existing and would require some minor blading and grading to make the area suitable for use. The ground disturbance associated with designating this parking area would be minimal and less than ¼ acre in size. There are no stream crossings associated with the proposed parking area. Like in all other alternatives, the parking area proposed is located on the ridge top, away from any surface water. For these reasons, designation and use of the parking area will have no short term or long term adverse effects to water quality.

Alternative 6

This is the preferred alternative. It represents much of the collaborative group recommendations of 2010 and issues raised by the public concerning dispersed recreation opportunities. When compared to Alternative 3 (modified proposed action), this alternative provides for more dispersed recreation opportunities and restores hydrologic function to more unauthorized routes not added to the NFTS. Mixed-use designation on 17N49 (0.4 miles) and parking areas is also proposed.

Direct and indirect Effects Indicators

Indicators: (1) Miles of routes by water quality risk rating (low, moderate or high). (2) Number of route-stream crossings.

Routes added to the NFTS:

Alternative 6 will add approximately 42 miles of unauthorized routes. Of these; approximately 35 miles (83 percent) were rated as low risks to water quality, 5 miles (12 percent) as moderate risks and 2 miles (5 percent) as high risks. There are roughly 17 stream crossings associated with these routes.

Mitigation measures to lessen the impacts to water resources would occur on all high and moderate risk routes proposed to be added as motorized trails. Mitigations include; waterbar installation, culvert replacement, and route definition (signage or physical barriers to restrict use to only designated routes). All mitigation measures would be completed prior to use by the public. Implementation of these mitigation measures is expected to reduce the risk to water quality to low levels. Direct and indirect affects in the short term (1 year) are limited. No new ground disturbance would occur as the routes already exist. The only new ground disturbance would be the installation of waterbars to improve drainage and road barriers or other obstacles to limit use of designated travel way. These activities would occur only on the existing travel way, which is already a disturbed site. In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Changes to existing NFTS:

Alternative 6 proposes to remove (decommission) approximately 53 miles of road from the NFTS. Of these to be removed; approximately 35 miles (66 percent) were rated as a low risk to water quality, 7 miles (13 percent) as a moderate risks, and 11 miles (21 percent) as a high risks. There are roughly 50 stream crossings associated with these roads. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to water quality, mitigation measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate. Long-term benefits will take effect once the treatment sites have recovered and stabilized (Switalski 2004). Based on studies conducted on the Six Rivers National Forest, the amount and duration of direct and indirect sedimentation impacts associated with road decommissioning post treatment erosion is estimated to be about 1-3 percent of the total fill volume excavated over a 5 year period (Furniss, Clifton and Ronnenberg 2007). In the long term (10-30 years) sedimentation is expected to decrease from existing levels because mitigation measures and routine maintenance are expected to promote or enhance hydrologic function in sensitive areas.

Under this alternative, the maintenance level of approximately 40 miles of NFTS roads would be designated as level 1 roads. Of these miles; 21 miles (53 percent) were rated as low risks to water quality, 6 miles (15 percent) as a moderate risks, and 13 miles (32 percent) as high risks. There are roughly 30 stream crossings associated with these roads. Treatments for roads changed to maintenance level 1 would be the same as roads proposed to be removed from the NFTS. The difference is that these roads, in the future and under a separate decision, could be added back on the NFTS. Until such time, all culverts and other drainage structures would be removed and the associated fill stored in stable locations, where appropriate. Road drainage would be restored to natural pathways, disturbed sites mulched and seeded with native grasses, and vehicle barriers installed. Short and long-term effects of these actions are the same as discussed above for roads removed (decommissioned).

There are approximately 81 miles of level 2 and 3 roads recommended for stormproofing. These represent the total number of roads that pose a high or moderate risk to water quality and are proposed for level 2 or 3 designations. There are 215 stream crossings associated with these roads. Stormproofing includes non-

routine maintenance actions that are intended to improve the roads resiliency to withstand larger storm events and minimize the potential for adverse impacts to water quality. Common treatments include installing larger diameter culverts at stream crossings, constructing rolling dips, outsloping and spot rocking the travelway. Road stormproofing activities associated with this alternative are expected to reduce the amount of fine sediment that is delivered to streams from surface erosion. These activities are also expected to reduce the impacts of mass-wasting events through reducing the potential for stream channel diversion, replacing undersized culverts, and hardening of road surfaces. Also, routine maintenance activities would occur on all NFTS roads and motorized trails. Routine maintenance includes culvert and ditch cleaning, blading and grading of travel way, clearing and trimming of vegetation in travelway. All activities would occur within the existing travelway, no new ground disturbance is expected. Because work would be conducted on existing roads, the amount and duration of adverse effects to water quality are expected to be minor and short-term. In the long term, the potential for road-related sedimentation as a result of these activities are expected to be reduced because the overall hydrologic function of treated roads would be improved.

Restoration of Unauthorized Routes:

This alternative proposes to restore approximately 98 miles of unauthorized routes. Of these miles; approximately 71 miles (73 percent) were rated as low risks to water quality, 13 miles (13 percent) as a moderate risks, and 14 miles (14 percent) as high risks. There are roughly 75 stream crossings associated with these routes. Restoration actions include; placing vehicle barriers, installing waterbars and culvert removal. Route-stream crossings would be treated to improve overall hydrologic function and restore more natural drainage patterns. Short and long-term effects of these actions are the same as discussed above for roads removed (decommissioned).

Mixed-use:

Designation of approximately 0.4 miles mixed-use on 17N49 will have no adverse effect to water quality. This action does not require any additional ground disturbance and therefore there would be no direct, indirect or cumulative effects to water quality. This segment proposed for mixed-use would be upgraded to maintenance level 3. Raising the maintenance level from 2 to 3 would not require any new ground disturbance. Level 3 roads are maintained to a higher standard (primarily for user comfort) and routine maintenance typically occurs more frequently as compared to level 2 roads. Regular road maintenance helps to protect water quality in the long term. The five parking area designations associated with this alternative are pre-existing and would require some minor blading and grading to make the areas suitable for use. The ground disturbance associated with designating the area would be minimal. The total area designated is less than 1/2 acre and are all located on the ridge top, away from any surface water. There are no stream crossings associated with the parking area. For these reasons, designation and use of the parking areas will have no short term or long term adverse effects to water quality.

Common to All Alternatives

Spatial and Temporal Context for Effects Analysis

The direct and indirect effects analysis area is site-specific and based on existing routes with in the Smith River NRA. The cumulative watershed effects analysis was conducted at the 6th field watershed level. Twenty 6th field watersheds were analyzed for cumulative effects.

All past, present and reasonably foreseeable future management activities on public and private lands were assessed at the 6th field watershed. This includes, for example, wildfires (from 2002 to present), Big Flat and Gordon Hill Vegetation and Fuels Management projects. Timber harvesting, fuel reduction

projects and other ground disturbing type activities dating back 30 years were considered in the cumulative watershed effects analysis.

Cumulative Watershed Effects

In assessing cumulative watershed effects for this project, all past, present foreseeable actions on both public and private lands were assessed within all affected watersheds and related to beneficial uses and sensitivities within these watersheds (Forest Plan p. Iv-71, 1-10 and 11). The equivalent roaded acres model was used as a method of addressing cumulative watershed effects. This model is designed as a preliminary indicator for managers to determine whether or not past and present land management disturbances in a given watershed approach or exceed a threshold of concern. The threshold of concern is an estimated upper limit of total disturbance that a watershed can tolerate without adverse impacts to beneficial uses. Anadromous fisheries are the primary beneficial use in the project area and increased sediment delivery to streams may impact anadromous fish habitat. More information about the equivalent roaded acres model can be found in Appendix D (Cumulative Watershed Effects Analysis, Assumptions and ERA coefficients used in the Travel Management Assessment). The timeframe for the analysis is the past 30 years and into the future 10 years. Figure 1 displays the watershed cumulative effects boundaries.

Activities that contribute equivalent roaded acres in the project area are timber harvesting, road construction, mining and wildfires. The Smith River NRA Management Plan was adopted in 1992, and since then timber harvesting and road construction has been dramatically reduced. Mining for chromite, nickel and gold began around 1850 and peaked about 1865. World War II sparked some new mining claims, but the few remaining claims are no longer active. Mine reclamation in the North Fork Smith River watershed has been on-going for several years and will continue to be a high priority for the Forest. Since 1998, wildfires have burned over 70,000 acres in the project area. The Biscuit Fire in 2002 accounts for most of these acres. The portion of the Biscuit fire located on the Smith River NRA was confined to the North Fork and Lower Middle Fork Smith River watersheds. Fire intensity was primarily low to moderate with some patches of higher intensity. As in the case of all the wildfires since 1998, no emergency soil stabilization actions were necessary.

All of the roads and motorized trails associated with this project already exist on the landscape and are reflected in the total percent existing equivalent roaded acres. Because these roads and motorized trails already exist on the ground and changes to maintenance levels or motorized trail additions are already accounted for in the percent existing equivalent roaded acres, the only changes to the projects contribution to the total equivalent roaded acres will be associated with road restoration and road decommissioning. The primary purpose of road restoration and decommissioning actions are to restore hydrologic function of former roads and trails. Subsequently, the percent equivalent roaded acres associated with these actions will be subtracted from the existing percent equivalent roaded acres. Professional judgment and experience concerning hydrologic recovery rates of roads and motorized trails restored on the Six Rivers National Forest conclude that it may 10 years for hydrologic functions to be restored. Equivalent roaded acres associated with future management actions will be added to each watersheds cumulative equivalent roaded acres.

Based on the cumulative effects analysis and watershed assessments of past and current conditions, lands within the Smith River basin have not experienced levels of human disturbance that change ecological processes or impact conditions over the long term (USDA Forest Service, Ecosystem Analysis of the Smith River, 1995). However, there are some impacts from the floods of 1955 and 1964 are still reflected in stream channel conditions. Future road restoration efforts are essential for maintaining current stream channel conditions and promoting the continuing recovery these important anadromous watersheds.

Table 14 summarizes the current percent equivalent roaded acres for the project area and compares it to each watershed's threshold of concern. None of the watersheds in the analysis area are approaching the threshold of concern.

Table 15 displays the percent equivalent roaded acres for Alternative 1 (no action) and Alternative 6 (the preferred alternative). Table 16 compares the cumulative percent equivalent roaded acres for all alternatives. The no action alternative accumulates, in the long term, more equivalent roaded acres when compared to all other alternatives.

None of the alternatives would move any analysis watershed to the threshold of concern because the routes are spread over such a large area (roughly 360,000 acres). The magnitude of observed effects is small as are the geographic extent of the impacts. The duration and frequency of motorized use are annual in nature and repetitive. Many roads and all motorized trails are subject to wet weather closures. Because the magnitude and spatial extent of the effects are small, the repeated nature of motorized use impacts does not translate into significant cumulative watershed effects that put the affected watersheds over the threshold of concern.

Table 14. Existing percent equivalent roaded acres (ERAs) compared to the threshold of concern by watershed

6th Field Watershed Name	Existing % ERA	% Threshold of Concern
Craigs Creek	3.69	10.0
Diamond Creek	6.41	12.9
Eightmile Creek	0.33	13.1
Goose Creek	2.72	11.7
Hardscrabble Creek-Smith River	3.51	10.0
Hunter Creek	1.86	13.1
Hurdygurdy Creek	1.86	11.9
Jones Creek	1.25	12.1
Lower Middle Fork Smith River	2.52	10.0
Lower North Fork Smith River	3.18	10.0
Lower South Fork Smith River	1.67	11.6
Middle South Fork Smith River	2.96	10.7
Patrick Creek	2.76	12.9
Rock Creek	1.56	11.7
Rowdy Creek	4.93	10.5
Siskiyou Fork Smith River	1.36	11.4
Smith River-Frontal Pacific Ocean	1.47	12.7
Turwar Creek	0.38	11.7
Upper Middle Fork Smith River	2.14	11.8
Upper South Fork Smith River	0.48	12.7

Table 15. Cumulative effects – preferred alternative equivalent roaded acres (ERAs) compared to the no action alternative

6th Field Watershed Name	% ERAs Reduced Alternative 1 (no action)	% ERAs Reduced Alternative 6 (preferred alternative)	Future Planned Actions (all alternatives) Added to % ERAs	Alternative 6 Cumulative % ERAs (existing + post project ERAs)
Craigs Creek	0	0.003	1.410	5.098
Diamond Creek	0	0.002	0	6.405
Eightmile Creek	0	0	0	0.332
Goose Creek	0	0.002	0	2.720
Hardscrabble Creek-Smith River	0	0.004	0.090	3.595
Hunter Creek	0	0	0	1.859
Hurdygurdy Creek	0	0.002	0.180	2.035
Jones Creek	0	0.001	0	1.251
Lower Middle Fork Smith River	0	0.002	0.026	2.541
Lower North Fork Smith River	0	0.002	0	3.179
Lower South Fork Smith River	0	0.002	0.180	1.850
Middle South Fork Smith River	0	0.002	0	2.961
Patrick Creek	0	0.003	0	2.754
Rock Creek	0	0	0	1.558
Rowdy Creek	0	0.003	0	4.922
Siskiyou Fork Smith River	0	0.003	0	1.354
Smith River-Frontal Pacific Ocean	0	0	0	1.474
Turwar Creek	0	0	0	0.378
Upper Middle Fork Smith River	0	0.004	0	2.129
Upper South Fork Smith River	0	0.001	0	0.480

Table 16. Comparison of cumulative percent equivalent roaded acres (ERAs) for all alternatives

6th Field Watershed Name	Cumulative % ERAs Alternative 1	Cumulative % ERAs Alternative 3	Cumulative % ERAs Alternative 4	Cumulative % ERAs Alternative 5	Cumulative % ERAs Alternative 6
Craigs Creek	5.101	5.099	5.099	5.098	5.098
Diamond Creek	6.404	6.404	6.402	6.402	6.405
Eightmile Creek	0.332	0.332	0.332	0.332	0.332
Goose Creek	2.722	2.721	2.721	2.720	2.720
Hardscrabble Creek-Smith River	3.598	3.597	3.593	3.591	3.595
Hunter Creek	1.859	1.859	1.859	1.859	1.859
Hurdygurdy Creek	2.037	2.034	2.035	2.035	2.035
Jones Creek	1.252	1.249	1.251	1.251	1.251
Lower Middle Fork Smith River	2.543	2.542	2.542	2.541	2.541
Lower North Fork Smith River	3.181	3.181	3.180	3.178	3.179
Lower South Fork Smith River	1.852	1.850	1.850	1.849	1.850
Middle South Fork Smith River	2.963	2.961	2.961	2.961	2.961
Patrick Creek	2.757	2.754	2.755	2.754	2.754
Rock Creek	1.558	1.552	1.558	1.557	1.558
Rowdy Creek	4.925	4.923	4.922	4.921	4.922
Siskiyou Fork Smith River	1.356	1.353	1.354	1.354	1.354
Smith River-Frontal Pacific Ocean	1.474	1.472	1.473	1.474	1.474
Turwar Creek	0.378	0.377	0.378	0.377	0.378
Upper Middle Fork Smith River	2.133	2.129	2.129	2.128	2.129
Upper South Fork Smith River	0.481	0.480	0.480	0.480	0.480

Summary of Effects Analysis Across All Alternatives

Comparison of water quality indicators in the table below reveals that there is not a significant difference concerning impacts to water quality in Alternatives 3, 5 and 6. However, because all of the roads and routes analyzed already exist on the ground, some effects to water quality have already occurred. The continued effects from these roads and routes are similar under Alternatives 1 and 4.

The main difference between all the action alternatives is the amount of road restoration and decommissioning proposed.

Alternative 5 predicts the least impacts to water quality because it proposes more road decommissioning and restoration of unauthorized routes (approximately 190 miles), Alternative 6 also provides for greater protection of water quality as compared alternatives 1, 3 and 4. The table below clearly displays Alternative 1 (no action) as having the most impact to water quality because it maintains the status quo and does not provide for active road restoration, decommissioning or stormproofing.

When considering the full array of proposed actions, Alternatives 1 and 4, predict greater impacts to water quality and Alternatives 5 and 6 lesser impacts.

Table 17. Comparison of effects to water quality

Indicators – Water Quality	Rankings of Alternatives for Each Indicator[a]				
	Alt. 1	**Alt. 3**	**Alt. 4**	**Alt. 5**	**Alt. 6**
Miles of unauthorized routes added to the NFTS and by water quality risk rating (low, moderate, high).	5 0	2 44 total (37 Low, 5 Mod, 2 High)	1 65 total (52 Low, 8 Mod, 5 High)	4 11 total (9 Low, 2 Mod, 0 High)	3 42 total (35 Low, 5 Mod, 2 High)
Number of stream crossings associated with unauthorized routes added to the NFTS.	5 0	1 19 total	3 8 total	4 7 total	2 17 total
Miles of NFTS road decommissioned by water quality risk rating (low, moderate, high).	1 0	4 55 total (37 Low, 7 Mod, 11 High)	3 54 total (36 Low, 6 Mod, 11 High)	4 55 total (37 Low, 7 Mod, 11 High)	2 53 total (35 Low, 7 Mod, 11 High)
Miles of road stormproofed and number of stream crossings	1 0	3 81 miles, 200 crossings	5 97 miles, 230 crossings	2 22 miles, 73 crossings	4 81 miles, 215 crossings
Miles of unauthorized road restoration by water quality risk rating (low, mod or high)	1 0	3 79 total (50 Low, 14 Mod, 14 High)	2 68 total (42 Low, 12 Mod, 14 High)	5 135 total (95 Low, 20 Mod, 20 High)	4 98 total (71 Low, 13 Mod, 14 High)
Number of stream crossings associated with unauthorized routes to be restored.	1 0	5 66	2 50	3 58	4 63
Miles of NFTS road to be closed/stored as level 1, in a maintenance free condition, by water quality risk rating (low, moderate, high).	1 0	3 33 total (18 Low, 6 Mod, 9 High)	2 25 total (13 Low, 5 Mod, 7 High)	5 113 total (43 Low, 44 Mod, 26 High)	4 40 total (21 Low, 6 Mod, 13 High)
Indicator Score **Reducing the Risks of Adverse Impacts to Water Quality**	**2.1** **(1)**	**3.0** **(3)**	**2.6** **(2)**	**3.9** **(5)**	**3.3** **(4)**

a - A score of 5 indicates the alternative has the least adverse impact for water quality related to the indicator; A score of 1 indicates the alternative has most impact for water quality related to the indicator.

Compliance with the Forest Plan and Other Direction

Alternative 1 (no action) would not be in compliance with the Forest Plan or the Clean Water Act because many of these routes are currently eroding, resulting in sedimentation of some streams and there would be no mechanism to restore or mitigate these impacts. All roads and trails proposed for addition to the NFTS must comply with the Clean Water Act regulations and the Six Rivers National Forest Land and Resource Management Plan direction for water quality protection. For these reasons, all of the roads or motorized trails that were rated as a high or moderate risk to water quality, have project design features included to reduce the potential for adverse impacts to water quality to low levels. The design features include installing larger stream crossing culverts, installing waterbars or constructing rolling dips to reduce diversion potential. Active restoration is prescribed for all roads removed (decommissioned) from the NFTS. All closed roads (level 1 roads or UARs not added to the NFTS) would have active restoration were needed to insure the roads and trails are left in a free draining, hydrologically benign condition. All closed roads will have earthen barriers installed to restrict motor vehicle use.

None of the watersheds are listed as water quality impaired under section 303(d) of the Clean Water Act. All of the action alternatives meet the conditions of the North Coast Water Quality Control Board, Waiver of Waste Discharge Requirement, Order No. R1-2010-0029 (The Waiver).

Implementation and annual evaluation of best management practices (BMPs), along with implementation checklists at the project level serve to insure compliance with The Waiver. A complete listing of best management practices that apply to this project can be found in Appendix E.

Aquatic Biota

Introduction

Management of aquatic dependent species and habitat, and maintenance of a diversity of animal communities, is an important part of the mission of the Forest Service (Resource Planning Act of 1974, National Forest Management Act of 1976). Management activities on National Forest System (NFS) lands must be planned and implemented so that they do not jeopardize the continued existence of threatened or endangered species or lead to a trend toward listing or loss of viability of Forest Service Sensitive species. In addition, management activities should be designed to maintain or improve habitat for Management Indicator Species to the degree consistent with multiple-use objectives established in each Forest Plan. Management decisions related to motorized travel can affect aquatic species by increasing human-caused mortality, causing changes in behavior due to disturbance, and habitat modification (Gaines et al. 2003, Trombulek and Frissell 2000, USDA Forest Service 2000). It is Forest Service policy to minimize damage to vegetation, avoid harassment to aquatic dependent species and habitat, and avoid significant disruption of aquatic dependent species and habitat while providing for motorized public use on NFS lands (FSM 2353.03(2)). Therefore, management decisions related to motorized travel on NFS lands must consider effects (and) to aquatic dependent species and habitat their habitat.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action as it affects aquatic biota includes:

Endangered Species Act (ESA). The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires that any action authorized by a federal agency not be likely to jeopardize the continued existence of a threatened or endangered species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical. Section 7 of the ESA, as amended, requires the responsible federal agency to consult the USFWS and the National Marine Fisheries Service concerning threatened or

endangered species under their jurisdiction. It is forest service policy to analyze impacts to threatened or endangered species to ensure management activities are not be likely to jeopardize the continued existence of a threatened or endangered species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical. This assessment is documented in a Biological Assessment (BA) and is summarized or referenced in this Chapter.

Forest Service Manual and Handbooks (FSM/H 2670) - Forest Service sensitive species are plant species identified by the Regional Forester for which population viability is a concern. The Forest Service develops and implements management practices to ensure that rare plants and animals do not become threatened or endangered and ensure their continued viability on national forests. It is forest service policy to analyze impacts to sensitive species to ensure management activities do not create a significant trend toward federal listing or loss of viability. This assessment is documented in a Biological Evaluation (BE) and is summarized or referenced in this Chapter.

Smith River NRA Act

Section four of the Smith River NRA Act of 1990 describes the purpose of the Smith River NRA - For the purposes of ensuring the preservation, protection, enhancement, and interpretation for present and future generations of the Smith River watershed's outstanding wild and scenic rivers, ecological diversity, and recreation opportunities while providing for the wise use and sustained productivity of its natural resources, there is hereby established the Smith River National Recreation Area.

The Smith River NRA Act therefore mandates a need to provide for recreation opportunities that are of the type and levels consistent with preservation, protection, and enhancement.

The first four provisions of Section 5 of the Smith River NRA Act of 1990 serve as a basis for the purpose and need of this project. They are:

- Provide for a broad range of recreation uses and provide recreational and interpretive services and facilities (including trails and campgrounds) for the public.
- Provide and maintain adequate public access, including vehicular roads for general recreational activities such as camping, hiking, hunting, and fishing.
- Improve the anadromous fishery and water quality, including (but not limited to) stabilizing landslides, improving fish spawning and rearing habitat, and placing appropriate restrictions or limitations on soil disturbing activities.
- Permit the use of off-road vehicles only on designated routes.

These four provisions in total include recreation opportunities and access, fish and watershed protection and restoration, and management of off-road vehicles. The proposed action is designed to meet these four provisions by managing vehicle travel and roads at a level and manner that are appropriate and consistent with fish and watershed resource protection.

Six Rivers National Forest Land and Resource Management Plan (Forest Plan)

The Six Rivers National Forest Land and Resource Management Plan (Forest Plan) outlines management direction related to roads, as well as resource protection and watershed restoration related to road use and management. This proposal is consistent with the Forest Plan management direction for the project area.

Aquatic and Riparian Ecosystems

Pages IV-106 through IV-111 of the Forest Plan includes direction for managing and protecting aquatic and riparian ecosystems, with specific standards and guidelines for managing roads and vehicle access to

protect fisheries and other aquatic biota, water quality, and riparian vegetation. Also included in this section of the Forest Plan is the direction for key watersheds. As part of the Northwest Forest Plan Aquatic Conservation Strategy, key watersheds are intended to provide a system of large refugia that are crucial to at-risk fish stocks and provide high water quality. Relevant facets of managing key watersheds are included in this section, including the specific requirement of “no net gain” in road miles. Forest standard and guideline 9-17 (page IV-111) states that watershed restoration should focus on removing and upgrading roads. The Smith River basin is designated as a key watershed. This project will reduce road miles across the District. There will be no net gain in road miles.

Aquatic Conservation Strategy

The Aquatic Conservation Strategy is intended as a means to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the FS and BLM within the range of the northern spotted owl.

In order to make the finding that an action “meets” or “does not prevent attainment” of the objectives, the analysis must include a description of the existing condition, a description of the properly functioning 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 toward the properly functioning range of natural variability. Management actions that do not maintain the existing condition or contribute to improved conditions in the long-term would not meet the intent of the Aquatic Conservation Strategy and thus, should not be implemented.

The four components of the Aquatic Conservation Strategy are riparian reserves; key watersheds; watershed analysis; and watershed restoration. Implementation of these components operate together to maintain and restore the productivity and resiliency of riparian and aquatic ecosystems. These four components are integral to the development, design, and implementation of projects in order to ensure consistency with Aquatic Conservation Strategy objectives. The following discussion addresses how each of these components relate to the programmatic actions and watersheds.

Riparian Reserves

Riparian reserves are portions of watersheds where riparian resources receive primary emphasis and where special standards and guidelines apply. Riparian areas are the portion of the riparian reserve nearest the water. Standards and guidelines prohibit and regulate activities in riparian reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives.

Key Watersheds

A system of key watersheds that serve as refugia is crucial for maintaining and recovering habitat for at-risk stocks of anadromous salmonids and resident fish species. These refugia include areas of high quality habitat as well as areas of degraded habitat. Key watersheds with high quality conditions will serve as anchors for the potential recovery of depressed stocks. Actions within key watersheds would be implemented in a manner consistent with guidance for management within these areas. The intent of activities in these areas would be focused on recovery of Pacific salmonids. Actions designed to reduce the negative effects of the existing infrastructure on aquatic habitats and habitat restoration is emphasized within key watersheds.

Standards and Guidelines for Key Watersheds

a. Inside roadless areas - This project does not contain activities that construct roads within IRAs.

b. Outside roadless areas - This project does include route activity within IRAs.

c. Key watersheds are highest priority for watershed restoration – The project contains several work activity categories that involve decommissioning and restoration to. As displayed in the baseline and effects to indicators sections below, these actions would be completed in the Smith River key watershed. Many indicators would be maintained due to concurrent activities on non-NFS roads and on adjacent private lands (see cumulative effects discussion).

d. Watershed analysis is required prior to management activities, except minor activities such as those categorically excluded under the National Environmental Policy Act - Most watersheds within the programmatic analysis area have had watershed analysis completed. Where watershed analysis has not been completed, it is anticipated that administrative units would limit activities to minor ones that are categorically excluded.

e. Watershed analysis is required prior to timber harvest - Not applicable. This project does not propose any harvest of standing timber.

Watershed Analysis

Watershed Analysis plays a critical role in providing for aquatic and riparian habitat protections. It is one of the principal analyses that is used in making decisions on implementation of the Aquatic Conservation Strategy. Watershed analysis is required in key watersheds, for roadless areas in non-key watersheds and riparian reserves prior to determining how proposed land management activities meet the Aquatic Conservation Strategy objectives. Watershed analyses have been completed for the entire Smith River basin.

Watershed Restoration

Watershed restoration is an integral part of a program to aid recovery of fish habitat, riparian habitat, and water quality. Restoration and decommissioning, as well as other route treatments, are consistent with watershed analysis findings. The Smith River Watershed Analyses identified areas of greatest benefit for restoration and decommissioning, and other route treatments stormproofing, which leaves the road open to travel. Stormproofing can involve removing soil from locations where there is a high potential for triggering landslides; modifying road drainage systems to reduce the extent to which the road functions as an extension of the stream network; and reconstruction of stream crossings to reduce the risk and consequences of road failure or washing out of road crossings.

Aquatic Conservation Strategy Objectives

The Proposed action alternatives all meet or do not prevent attainment of the following Aquatic Conservation Strategy objectives:

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.

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.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
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.
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.
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.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distribution of coarse woody debris sufficient to sustain physical complexity and stability.
9. Maintain and restore habitat to support well distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Roadless Areas and the Smith River Key Watershed

As stated in the 2001 Roadless Rule, § 294.12 Prohibition on road construction and road reconstruction in inventoried roadless areas, a road may be added to the road system in IRAs if it meets one of the criteria of § 294.12. The 2001 Roadless Rule defines road construction/reconstruction to include the process of adding a road to the transportation system.

However, these criteria do not apply to key watersheds. Page IV-111 of the Forest Plan includes standards and guidelines for inventoried roadless areas within key watersheds that are designed to protect the remaining high quality aquatic and riparian habitats. Key watershed standard and guideline #9-8 states that no new roads will be built in IRAs within key watersheds. The 2001 Roadless Rule provides equal protection for all IRAs. Since the entire Smith River NRA is a key watershed, no new road construction can occur in any IRAs within the NRA.

Six Rivers Forest Plan Management Areas:

Management Area 7 - Smith River National Recreation Area (Smith River NRA): The Smith River NRA was established in November of 1990, by SB 2566/HB 4309. The primary goals are to emphasize, protect, and enhance the unique biological diversity; anadromous fisheries; and the wild, scenic, and recreational potential of the Smith River while providing sustained yields of forest products.

The Smith River NRA is managed under direction provided by eight management areas (or zones). The Smith River NRA Act legislated specific statutes. The Smith River NRA management plan (Appendix A of the Six Rivers Forest Plan) provides direction to guide compliance with those statutes.

Smith River NRA Management Plan

The proposed action is consistent with the Smith River NRA Management Plan. The following describes which sections of the Plan are relevant to this proposed action. Much of the Plan underscores the basis of the purpose and need of the proposed action.

Resources of the National Recreation Area (pages 6-8) describe the spectrum of recreational uses and opportunities on the NRA, including sightseeing, fishing, camping, trails (including planned OHV trails), whitewater boating, swimming, wilderness, and off-highway vehicle use. Page 8 describes that OHV use is permitted on “designated routes” (as stated in the Act), and that access to these routes is limited to the dry season only (normally May through October). The Smith River NRA roads analysis process and OHV Strategy identified all potential resources risks for every road on the District, and developed management recommendations to address those risks. With regard to the current proposed action, any routes determined to need specific seasonal closures for resource protection will be closed seasonally with specific closure dates applied. Any routes determined in this EIS to have unmitigatible resource risks from wet weather use, will be either removed or not be designated. Therefore, access to any designated route will be managed on a site-specific basis.

Specific management direction for each management area is on pages 16-39. Management direction for OHV use is specifically included for the North Fork Management Area (page 22).

The NRA management plan Fisheries and Riparian Plan states that: All fisheries and riparian work will be coordinated to: Maintain the function of corridors and manage for watershed-stream integrity by correcting road and culvert failures, controlling landslides and fine sediment sources, and maintaining sources of large woody debris for channel stability and stream habitat complexity.

Management Area 9 - Riparian Reserves: As stated above, under the Aquatic Conservation Strategy, riparian reserves are used to maintain and restore riparian structures and functions to intermittent streams, confer benefits to riparian-dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and dispersal corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. The riparian reserves would also serve as connectivity corridors between late-successional reserves.

The riparian reserve management direction stated above includes restoration of riparian structures and functions, as well as habitat conservation, improved dispersal habitat, and maintenance of habitat connectivity. Aquatic and riparian habitat has been degraded due to unregulated vehicle access and recreational use, and need protection in order to recover and provide for the needs of fish and wildlife. The proposed action alternatives would improve riparian conditions by removing unneeded routes, and upgrading and stormproofing needed routes to reduce erosion and sediment delivery. The proposed action alternatives are consistent with riparian reserve management direction.

Watershed Management: Watershed analyses have been completed for the South, Middle, and North Forks of the Smith River (1995) and for the Blue Creek Watershed (1996) a tributary to the Klamath River that encompasses the remaining area of the Gasquet District outside of the Smith River NRA. Watershed analyses are required to be prepared for activities occurring in key watersheds. Key watersheds are expected to provide high quality habitat and serve as refugia for maintaining or recovering habitat for at-risk stocks of anadromous salmonids and resident fish species. The watershed analysis found that riparian corridors, stream channels, and fish habitat have been significantly altered and impacted by mining, timber harvest, and roads. This project would lead to improved watershed conditions in areas where roads currently pose ecological risks.

Effects Analysis Methodology

This analysis of effects and environmental consequences to aquatic biota and their habitat uses a standardized set of indicators developed from the Northwest Forest Plan and adopted by the USFS and NMFS. Indicators are those identified in the methodology Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS 1996).

The indicators are used to determine effects to aquatic biota, and if any of the action alternatives (or their components) “meets” or “does not prevent attainment” of the objectives of the Aquatic Conservation Strategy. This indicator analysis method describes the existing baseline condition (summarized by indicator in a “matrix”), including the properly functioning range of natural variability of each indicator, and how the project maintains the existing condition or moves it toward the properly functioning range of natural variability.

Data Sources:

Assessment of environmental baseline and use of indicators and pathways follows Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS 1996). Information regarding fish habitat baseline conditions of the Smith River is derived primarily from these sources: 1) Six Rivers National Forest fish surveys habitat inventories (including Level II surveys from Siskiyou Research Group and the Smith River Alliance) for Hurdygurdy, Craigs, Coon, Gordon, Rock, Boulder, Jones, Goose, Cant Hook, Patrick, Shelly, Monkey, Griffin, Siskiyou Fork, Myrtle, Hardscrabble, and Middle, South, and North Fork Smith, 2) stream survey reports from the California Department of Fish and Game, 3) the Fox Unit Monitoring Fishery Reports for upper South Fork Smith tributaries (USFS 1976 through 1985), and 4) the Smith River Ecosystem Analysis (McCain et al. 1995).

Analysis of watershed and road conditions (and effects) is based on Road Assessment and Restoration Planning in the Smith River Basin (Ledwith 2003a, Ledwith 2003b). These analyses address current and potential sediment sources, road density and location, drainage network increases, and effects from road drainage features such as stream crossings; and use methods outlined in the Assessment and Implementation Techniques for Controlling Road-Related Sediment Sources (Hagans and Weaver, 1997), Methods for Inventory and Environmental Risk Assessment of Road Drainage Crossings (Flanagan et. al, 1998)

Watershed condition data were also compiled from Rating Watershed Condition: Reconnaissance Level Assessment for the National Forests of the Pacific Southwest Region (USDA Forest Service, Draft 2.4, April 2000). This report was part of a regional USDA FS effort to evaluate watershed condition and identify effects. Watersheds were delineated at the 5th field scale for National Forest System Lands, which includes all of the Smith River NRA and Gasquet District lands. The following watershed information is general to the entire action area. More specific watershed data is included for project activities in close proximity to coho salmon critical habitat.

Aquatic Biota Habitat Indicators:

Indicators are those identified in the methodology Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS 1996). These indicators are grouped according to pathways as follows:

Water Quality

- Temperature
- Sediment and Turbidity
- Chemical Contaminants and Nutrients

Habitat Access

- Physical Barriers

Habitat Elements

- Substrate
- Large Woody Debris
- Pool Frequency
- Pool Quality
- Off-channel Habitat
- Refugia

Channel Condition and Dynamics

- Width/Depth ratio
- Streambank Condition
- Floodplain Connectivity

Flow/Hydrology

- Peak/Base Flows
- Drainage Network Increase

Watershed Conditions

- Road Density and Location
- Disturbance History
- Riparian Reserves

Affected Environment

The Smith River is well known for its inherent clarity and low turbidity. Turbidity levels are very low and are reflective of the hard ultramafic rock and coarse parent material, and the subsequent coarse substrate that dominates streams of the Smith River basin. Turbidity data has been recorded during storms following wildfire - an indication of the expected level of ash delivered from hillslopes into channels during storms. One of the highest turbidity readings for the Smith basin was observed in November 16, 2002 during the first major storm that followed the Biscuit Fire of 2002, where turbidity (presumably from ash runoff) peaked at 74 turbidity units at 8:45 pm. The turbidity dropped back to 8 by 8:00 pm the following day. The stream maintains a low turbidity level during a very high storm flow (>100 year return interval) and recovers very quickly from a large pulse of wildfire ash.

Water temperature in mainstems of the Smith River is beneficial to threatened, endangered and sensitive fish, and ranges from 5 degrees C in winter (in tributaries) to 23 degrees C in late summer (40 to 75 degrees F) (USDA Forest Service 1976 to 1985). Due to the proximity to the coast and the maritime rain precipitation patterns, stream temperatures rarely approach the freezing point. Shade is provided mainly by red alder, bigleaf maple, Douglas-fir, incense cedar, and Port-Orford-cedar. Some dense shading from redwood occurs in the western part of the project area. In the anadromous reaches of the Smith River, shade canopy ranges from 20 to 83 percent (USDA Forest Service 1976 through 1985). The range in water temperature in the Smith River is properly functioning.

The road system directly affects riparian communities where it impinges on riparian areas. Roads can indirectly affect riparian communities by intercepting surface and subsurface flows and routing these flows so that riparian areas dry up and the riparian vegetation is replaced with upland vegetation. Riparian plant communities play a vital role in providing shade. Removal or degradation of these communities can affect stream stability and water temperatures, which in turn, affects aquatic habitat.

The condition and function of the riparian reserves varies throughout the project area. Functions provided by the riparian reserves that are important for aquatic threatened, endangered and sensitive species include shade canopy, large woody debris production from the mortality and recruitment of mature trees,

protection of small floodplains important for overwintering habitat, and production of nutrient and food sources. As described above, the shade canopy is currently adequate to maintain stream temperatures within the range necessary for productive salmonid habitat.

The following fish species are known to occur in the project area (Fuller 1995, McCain 1994). See the Forest-wide Reference Document dated March, 2004 for species life history information.

Federally Threatened, Endangered, or Proposed Species

Coho Salmon (*Oncorhynchus kisutch*) Southern Oregon/Northern California Coasts (SONCC) Evolutionarily Significant Unit (ESU), and designated critical habitat.

Status: Federally Threatened

Both historical and recent abundance trends have been described by NMFS in their coast-wide status review (Weitkamp et al. 1995, pgs. 110-111). Although data is limited for this evolutionarily significant unit, the status review made the following summary:

> Most of the information for the northern California region of this evolutionarily significant unit was recently summarized by the California Department of Fish and Game. They concluded that "Coho salmon in California, including hatchery stock, could be less than 6 percent of their abundance during the 1940s, and have experienced at least a 70 percent decline in numbers since the 1960s." They also reported that coho salmon populations have been virtually eliminated in many streams and that adults are observed only every third year in some stream, suggesting that two or three brood cycles may already have been eliminated.

An "Updated Status of Federally listed ESUs of West Coast Salmon and Steelhead" (including coho salmon) was completed in June 2005 (Good et al. 2005). The status update included limited new information for coho salmon. In the status update, the BRT stated that, "None of these data contradict the conclusions the BRT reached previously, nor do any data (1995 to present) suggest any marked change, either positive or negative, in the abundance or distribution of coho salmon within the SONCC ESU."

NMFS describes coho salmon within the Smith River basin as a functionally independent population (Williams et al. 2006). Functionally independent salmon populations can serve primary roles in salmon evolutionarily significant unit recovery. Coho salmon in the Smith River basin primarily occur in tributaries of the lower mainstem, particularly Mill Creek and Rowdy Creek. Coho salmon occurrence in the Smith River NRA has been low over the past 30 years, as indicated by annual spawning and juvenile fish surveys since 1976. Adult and juvenile coho are not observed in survey reaches on the NRA every year, but rather sporadically. Spawning and juvenile coho have been observed sporadically in the low gradient and gravel-rich reaches of large 6th order tributaries of the North, South, and Middle Forks Smith River, including Hurdygurdy, Patrick, and upper North Fork Smith. Juvenile coho were observed in Hurdygurdy and Patrick Creeks in 1991, and recently in the upper South Fork Smith in 2012 and 2013 and North Fork Smith (outside the NRA) in 2012 and 2013.

Critical Habitat (CH): NMFS designated critical habitat for Southern Oregon / Northern California Coasts coho salmon on May 5, 1999 that encompasses coho-accessible reaches of all rivers (including estuaries and tributaries) between Cape Blanco, Oregon and Punta Gorda, California. Analysis of Southern Oregon / Northern California Coasts coho critical habitat on the Six Rivers National Forest is based on known or suspected coho habitat found within a watershed. Critical habitat excludes reaches located above longstanding natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). Southern Oregon / Northern California Coasts coho critical habitat is derived from available

historical fish species inventories, and habitat assessments on record at the Six Rivers National Forest Supervisor's Office (SO).

Essential Fish Habitat (EFH): The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) set forth a number of new mandates for NOAA Fisheries, regional fishery management councils, and federal action agencies to identify and protect important marine and anadromous fish habitat. Effects to essential fish habitat related to this project were analyzed using habitat defined by the Six Rivers National Forest as known or suspected coho and chinook habitat. essential fish habitat for coho and chinook were derived from available historical fish species inventories, and habitat assessments on record at the Six Rivers National Forest SO.

Forest Service Sensitive Species

Steelhead (*Oncorhynchus mykiss*) Klamath Mountain Province (KMP) evolutionarily significant unit

Chinook salmon (*Oncorhynchus tshawytscha*) Southern Oregon/Northern California Coastal (SONCC) evolutionarily significant unit

Coastal cutthroat trout (*Oncorhynchus clarkii*) Southern Oregon/ California Coasts (SOCC) evolutionarily significant unit

Aquatic Biota Habitat Indicators – Baseline Conditions

Water Quality

Water Temperature: properly functioning

Water temperature in the project area ranges from 5 degrees C in winter (in tributaries) to 23 degrees C in late summer (in mainstems) (USFS 1976 to 1985). Due to the proximity to the coast and the maritime rain precipitation patterns, stream temperatures rarely approach the freezing point. Shade is provided mainly by red alder, bigleaf maple, Douglas-fir, incense cedar, and Port-Orford-cedar. Some dense shading from redwood occurs in the western part of the project area. In the anadromous reaches of the Smith River, shade canopy ranges from 20 to 83 percent (USFS 1976 through 1985). The range in water temperature in the Smith River is properly functioning.

Turbidity: properly functioning

The Smith River is well known for its inherent clarity and low turbidity. Turbidity levels are very low and are reflective of the hard ultramafic rock and coarse parent material, and the subsequent coarse substrate that dominates streams of the Smith River basin. Information is available for sediment related turbidity during storms. For Hurdygurdy Creek, the highest turbidity recorded that is on record is 5.5 (Hach FTU) on 14 January 1980. This was at a flow of 1600 cubic feet per second (cfs) and a suspended sediment load of 157 milligrams per liter (USFS 1980).

Turbidity data has also been recorded during storms following wildfire - an indication of the expected level of ash delivered from hillslopes into channels during storms. One of the highest turbidity readings for the Smith basin was observed in November 16, 2002 during the first major storm that followed the Biscuit Fire of 2002, where turbidity (presumably from ash runoff) peaked at 74 at 8:45 pm. The turbidity dropped back to 8 by 8:00 pm the following day. Since the stream maintains a low turbidity level during a very high storm flow (>100 year return interval) and recovers very quickly from a large pulse of wildfire ash, turbidity can therefore be assumed to be properly functioning.

Sediment: at risk

Management-related sources of sediment exist primarily in the form of road prisms and stream crossings. Crossings are predominantly corrugated metal culverts buried within channels with earthen fills. Stream crossing fills present the most concern since the fills are currently within channels, and in several cases have the potential for stream diversions or are beginning to cause impacts due to crossing failure. Nearly 50 percent of the stream crossings are in need of routine maintenance. Cross drains and erosional features on roads (gullies, rills, road prism and bank failures) are also sources of sediment.

Mass wasting can be a primary determinant of fine sediment sources. The sensitivity of an area to mass wasting depends on the interaction of the soils and underlying bedrock, slope steepness, and the subsurface hydrology. Much of the District is characterized as steep, mountainous terrain. Road-related mass wasting can be attributed to 1) improper placement and construction of road fills and stream crossings, 2) inadequate culvert sizes to accommodate the peak flows, sediment loads, and woody debris, 3) roads located on soils susceptible to mass wasting, and 4) water diversion onto unstable hillslopes. Road-related mass wasting potential is determined by examining the miles and density of roads located on unstable geologic rock units (Table 18 and Table 19).

Table 18. Smith River NRA and Gasquet District mass wasting

Analysis Watershed Name	Mass Wasting Potential
Lower North Fork Smith	Low Hazard
Middle Fork Smith	High Hazard
Myrtle-Hardscrabble	Moderate Hazard
South Fork Smith	Moderate Hazard

Table 19. Criteria for mass wasting ratings

Rating	Definition
High Hazard	Watersheds characterized by the presence of a large number of roads on unstable geologic types. This results in a situation where it is very likely that the timing, geographic distribution, and magnitude (total volume) of natural land sliding has been significantly altered.
Moderate Hazard	Watersheds characterized by the presence of a moderate number of roads on unstable geologic types. This results in a situation where there is a moderate risk that the timing, geographic distribution, and magnitude (total volume) of natural land sliding has been significantly altered.
Low Hazard	Watersheds characterized by the presence of very few, if any, roads on unstable geologic types. This results in a situation where the natural sediment regime is likely to be intact, and it is very unlikely that roads have, or will, significantly modify the timing, geographic distribution, and magnitude (total volume) of natural land sliding in the watershed.

North Fork Smith subbasin

The North Fork Smith subbasin extends northward in to Oregon and drains a large geologic formation known as the Jesephine Ophiolite, and is dominated by lateritic soils that are very old and deeply weathered. The California portion of the subbasin is approximately 40,000 acres, and the Oregon portion is approximately 60,000. The road network here is primarily related to mining activity from the late 1800s to the mid-1900s. A large portion (30,330 acres) of the subbasin is roadless. The North Fork Smith Roadless area includes the majority of the drainage of the North Fork of the Smith River. Approximately

9,000 acres of the western portion of the roadless area has been altered by roads and mining activities. The geologic character of the ophiolitic area is predominantly serpentine/ultramafic with very coarse parent material. Therefore, the potential for fine sediment to be produced is lower than that of the Middle and South Fork subbasins.

Nearly all of the stream crossings within the North Fork Smith subbasin are rocked fords containing very small fills. Potential road-related fine sediment sources in this subbasin are considerably fewer than in the Middle and South Fork subbasins. In the Bear Creek, High Plateau Creek, Peridotite Canyon Creek and Stony Creek watersheds, Forest Road 18N13 (8 miles), Road 18N09 (6 miles) and all of the spur roads (approximately 24 miles) are currently maintained at ML 1 and are in good hydrologic condition, with very little drainage diversions, erosion, and potential for sedimentation.

Middle Fork Smith sub basin (including Myrtle-Hardscrabble)

Within the Middle Fork Smith subbasin, 108 roads have either a stream crossing, cross drain, or erosional feature for a total of 829 features. Crossing types in the subbasin are diverse with 357 (82 percent) fitted with corrugated metal culverts, 44 (10 percent) fords, 21 (5 percent) Humboldt crossing and 13 (3 percent) bridges. Eighty four stream crossing sites (19 percent) were identified as high, 208 (48 percent) as medium, and 145 (33 percent) low priority. High and medium priority stream crossings could potentially be a source of approximately 231,866 cubic yards of sediment.

A total of 311 cross drains exist in the Middle Fork Smith subbasin. Of these, 37 (12 percent) were identified as high priority. These culverts commonly have plugged inlets and directly delivery sediment to the stream network through surface flow paths (i.e., rills and gullies). These flow paths are chronic contributors of fine (i.e., silt and clay) sediment from the road surface and inboard ditches. The main cause of these flow paths is long sections of uncontrolled flow along the road surface and inboard ditch.

120 (39 percent) cross drains are in need of routine maintenance. The most common problem (50 percent of sites) is sediment plugging of the culvert inlet. Plugged cross drains can divert water either onto the road surface or hillslope causing erosion, or into downroad cross drains or stream crossings possibly causing these sites to fail. Other maintenance needs include treating buried outlets, filled inboard ditches, and broken drop inlet covers.

A total of 81 road-related erosional features have been identified in the Middle Fork Smith watershed. Types of erosional features include: 31 cutslope failures, 28 fillslope failures, and 22 roadbed failures. These sites are the source of an estimated 99,030 cubic yards of sediment that is beginning to enter the stream network.

Within the Middle Fork Smith subbasin, 248 roads (132 system and 116 non-system) have been inventoried and evaluated. A total of 437 stream crossings exist in the Middle Fork Smith watershed giving a stream crossing density of 1.7 crossings per mile of road. Road density is approximately 0.003 miles/acre. Knopki, Little Jones, and Siskiyou Fork watersheds in the upper Middle Fork area have the majority of road-related impacts. In the Knopki watershed, 18N11D and complex of roads has 17 features in which 13 are high priority. Seven stream crossings have failed with an estimated 500-1000 cubic yards of sediment left to deliver to the stream network. In addition there are 7 erosional features in which 6 are considered high priority with potential delivery of 20,352 cubic yards of sediment to the stream network. Many of these sites have been identified as chronic sources of sediment to Knopki Creek.

Forest Road18N05 is a ridge to valley road in which the lower 2 miles are in close proximity to a perennial tributary of Knopki Creek. The stream crossings (9) are old fords and Humboldt crossings that are failing and currently diverting. There are four erosional features that are in the process of recovering but still have the capacity to deliver 1,145 cubic yards of sediment to the stream network. The road has

been abandoned for 20 plus years and is heavily vegetated. Treating this road would result in potential "sediment savings" of 2,150 cubic yards. Table 20 describes the potential sediment sources existing in the Middle Fork Smith sub basin.

Table 20. Potential sediment yield from road-related sites in the Middle Fork Smith sub basin (from Ledwith 2003a)

Site Type	Total number of sites	Number of high priority sites	Number of medium priority sites	Future yield to streams (cy)	Number of sites that need maintenance	Number of sites currently diverting	Number of sites with diversion potential
Stream Crossings	437	84	205	231,866[a]	149	33	181
Cross Drains	311	37	64	N/A	120	N/A	302
Erosional Features	81	35	10	44,339[b]	N/A	N/A	N/A
Totals	829	156	279	276,205	269	33	483

a - Includes stream crossings ranked high or medium priority. At stream crossings with diversion potential, future erosion is difficult to predict. A minimum estimate of the stream crossing fill volume was used as a predicted value for this table.

b - Includes erosional features ranked high and medium priority.

South Fork Smith Subbasin

Within the South Fork Smith subbasin, 264 roads (164 system and 100 non-system) have been inventoried and evaluated. A majority of the roads pose little risk to the stream network, with only minor evidence of past sediment delivery to streams. Only 110 (45 percent) of the roads have either a stream crossing, cross drain, or erosional feature for a total of 1,059 features. Of these sites, 415 (39 percent) need treatment for a potential sediment savings of 287,013 cubic yards.

Twelve high priority roads are identified as sediment sources. Road 15N11A is an abandoned haul road to Canthook Creek. There are 12 high priority sites on the road including 8 stream crossings that have failed and are contributing sediment to the stream network. Some of these crossings are actively diverting causing roadbed and fillslope erosion. The road ends at Canthook Creek where the stream is eroding the road fill delivering sediment directly into the stream. The area surrounding 15N11A has multiple crossings and landings along Canthook Creek. Treatment of these areas would result in "sediment savings" of 3,655 cubic yards.

There are 7 high priority sites between County Road 405 and road 16N03 with many sites delivering sediment to the stream system. The first half mile of 405.5 follows a perennial tributary of Hurdy Gurdy Creek. Within this section are two erosional features and two stream crossings that are chronic sources of sediment to the stream. The drainage system on 16N03.2 is not working adequately causing roadbed and fillslope erosion. The high priority stream crossing at mile post 0.69 is rapidly failing and may deliver the whole prism to the stream network. Treatment of these roads would result in "sediment savings" of 6,896 cubic yards.

Road 16N33 used to connect 17N04 to 16N03 until a middle section was decommissioned. The upper section, beginning at 17N04, is two miles long and has two stream crossings and two cross drains which are plugged and diverting causing erosion. The last mile of this road, down to the decommissioned section, runs along a perennial tributary of Hurdy Gurdy Creek. The drainage is poor with long stretches of saturated roadbed. Runoff in this section is routed down the road causing gullying and erosion of the hillslope. There are also numerous fillslope failures. 16N33 Lower starts at 16N03. The first 0.6 miles (to intersection of 16N31, A and B) is fairly stable with 3 features. The second 0.6 miles is in poor condition

with 9 fillslope failures and 4 road gullies. There is also a failed stream crossing (16N33-0.89) which is actively eroding the fillslope. Treatment of these roads would result in “sediment savings” of 40,101 cubic yards. Table 21 describes the potential sediment sources existing in the South Fork Smith subbasin.

Table 21. Potential sediment yield from road-related sites in the South Fork Smith sub basin (Ledwith 2003b)

Site Type	Total number of sites	Number of high priority sites	Number of medium priority sites	Future yield to streams (cy)	Number of sites that need maintenance	Number of sites currently diverting	Number of sites with diversion potential
Stream Crossings	410	51	194	270,986[a]	175	14	146
Cross Drains	613	67	76	N/A	238	N/A	426
Erosional Features	36	17	10	16,027[b]	N/A	N/A	N/A
Totals	1,059	135	280	287,013	413	14	572

a - Includes stream crossings ranked high or medium priority. At stream crossings with diversion potential, future erosion is difficult to predict. A minimum estimate of the stream crossing fill volume was used as a predicted value for this table.

b - Includes erosional features ranked high and medium priority.

Chemical Contaminants and Nutrients: at risk

No known toxic chemical contaminants occur in the watershed. There is a risk of chemical contamination to streams from unrestricted motor vehicle traffic on stream banks and gravel bars at dispersed streamside recreation sites.

Recreational use of popular streamside recreation sites and the potential for water contamination from human waste has resulted in additional vault or portable toilets placed throughout the Smith River NRA in the last 5 years.

The Smith basin is at risk of not properly functioning with regard to this indicator.

Habitat Access

Physical Barriers: properly functioning

There are no known anadromous fish migrations barriers associated with any Forest Road (Six Rivers National Forest Fish Passage Survey, 2001). A few road-stream crossings have been identified as potential barriers to resident coastal cutthroat trout in the Middle Fork Smith River and Blue Creek. To what extent resident fish are affected by these possible barriers is unknown, and further analysis of these areas is a priority. In general, the location of the potential barrier is in the upper portions of the watershed and the extent to which resident fish are affected appears to be minimal.

The only artificial anadromous barrier on the Smith River was on Monkey Creek (which blocked approximately 3 miles of anadromous habitat) and was removed in 1995. No other artificial barriers exist and the stream system has approximately 300 miles of habitat accessible to anadromous fish. Therefore, the Smith basin is properly functioning with regard to habitat access.

Habitat Elements

Substrate: properly functioning

In the Smith River, sources of substrate mainly originate from natural debris, rotational, and translational landslides. Although channel aggradation is evident in some depositional reaches of the system, such as lower Hurdygurdy and Jones Creeks, substrate composition is very coarse and is dominated by cobble and gravel. The large 1964 “rain-on-snow” storm event de-stabilized logged areas and activated many landslides in the watershed, which delivered a very large pulse of hillslope debris and sediment to the channel, resulting in aggradation (Fox Unit Monitoring Fishery Reports, USDA Forest Service 1976 through 1985). Smaller storms from the 1970s to the present periodically reactivated some landslides, but have also progressively downcut through the aggraded areas and have slowly routed, transported, and stored the channel sediment from the 1964 event to stable bar locations.

In depositional areas of lower Hurdygurdy, Patrick, Craigs, Monkey, and Coon Creeks, channel aggradation is influenced by the legacy of placer and hydraulic mining that occurred in the late 1800s, which washed out coarse material from lower hillslopes and delivered material to the lower reaches. The fine sediment component of substrate has been measured in the Smith basin. Fine sediment (<.85 millimeter particle size) in depositional reaches (including gravel bars) associated with salmon spawning habitat was measured from 1976 to 1984 in Hurdygurdy Creek (a primary salmon spawning area) and ranged from 3.5 percent to 5 percent (USDA Forest Service 1976 to 1985). A fine sediment percentage of 20 percent has been documented as a threshold where salmon egg mortality begins to greatly increase (Reiser and Bjornn 1979, Bjornn and Reiser 1991). These data indicate that in depositional features such as gravel bars (i.e. spawning habitat) where fine sediment can accumulate and have a defined impact, the level of fine sediment is very low and the Smith basin is properly functioning with regard to substrate.

Large Woody Debris: at risk

Large wood availability in the Smith River have been at low levels for at least the past 5 decades (CDFG 1963, 1972, 1978; USFS 1991). Some portions of the basin, mainly the North Fork subbasin, have limited levels of wood partly due to natural harsh soil conditions and resulting sparse canopy stands. Much of the large woody debris is above the bank full channel and potentially functions during high flow periods. This distribution of large woody debris is characteristic of the Smith River basin and due in large part to the intensity of storm events and associated flow responses, and to the predominance of steep confined stream reaches that prevent large woody debris from accumulating. A 1972 stream survey documented 10 large woody debris jams in the 12 mile anadromous reach of Hurdygurdy Creek, ranging from 67 to 13,000 cubic yards in size (CDFG 1972). Stream habitat inventories throughout the basin completed from 2001-2013 indicate that levels of large wood in many of the lower gradient reaches of large tributaries ranges from 0-3 pieces per mile.

In pools, large woody debris provides channel complexity and the habitat components of cover and bank stability, however these sites comprise a small proportion of the total stream area when compared to other habitat types and cover elements. Instream cover provided by large woody debris in pools averages is 6 percent, and for riffle and run habitats is 2 percent (USDA Forest Service 1991). Habitat surveys throughout the basin have documented very low quantities of large woody debris. Therefore, the Smith River basin is at risk of properly functioning with regard to large woody debris.

Pool Frequency: properly functioning

Pool/riffle ratio (by occurrence) is approximately 1/3. Pools comprise approximately 18 percent of the total surface area, compared to riffles that comprise the remaining 82 percent. The predominate pools are bedrock-formed. Pools are more abundant in the mainstems of the North, Middle, and South Forks Smith,

and in the lower reaches of primary tributaries including Diamond, Stony, Hardscrabble, Myrtle, Patrick, Monkey, Siskiyou Fork, Hurdygurdy, Craigs, Coon, Gordon, Jones, Goose, and Rock Creeks. Pools generally become smaller and/or less abundant progressively upstream in the steeper channel reaches, however they are common at natural falls barriers – which can provide important cool water refugia during low flows in summer. Stream habitat inventories of these major tributaries indicate that the predominant pool-forming elements are bedrock flow obstructions, and the most common cover element is interstitial space within the coarse substrate. Given that pool formation and frequency is controlled primarily by the natural processes of scour and fill around bedrock obstructions, and that those processes have not been altered, pool frequency is therefore properly functioning.

Pool Quality: properly functioning

Due to the lack of large woody debris cover, the complexity of pools (e.g. amount of cover, spatial partitions, and substrate diversity) is less than what would potentially exist with more abundant large woody debris. This lack of complexity directly relates to the quality of pool habitats for overwintering coho salmon (Meehan and Bjornn 1991). However, this low abundance of large woody debris is characteristic of the Smith River basin and due in large part to the predominance of steep confined stream reaches that prevent large woody debris from accumulating, and the intensity of storm events and associated flow responses. The amount of large woody debris jams present in the project area (middle and upper reaches of the Smith basin) prior to European settlement and subsequent large woody debris removal may have been low compared to other basins. For example, large woody debris jams are non-existent in the North Fork Smith mainstem, a reach that has had no intentional removal and very low amounts of direct channel disturbance (road crossings, streamside timber harvest, etc.). All other important attributes, such as depth, temperature refugia, interstitial cover space, bedrock cover ledges, and pool volume are at their potential. Average residual pool depth for most large tributaries ranges from 2 to over 7 meters. Therefore, given the overall condition of these important attributes, pool quality is best described as properly functioning.

Off-channel Habitat: properly functioning

Due to the predominant steep incised channel morphology of the stream system in the project area, abundance of off-channel habitat is low. In lower reaches of the main tributaries, backwater alcoves and edgewater type habitat comprise typically two percent of the total habitat surface area, and are commonly associated with channel braids or overflow channels near gravel bars. However, in comparison to their availability, these isolated small habitats are highly utilized by newly emerged salmonids in early spring during high flows. Based on habitat inventories throughout the Smith River basin, the low amount of off-channel habitat is typical for the dominant B channel types and indicates that the stream system is controlled by rock type and channel gradient and is therefore within the expected range (Rosgen 1994). Therefore, off-channel habitat is properly functioning.

Refugia: properly functioning

The value of the Smith River as a fish habitat refuge is high and is reflective of the overall habitat conditions in the Smith River basin. The refugia values are highlighted by the fact that the entire basin is designated as a key watershed under the Northwest Forest Plan. The Smith River supports all freshwater life stages of Chinook salmon, coho salmon, steelhead, and coastal cutthroat, as well as Pacific lamprey, and several species of amphibians. Any given sub basin or watershed can be expected to provide sufficient refuge habitat in the event of a large catastrophic disturbance in a nearby watershed, such as a wildfire or debris landslide. Therefore, the Smith River is assumed to be properly functioning as a fish habitat refuge.

Channel Conditions and Dynamics

Width/depth Ratio: properly functioning

Although channel aggradation is evident in some reaches, the width/depth ratio is within expected ranges for typical channels in the Smith River. In depositional reaches, the average width/depth ratio of the wetted channel measured during summer flows is 6.55/1.0, and ranges from 3.18/1.0 in trench pools to 17.0/1.0 in high gradient riffles. In reaches of the Smith River system, bankfull width/depth ratio ranges from below 20 to over 50. Smith River channels are predominantly steep and relatively incised Rosgen B forms (Rosgen 1994), where the width/depth ratio is fairly resilient to changes from sediment input and flooding. Overall, the width/depth ratio is properly functioning.

Streambank Condition: properly functioning

Streambank condition can be described in terms of stability. Streambank stability data are available for upper South Fork and North Fork tributaries (measured as percent reach length) and ranges from zero in steep narrow bedrock channels such as the North Fork Smith subbasin, to approximately 11 percent of the stream channel in lower Hurdygurdy Creek where mining has occurred (Fox Unit Monitoring Fishery Reports). Portions of the Middle Fork Smith River are influenced by extensive streambank alterations from Highway 199, but have maintained high stability due to the predominance of boulder and bedrock banks. Due to the predominance of bedrock streambanks in the Smith River system, streambank condition is properly functioning.

Floodplain Condition: properly functioning

Roads can directly affect physical channel dynamics when they encroach on floodplains or restrict channel migration. Floodplains help dissipate excess energy during high flows and recharge soil moisture and groundwater. Floodplain function is compromised when roads encroach on or isolate floodplains. This can increase peak flows. When peak flows increase, more water is available for in-channel erosion, which affects channel stability. Restricting channel migration can cause channel straightening which increases the stream energy available for channel erosion. This can also result in channel instability. Altering channel pattern affects a stream's ability to transport materials, including wood and sediment.

The project area is predominantly comprised of steep narrow canyons and valley floors, where floodplains within the bankfull level are small and localized as to their influence. However, in lower gradient reaches throughout the Smith River system, small floodplains do exist, are well connected to the channel, and are properly functioning.

Flow/Hydrology

Peak/Base Flow: properly functioning

Roads can divert surface flow, expand channel networks, convert subsurface flow to surface flow, and reduce infiltration. A channel network can be expanded by road ditches and road-related erosional features (e.g. gullies and rills), which intercept and concentrate runoff from their natural flow path. These factors may affect the overall hydrology in a watershed, particularly the quantity and timing of flow.

Reduced infiltration contributes to additional surface flow since water does not infiltrate for storage in the soil profile, but rather runs off as overland or surface flow. Storage and movement of water through the soil profile as subsurface flow regulates and sustains base flows in stream channels. When infiltration during storms is reduced, more water becomes available as surface runoff, and less water is available as subsurface. This can result in quicker, higher, and sharper stream peak flow responses to storms ("flashiness"), and lower less sustained base flows during dry periods.

Road hazard potential can be used to represent the potential for altered hydrologic regime (changes in runoff response) and stream diversions associated with roads. The overall condition class is determined by examining the slope position, slope gradient, proximity to stream channels, number of stream crossings, and density of the road system for each watershed (Table 22 and Table 23).

Table 22. Smith River NRA and Gasquet District road hazard potential

Analysis Watershed Name	Road Hazard Potential
Lower North Fork Smith	Low Hazard
Middle Fork Smith	Moderate Hazard
Myrtle-Hardscrabble	Moderate Hazard
South Fork Smith	Low Hazard

Table 23. Criteria for road hazard potential ratings

Rating	Definition
High Hazard	The density and distribution of roads within the watershed indicate there is a high probability that the hydrologic regime (i.e. timing, magnitude, duration, and spatial distribution of runoff flows) is substantially altered. Roads within the watershed exhibit at least 3 of the following characteristics: (a) densities >0.25 miles/square mile on slope classes >45%, (b) densities >0.5 miles/square mile in middle and lower slope positions, (c) densities > 0.25 mile/square mile within 100 meters of stream channel (hydrologically connected), (d) > 1 stream crossing/mile of road.
Moderate Hazard	The density and distribution of roads within the watershed indicate there is a moderate probability that the hydrologic regime is substantially altered. Roads within the watershed exhibit 1 - 2 of the following characteristics: (a) densities >0.25 miles/square mile on slope classes >45%, (b) densities >0.5 miles/square mile in middle and lower slope positions, (c) densities > 0.25 mile/square mile within 100 meters of stream channel (hydrologically connected), (d) > 1 stream crossing/mile of road.
Low Hazard	The density and distribution of roads within the watershed indicate the hydrologic regime is substantially intact and unaltered. Roads within the watershed exhibit the following characteristics: (a) densities <0.25 miles/square mile on slope classes >45%, (b) densities <0.5 miles/square mile in middle and lower slope positions, (c) densities < 0.25 mile/square mile within 100 meters of stream channel (hydrologically connected), (d) (watershed average) < 1 stream crossing/mile of road.

Definitions:

Hydrologically Connected: Any road segment that, during a 'design' runoff event, has a continuous surface flowpath between any part of the road prism and a natural stream channel (any declivity in the land that exhibits a defined channel and evidence of scour and deposition) is a hydrologically connected road segment. This process uses proximity of roads to streams as a surrogate for identifying hydrologically connected roads to streams.

Hydrologic Regime: The timing, magnitude, duration, and spatial distribution of peak , high, and low flow runoff within a watershed.

Regardless of the land use history and the associated disturbance in the watershed, a significant portion of the land area is undisturbed to the point where the peak/base flow has not been measurably altered. As hillslopes, old landslide scars, and decommissioned roads continue to stabilize, it is expected that the peak/base flow response will continue to function properly.

Increase in Drainage Network: at risk

All road-stream crossings provide a point of hydrologic connectivity, but the lengths of connectivity differ at each site. Cross-drains, water bars, drainage dips, and other road drainage structures may be hydrologically connected to a channel if the diverted flow is sufficient to create a gully that leads to a stream channel. Connectivity also occurs when ditches or the road surface deliver directly to the stream at road-stream crossings. Roads cuts with long, continuous ditch lengths can intercept ground water, route it as surface water and may locally increase peak flows during storm events. Drainage ditches that are connected to road-stream crossings provide a conduit for road-related sediment to enter stream channels.

Road-stream proximity (roads within 105 meters of stream) and road-stream density are displayed in Table 24 to indicate the extent of hydrologic connectivity within a watershed.

Table 24. Hydrologic connectivity on the Smith River NRA and Gasquet District

Analysis Watershed Name	Road-Stream Proximity (mi/sq. mi)	Crossing Density (#/sq. mi)
North Fork Smith	0.27	0.39
Middle Fork Smith	0.63	1.17
Myrtle-Hardscrabble	0.60	1.04
South Fork Smith	0.32	0.56

North Fork Smith Subbasin

A large portion (30,330 acres) of the subbasin is roadless, The North Fork Smith Roadless area includes the majority of the drainage of the North Fork of the Smith River. Approximately 9,000 acres of the western portion of the roadless area has been altered by roads and mining activities. The geologic character of the ophiolitic area is predominantly serpentine/ultramafic with very coarse parent material. Nearly all of the stream crossings within the North Fork Smith subbasin are rocked fords containing very small fills. Potential road-related fine sediment sources in this subbasin are considerably fewer than in the Middle and South Fork subbasins. In the Bear Creek, High Plateau Creek, Peridotite Canyon Creek and Stony Creek watersheds, Forest Road 18N13 (8 miles), Road 18N09 (6 miles) and all of the spur roads (approximately 24 miles) are currently maintained at ML 1 and are in good hydrologic condition, with very little drainage diversions, erosion, and potential for sedimentation. Therefore, the increase in drainage network indicator is properly functioning.

Middle Fork Smith subbasin (including Myrtle-Hardscrabble)

Within the Middle Fork Smith subbasin, roads 17N08, 18N07, and 18N11 experience high traffic loads and have a combined 29 high priority sites between them which accounts for 28 percent of all high priority sites. These roads are chronic contributors of sediment to nearby streams with 17N08 contributing directly to Little Jones Creek and 18N07 contributing directly to Knopki Creek. Common problems on these roads include undersized culverts, plugged culverts, and roadbed gullies. The drainage pattern on these roads is mostly insloped with 92 percent of the steam crossings under-sized for the 100-year storm event, and 77 percent having the potential to divert if overtopped. The roads also have some of the longest inboard ditches in the watershed. The average inboard ditch, without a break in slope, for 18N07 was 1,102 feet and 641 feet for 17N08. Beyond addressing the specific problems at each high priority site, these roads would benefit from culvert upgrades, installation of diversion prevention dips, and breaks in slope to reduce length of inboard ditches. Treatment of these roads would result in potential “sediment savings” of 97,969 cubic yards. Due to the current condition of roads and length of hydrologically

connected road drainage features, the increase in drainage network indicator is at risk of not properly functioning.

South Fork Smith subbasin

A total of 613 cross drains have been identified in the South Fork Smith subbasin. Of these, 67 (11 percent) were identified as needing immediate treatment. The most common problems at these pipes were plugged inlets and direct delivery of sediment to the stream network through surface flow paths (i.e., rills and gullies). These flow paths can be chronic contributors of fine (i.e., silt and clay) sediment from the road surface and inboard ditches. The main cause of these flow paths is long sections of uncontrolled flow along the road surface and inboard ditch. In these situations, the most effective treatment is the installation of additional drainage features to reduce the road-related drainage density.

238 (39 percent) cross drain sites were identified as needing simple routine maintenance. The most common problem (60 percent of the sites) is sediment plugging the culvert inlet. Sites that plug can divert water either onto the road surface or hillslope causing erosion, or into downroad cross drains or stream crossings, expanding the drainage network and eventually causing the downstream sites to fail. Due to the current condition of roads and length of hydrologically connected road drainage features, the increase in drainage network indicator is at risk of not properly functioning.

Watershed Conditions

Road Density and Location: at risk

Road networks can impact watershed processes through surface erosion and the generation and transport of increased loads fine sediment. Surface erosion is highly dependent on soils, road surfacing, road grade, age of the road, traffic volumes, and the effectiveness and spacing of drainage structures. Studies have indicated that sediment delivery to stream systems is highest in the initial years after road construction, although unlined ditches and road surfaces with little armor can remain chronic sources of sediment.

Surface erosion condition is determined by examining the density of roads on erodible soils (Table 25 and Table 26). This indicator addresses the potential for altered sediment regime associated with surface erosion accelerated by road construction and road maintenance.

Table 25. Smith River and Gasquet District surface erosion

Analysis Watershed Name	Road Hazard Potential
Lower North Fork Smith	Low Hazard
Middle Fork Smith	Moderate Hazard
Myrtle-Hardscrabble	Moderate Hazard
South Fork Smith	Low Hazard

Table 26. Criteria for surface erosion ratings

Rating	Definition
High Hazard	Significant alteration of the natural sediment regime associated with surface erosion is likely or evident. Conditions are characterized by the presence of higher road densities and associated disturbance to soil and vegetation on soils highly sensitive to accelerated erosion (high - very high Erosion Hazard Ratings).
Moderate Hazard	Moderate alteration of the natural sediment regime associated with surface erosion is likely or evident. Overall disturbance is variable, with low to moderate road densities and associated disturbance to soil and vegetation on soils highly sensitive to accelerated erosion (high - very high Erosion Hazard Ratings).
Low Hazard	Minor or no alteration of the natural sediment regime associated with surface erosion is likely or evident. Overall disturbance is low and are characterized by the presence of low road densities and associated disturbance to soil and vegetation on soils highly sensitive to accelerated erosion (high - very high Erosion Hazard Ratings).

Drainage structure, function, and spacing are key to minimizing the amount of surface flow, which directly affects surface erosion. Subsequent project level roads analysis may consider new cross drain spacing guidelines using the Water Erosion Prediction Program (WEPP) to model surface erosion from roads have been derived (Morfin et al., 1996). The WEPP model provides for input ranges of local climatic conditions, surfacing material characteristics, maintenance frequency, distance between cross drains, and road grade typical for National Forests (USDA Forest Service, Water/Road Interaction Series, 1998).

Stream crossing density reflects the extent to which roads have modified the channel network and is an indicator of the potential for culvert failures. The relatively low density of road-stream crossings across the Smith River NRA is attributable to the high proportion of roads on or near ridgelines and not in frequent proximity to channels. The consequences of culvert failures can range from minor to substantial. Minor failures introduce culvert fill material that exceeds the transport capacity of the channel, causing it to become aggraded and widened. It can take several years for the channel to adjust and move the sediment downstream, but generally the effects are localized and remain within a relative short distance downstream of the crossing. Substantial failures can generate debris flows and entrain additional sediment as they progress downhill and downstream. The impacts from debris flows can extend far from the culvert failure site and take many years for the channel to adjust and riparian vegetation to reestablish. Stream crossings on steep terrain, with a lot of woody debris upstream, have the greatest potential for debris flows. Adequate road maintenance is critical in these areas.

Culvert diversions also pose significant risks in terms of off-site sedimentation. Diversions occur when a culvert plugs and the stream flow follows the roadbed instead of crossing the road and returning to the original channel. When the diverted stream flow accumulates enough water and sediment, it can create a gully and eventually cross the road and scour a new channel on the hillslope. Upgrading culvert size, increasing the number of cross drain culverts, water bars, or larger drivable surface drains (rolling dips) can minimize diversion potential.

Table 27 describes estimated road-crossing density for the District. Estimates may be actually higher or lower than predicted depending on accuracy of the stream or road coverage. The relatively low crossing density throughout the project area is attributed to the majority of roads located in the upper third of the watershed where stream density is lower. During the Smith River road analysis process, data on road-stream crossing density was field verified to identify specific sites and areas of concern. This included and extensive road and culvert inventory in the South and Middle Fork Smith River sub-basins (Ledwith 2003).

Table 27. Smith River NRA and Gasquet District road-stream crossing density

Analysis Watershed Name	Crossing Density (#/sq. mi)
Lower North Fork Smith	0.39
Middle Fork Smith	1.17
Myrtle-Hardscrabble	1.04
South Fork Smith	0.56

Portions of roads in the Smith River basin are near streams and affect flow hydrology (within 105 meters of a channel). A smaller portion of these are also within valley bottoms of stream systems. Overall road density across the Smith River basin is relatively low at approximately 1.6 mile per square mile. Therefore, the low road density that includes a portion near channels (location indicator) best describes this indicator as at risk of not properly functioning.

Disturbance History: at risk

Human disturbance history in the Smith River basin includes timber harvest and mining. Approximately 58,000 acres (NFS and private) in the project are have had some form of timber management. Most of the private lands are located in the upper Hurdygurdy, Goose, and Little Jones Creek watersheds. Approximately 15 percent of the watershed has had some form of human disturbance, and the forest age for much of this disturbed area is less than 50 years old (early mature).

Past hydraulic mining, primarily for gold, altered certain stream channels, including Hurdygurdy, Craigs, Coon, Patrick, and Myrtle Creeks. For example, the lower 4 miles of Hurdygurdy Creek were at the heart of the Big Flat Mining District, which was most active from 1878 to 1889 and again between 1932 and 1939. This mining district encompassed approximately 1,500 acres, and contained two major ditch systems, ten hydraulic pits, numerous placers, and smaller ditches and penstock sections (USDA Forest Service 1976 through 1985). Hydraulic mining altered channels and riparian areas significantly. Huge volumes of hillslope sediment were washed down to riparian and streamside areas, and large woody debris was removed from the channel to facilitate the mining of alluvial gold placer deposits within the substrate and near the channel. The removal of large woody debris reduced habitat complexity, large woody debris recruitment potential, and the ability of the channel to store and route the introduced sediment. Much of the landscape where hydraulic mining occurred is recovering, and previously altered riparian stands in areas like lower Hurdygurdy Creek are approaching 70 to 80 years and are beginning to provide riparian reserve functions.

This amount of disturbance history from timber harvest and mining results in the watershed to be at risk of not properly functioning.

Riparian Reserves: properly functioning

The road system directly affects riparian communities where it impinges on riparian areas. Roads can indirectly affect riparian communities by intercepting surface and subsurface flows and routing these flows so that riparian areas dry up and the riparian vegetation is replaced with upland vegetation. Riparian plant communities play a vital role in providing shade. Removal or degradation of these communities can affect stream stability and water temperatures, which in turn, affects aquatic habitat.

The condition and function of the riparian reserves varies throughout the project area. Functions provided by the riparian reserves that are important for aquatic threatened, endangered and sensitive species include shade canopy and thermal buffering, large woody debris production from the mortality and

recruitment of mature trees, protection of small floodplains important for overwintering habitat, and production of nutrient and food sources. As described above, the shade canopy is currently adequate to maintain stream temperatures within the range necessary for productive salmonid habitat.

Due to the timber harvest history (described above), approximately 10 percent of the riparian reserves in the project area are in an early to early mature seral stage (approximately 15,000 acres of private land are included in this estimate). These riparian reserves are predominantly within plantations or thinning areas comprised of the Douglas-fir plant series and typically range from 25 to 60 years old. Over the next 100 years, large woody debris recruitment potential will likely be low in these areas until they mature and develop the potential for large woody debris recruitment. The remaining majority (90 percent) of the riparian reserves have not been managed, and range from early mature to old growth. Variation in seral stage is due to mainly to fire, windthrow, and landslides. These riparian reserves function properly and will continue to provide shade, food, nutrients, and large woody debris. Therefore, the overall current riparian reserve baseline condition at the Smith River basin scale, is that riparian reserves are properly functioning.

Table 28. Pathways and indicators for the Smith River Basin

	Properly Functioning	At Risk	Not Properly Functioning
Water Quality			
Temperature			
Sediment and Turbidity	turbidity	sediment	
Chemical Contaminants and Nutrients			
Habitat Access			
Physical Barriers			
Habitat Elements			
Substrate			
Large Woody Debris			
Pool Frequency			
Pool Quality			
Off-Channel Habitat			
Refugia			
Channel Condition and Dynamics			
Width to Depth Ratio			
Streambank Condition			
Floodplain Connectivity			
Flow and Hydrology			
Peak and Base Flows			
Drainage Network Increase			
Watershed Conditions			
Road Density and Location			
Disturbance History			
Riparian Reserves			

Middle Fork of Smith River

Most activities planned are too far away to effect coho salmon and their critical habitat, therefore, road work activities that are in close proximity to coho salmon and their critical habitat will be focused on for this analysis. To assess impacts from the proposed action, a more specific set of data are used to analyze impacts from activities within close proximity to coho salmon critical habitat.

The following information was stated above to show habitat indicators for the entire Smith River basin. However this information is again shown to analyze effects of the project within the Upper Middle Fork of the Smith River. Habitat indicators discussed below are only for sediment and turbidity because those habitat indicators are the only ones that have the potential to be affected.

Sediment and Turbidity: At Risk

Within the Middle Fork Smith subbasin, 108 roads have either a stream crossing, cross drain, or erosional feature for a total of 829 features. Crossing types in the subbasin are diverse with 357 (82 percent) fitted with corrugated metal culverts, 44 (10 percent) fords, 21 (5 percent) Humboldt crossing and 13 (3 percent) bridges. Eighty four stream crossing sites (19 percent) were identified as high, 208 (48 percent) as medium, and 145 (33 percent) low priority. High and medium priority stream crossings could potentially be a source of approximately 231,866 cubic yards of sediment.

A total of 311 cross drains exist in the Middle Fork Smith subbasin. Of these, 37 (12 percent) were identified as high priority. These culverts commonly have plugged inlets and directly delivery sediment to the stream network through surface flow paths (i.e., rills and gullies). These flow paths are chronic contributors of fine (i.e., silt and clay) sediment from the road surface and inboard ditches. The main cause of these flow paths is long sections of uncontrolled flow along the road surface and inboard ditch.

120 (39 percent) cross drains are in need of routine maintenance. The most common problem (50 percent of sites) is sediment plugging of the culvert inlet. Plugged cross drains can divert water either onto the road surface or hillslope causing erosion, or into downroad cross drains or stream crossings possibly causing these sites to fail. Other maintenance needs include treating buried outlets, filled inboard ditches, and broken drop inlet covers.

A total of 81 road-related erosional features have been identified in the Middle Fork Smith watershed. Types of erosional features include: 31 cutslope failures, 28 fillslope failures, and 22 roadbed failures. These sites are the source of an estimated 99,030 cubic yards of sediment that is beginning to enter the stream network.

Within the Middle Fork Smith subbasin, 248 roads (132 system and 116 non-system) have been inventoried and evaluated. A total of 437 stream crossings exist in the Middle Fork Smith watershed giving a stream crossing density of 1.7 crossings per mile of road. Road density is approximately 0.003 miles/acre. Knopki, Little Jones, and Siskiyou Fork watersheds in the upper Middle Fork area have the majority of road-related impacts. In the Knopki watershed, 18N11D and complex of roads has 17 features in which 13 are high priority. Seven stream crossings have failed with an estimated 500-1000 cubic yards of sediment left to deliver to the stream network. In addition there are 7 erosional features in which 6 are considered high priority with potential delivery of 20,352 cubic yards of sediment to the stream network. Many of these sites have been identified as chronic sources of sediment to Knopki Creek.

18N05 is a ridge to valley road in which the lower 2 miles are in close proximity to a perennial tributary of Knopki Creek. The stream crossings (9) are old fords and Humboldt crossings that are failing and currently diverting. There are four erosional features that are in the process of recovering but still have the capacity to deliver 1,145 cubic yards of sediment to the stream network. The road has been abandoned for

20 plus years and is heavily vegetated. Treating this road would result in potential "sediment savings" of 2,150 cubic yards. Table 29 describes the potential sediment sources existing in the Middle Fork Smith sub basin.

Table 29. Potential sediment yield from road-related sites in the Middle Fork Smith sub basin (from Ledwith 2003a)

Site Type	Total number of sites	Number of high priority sites	Number of medium priority sites	Future yield to streams (cy)	Number of sites that need maintenance	Number of sites currently diverting	Number of sites with diversion potential
Stream Crossings	437	84	205	231,866[a]	149	33	181
Cross Drains	311	37	64	N/A	120	N/A	302
Erosional Features	81	35	10	44,339[b]	N/A	N/A	N/A
Totals	829	156	279	276,205	269	33	483

a - Includes stream crossings ranked high or medium priority. At stream crossings with diversion potential, future erosion is difficult to predict. A minimum estimate of the stream crossing fill volume was used as a predicted value for this table.

b - Includes erosional features ranked high and medium priority.

Table 30. Pathways and indicators for Upper Middle Fork Smith River

	Properly Functioning	At Risk	Not Properly Functioning
Water Quality			
Temperature			
Sediment and Turbidity	turbidity	sediment	
Chemical Contaminants and Nutrients			
Habitat Access			
Physical Barriers			
Habitat Elements			
Substrate			
Large Woody Debris			
Pool Frequency			
Pool Quality			
Off-Channel Habitat			
Refugia			
Channel Condition and Dynamics			
Width to Depth Ratio			
Streambank Condition			
Floodplain Connectivity			
Flow and Hydrology			
Peak and Base Flows			
Drainage Network Increase			
Watershed Conditions			
Road Density and Location			
Disturbance History			
Riparian Reserves			

Diamond Creek

Sediment and Turbidity: Properly Functioning.

The aquatic habitats of Diamond Creek consist of cobble / boulder dominated rapids, riffles, and non-turbulent riffles and cobble / boulder dominated mid-channel pools, lateral scour pools, trench pools, and plunge pools. Gravel is the sub-dominant substrate component in both fast water and slow water habitat trending toward co-dominance with larger substrate in the upper reaches. Gravel is present either as interstitial fill between larger substrate, in eddy deposits, in occasional large patches in pooltails, and along stream margins. Bedrock outcrop is common throughout the surveyed section and is often a contributor to pool formation and maintenance. Sand is a minor substrate component in Diamond Creek. The substrate of Diamond Creek is not embedded. Several side channels occur in Diamond Creek of which some offer rearing and refuge habitat opportunities that differ from the main channel. Water quality and clarity is excellent. Water temperature was cool throughout the surveyed section ranging from 160 C to 100 C, well below lethal levels.

Table 31. Pathways and indicators for Diamond Creek

	Properly Functioning	At Risk	Not Properly Functioning
Water Quality			
Temperature range is 16C to 10C, below lethal levels for fish. Riparian provided shade is dependent on geology. Shade is less common in peridotite/serpentine dominated areas. Best riparian shade in upper watershed. No suspended sediment detected. Negligible turbidity. Water is clear.			
Habitat Access			
No barriers to migration observed. A bedrock waterfall and a bedrock chute may inhibit migration in upper watershed during low flow.			
Habitat Elements			
Substrate Fast water dominated expressed mainly as rapids and riffles. Boulder/cobble dominated substrate. Gravel is found more often as interstitial fill rather than in patches suitable for spawning. The streambed is not embedded. Large woody debris density is naturally low. Though recently burned, the riparian zone appears intact and unmanaged. Pool density is naturally low. Pools formed by boulders and bedrock. Average pool depth is 4.4 feet. Side channels offer some rearing and refuge habitat that differs from main channel. Anadromy likely extends 8.15 miles up from mouth.			
Channel Condition and Dynamics			
Stable with evidence of active bank instability observed. Bank instability is naturally occurring. With localized exceptions at landslides, the channel is not aggraded.			
Flow and Hydrology			
Measured discharge within expected range. Currently used roads in the watershed have either had stream crossings converted to rolling dips or have had culverts replaced. Stream is fed by numerous tributaries, seeps, and springs.			
Watershed Conditions			
Road density is approximately 0.96 miles per square mile. Most sub-watersheds have a higher road density. Most roads are high in subwatersheds, or along drainage divides, or decommissioned. Road 18N09 parallels the stream in reaches two and three, currently shows signs of erosion, and may be a future sediment source.			

Although Diamond Creek is designated as critical habitat, recent stream surveys in Diamond Creek (Siskiyou Research Group 2004) did not detect presence of juvenile coho.

Environmental Consequences

Alternative 1, No Action

Direct and Indirect Effects

Under the No Action alternative, there would be no reduction in road density across the District, and no habitat restoration would occur from decommissioning roads and restoring unauthorized routes. Disturbance and direct mortality from on-going road use would not be eliminated on removed roads. Sedimentation into streams would not be reduced. The No Action alternative will not disturb any habitat at culvert sites on roads to be decommissioned or restored; therefore, there will be no short term habitat affects.

Cumulative Effects

The No Action alternative will not provide the beneficial cumulative effects because no road reduction or restoration activities would occur. The current conditions will continue to degrade conditions for sensitive resources.

Alternative 3, Modified Proposed Action

Direct and Indirect Effects

Alternative 3 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 30 percent (Table 32). Road density will be reduced from 1.59 mi/mi2 to 1.34 mi/mi2 across the District, varying from 0.68 mi/mi2 to 2.07 mi/mi2 depending on the 5th field watershed. Approximately 78 culverts would be removed in Alternative 3, which would significantly reduce sedimentation to adjacent stream channels.

Alternative 3 reduces road density in all 5th field watersheds (Table 32). None of the 5th field watersheds exceed 3 mi/mi2 and only the Middle Fork Smith, which contains State Highway 199 and multiple Del Norte County roads, exceed 2 miles per square mile (2.07 mi/mi2) under Alternative 3.

Table 32. Road density by 5th field watershed of the Smith River basin

5th Field Watershed	Alternative 1 Road Density (mi/mi^2)	Alternative 3 Road Density (mi/mi^2)	Alternative 4 Road Density (mi/mi^2)	Alternative 5 Road Density (mi/mi^2)	Alternative 6 Road Density (mi/mi^2)
Lower Smith River	0.97	0.79	0.78	0.62	0.73
Middle Fork Smith River	2.46	2.07	2.11	1.8	2.02
North Fork Smith River	0.81	0.68	0.72	0.6	0.67
South Fork Smith River	1.93	1.67	1.7	1.44	1.64

Includes road miles on non-Forest Service lands

Determinations:

Alternative 3 of the Smith River RTM project was determined to have minimal habitat effects with long term benefits of reducing road density across the District. Alternative 3 would result in a 30 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit aquatic in the long-term through the reduction in sedimentation and habitat restoration. Alternative 3 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species. Alternative 3 complies with the Six

Rivers Forest Plan in regards to the analysis of effects to aquatic threatened, endangered and sensitive and management indicator species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), Alternative 3 will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include increasing Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 3 of the Smith River NRA project will remove 134.31 miles of road/routes and reduce road density across the NRA.

Alternative 4

Direct and Indirect Effects

Alternative 4 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 29 percent (Table 32). Road density will be reduced from 1.59 mi/mi2 to 1.34 mi/mi2 across the District, varying from 0.72 mi/mi2 to 2.11 mi/mi2 depending on the 5th field watershed (Table 32). Alternative 4 reduces road density in all 5th field watersheds (Table 32). None of the 5th field watersheds exceed 3 mi/mi2 and only the Middle Fork Smith, which contains State Highway 199 and multiple Del Norte County roads, exceeds 2 miles per square mile (2.11 mi/mi2) under Alternative 4.

No new road construction or reconstruction will occur under as part of this project and only minor expansion of existing open areas (brush removal) will occur under Alternative 4 to allow parking along 17N49. Therefore, no additional critical habitat will be removed through road construction for any aquatic threatened, endangered and sensitive and management indicator species. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 82 culverts would be removed across the District under Alternative 4.

Culvert removal activities could also affect threatened, endangered and sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Determinations:

Alternative 4 would result in a 30 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of toad-related sedimentation and habitat restoration. Alternative 4 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species.

Alternative 4 complies with the Six Rivers Forest Plan in regards to the analysis of effects to aquatic threatened, endangered and sensitive and management indicator species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), Alternative 4 will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed

areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include increasing Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 4 of the Smith River NRA project will remove 82 culverts and 133.28 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment while decommissioning or upgrading roads. However, reducing road density across the District will reduce road-related sedimentation of stream habitat, and reduce chronic road disturbance.. In the long term, the project will benefit aquatic threatened, endangered and sensitive and management indicator species.

Alternative 5

Direct and Indirect Effects

Alternative 5 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 47 percent (Table 32). Road density will be reduced from 1.59 mi/mi2 to 1.17 mi/mi2 across the District, varying from 0.6 mi/mi2 to 1.8 mi/mi2 depending on the 5th field watershed (Table 32). Approximately 354 culverts will be removed. No unauthorized routes will be added near threatened, endangered and sensitive species habitat.

Road Density

Alternative 5 reduces road density in all 5th field watersheds (Table 32). None of the 5th field watersheds exceed 2 mi/mi2 under Alternative 5. No new road construction or reconstruction will occur under as part of this project and only minor expansion of existing open areas (brush removal) will occur under Alternative 5 to allow parking along 17N49 which does not occur in potential habitat for any species of concern. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 354 culverts would be removed across the District under Alternative 5.

Culvert removal activities could also affect threatened, endangered and sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Determinations:

Alternative 5 of the Smith River RTM project was determined to have minimal habitat effects with long term benefits of reducing road density across the District. Alternative 5 would result in a 47 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration. Alternative 5 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species.

Alternative 5 complies with the Six Rivers Forest Plan in regards to the analysis of effects to aquatic threatened, endangered and sensitive and management indicator species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), all action alternatives will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 5 of the Smith River NRA project will remove 312.29 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment (noise disturbance) while decommissioning or upgrading roads. However, reducing road density across the District will reduce fragmentation of habitat, increase patch size, and reduce disturbance and direct mortality. In the long term, the project will benefit aquatic threatened, endangered and sensitive and management indicator species.

Alternative 6

Direct and Indirect Effects

Alternative 6 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 36 percent (Table 32). Road density will be reduced from 1.59 mi/mi2 to 1.32 mi/mi2 across the District, varying from 0.67 mi/mi2 to 2.02 mi/mi2 depending on the 5th field watershed (Table 32).

Alternative 6 reduces road density in all 5th field watersheds (Table 32). None of the 5th field watersheds exceed 3 mi/mi2 and only the Middle Fork Smith, which contains State Highway 199 and multiple Del Norte County roads, exceed 2 miles per square mile (2.02 mi/mi2) under Alternative 6.

No new road construction or reconstruction will occur under as part of this project and only minor expansion of existing open areas (brush removal) will occur under Alternative 6 to allow parking along 17N49 which does not occur in potential habitat for any wildlife species of concern. Therefore, no additional northern spotted owl or marbled murrelet critical habitat will be removed through road construction and no suitable habitat will be removed for any threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, Survey and Manage, or other wildlife species. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 161 culverts would be removed across the District under Alternative 6. Culvert removal activities could also affect threatened, endangered and sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Roads determined to have a high risk to aquatic resources will need to have the restoration work accomplished during the breeding season of the northern spotted owl, marbled murrelet, and Forest Service sensitive species such as the pacific fisher, marten, and northern goshawk. Work on these roads will include decommissioning and upgrading. Delaying implementation until after the breeding season would mean that the project would require multiple years of work on the same road, which greatly increases the cost of the work as well as increasing risk to aquatic resources. Therefore no limited operating period will be imposed on activities proposed for these roads. Not all the roads or all segments of each road are within 0.25 of suitable habitat for these species. Several roads are within the Highway199 corridor, and have high ambient noise levels. Others occur in unsuitable habitat.

Determinations:

Alternative 6 of the Smith River NRA project was determined to have minimal habitat effects with long term benefits of reducing road density across the District. Alternative 6 would result in a 36 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit aquatic species in the long-term through the reduction of sedimentation and habitat restoration. Alternative 6 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species. Alternative 6 complies with the Six Rivers Forest Plan in regards to the analysis of effects to aquatic threatened, endangered and sensitive and management indicator species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), all action alternatives will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 6 of the Smith River NRA project will remove 154.98 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment (noise disturbance) while decommissioning or upgrading roads. However, reducing road density across the District will reduce fragmentation of habitat, increase patch size, and reduce disturbance and direct mortality. In the long term, the project will benefit aquatic threatened, endangered and sensitive and management indicator species.

Summary of Effects of all Action Alternatives

As a result of any action alternative, some sediment may enter stream channels because of heavy equipment use and disturbance of soils during road upgrading or decommissioning. Short-term effects such as localized increases in fine sediment in certain stream reaches may occur. Fine sediment introduced into a waterway can cause turbidity. An increase in turbidity can affect fish and filter-feeding macro-invertebrates downstream of the work site. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult fish (Spence et al. 1996, Berg and Northcote 1985).

Increases in sediment supply beyond the transport capability of the stream can cause stream channel instability, aggradation (where the channel can become wider and shallower and sometimes to the extent that perennial streams become intermittent); (Cederholm and Reid 1987), loss of pools, and a reduction in gravel quality (Sullivan et al. 1987, Furniss 1991, Swanston 1991). For salmon, these changes can mean reduced spawning and rearing success when spawning areas are covered, eggs and fry suffocate or are trapped in redds (“nests”), food abundance is reduced, and over-wintering habitat is reduced (Cederholm and Reid 1987, Hicks et al. 1991).

Contamination to the stream channel from any of the action alternatives could occur from equipment leaks (e.g., diesel fuel, oil, hydraulic fluids, and antifreezes). However, following the Forest Plan standards of refueling at least 150 feet from a stream and having spill containment equipment on hand would reduce the risk of these hazards. Contamination may also occur from wet concrete or wastewater when bridges or culverts are repaired. Spilled wet concrete and wastewater runoff from concrete curing can cause rapid pH swings, which has the potential to kill or stress fish. However, the use of concrete would be very infrequent and be applied during low flows when many channels are dry. Therefore, any

subsequent risk to water quality would be negligible. Closing roads in riparian reserves that access streambanks and bars, and restricting vehicles to designated routes, will reduce the potential for oil and gasoline (petrochemical) contamination. Upon completion of any action alternative, risk of contamination will decrease from NFS roads.

Streambanks may be disturbed when culverts are upgraded or replaced. Streambank vegetation may need to be removed from the work site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished, which could cause some localized streambank instability. Riparian canopy vegetation would potentially be disturbed when culverts are removed and when roads are decommissioned. When culverts are removed, riparian shrubs and trees may be cut and excavated to access each site and restore proper channel dimensions. This type of activity is likely to have no or localized effects on stream shade and water temperature because of the small amount of vegetation being removed. The removal of roads adjacent to streams would have a positive effect on stream temperature and streambank stability in the long term. Trees and other riparian vegetation would re-colonize a decommissioned roadbed and, in time, help shade the adjacent stream and re-stabilize the streambanks to their natural slope.

The effects to threatened, endangered and sensitive fish and stream habitat from any of the action alternatives is linked to degree of hydrologic connectivity - the proximity of roads to streams, specifically hillslope position, and strongly influences how much surface and subsurface water flow a road would intercept and deliver re-routed water and added road sediment to different stream segment or channel (also called a diversion). Mid-slope and lower slope roads would have the greatest potential of intercepting and re-routing flows. Increased runoff from improperly maintained roads can increase sediment transport efficiency and peak stream flows which may destabilize stream channels and reduce habitat quality. The implementation of Alternatives 2, 3, or 4 would substantially reduce the hydrologic connectivity of the NFS road system, and restore hillslope drainage to natural patterns.

The effects of the action alternatives have been determined by the fisheries biologist to have potential short-term adverse effects, with long-term beneficial effects to threatened, endangered and sensitive fish, coho salmon critical habitat, and coho and chinook salmon essential fish habitat. The NMFS concurred with this decision.

No Action

The No Action Alternative would not involve any road decommissioning, culvert upgrades, or stormproofing activities that would be beneficial to threatened, endangered and sensitive fish species. Current impacts to threatened, endangered and sensitive fish from identified roads and areas would continue. Existing road-related sediment sources affecting threatened, endangered and sensitive fish and stream habitat would not be reduced. Hydrologic connectivity would not be reduced, which would further increase the amount of fine sediment entering streams.

Off-highway motor vehicles would be restricted only to current ML 2 roads. No OHV traffic would occur in riparian areas and on streambanks and gravel bars, which would reduce the potential for petrochemical contamination to streams. The risk of toxic pollution to water quality will be reduced to negligible levels.

Cumulative effects

Roads may have unavoidable effects on streams, no matter how well they are located, designed or maintained (FEMAT 1993). Roads can affect streams directly by accelerating erosion and sediment loadings, by altering channel morphology, and by changing the runoff characteristics of watersheds (Furniss et al. 1991). Hauge et al. (1979) discussed several ways that roads can affect hillslope drainage, including changes in infiltration rates, interception and diversion of subsurface flow, changes in the

watershed area of small streams, changes in the time distribution of water yield to channels, and changes in fine (micro) details of drainage. Gibbons and Salo (1973 op cit Furniss 1991) found that sediment contributions per unit area from roads is much greater than that from all other land management activities combined, including log skidding and yarding. In general, roads have been a primary source of sediment impacts in developed watersheds (Everett et al. 1994; Rhodes et al. 1994; Wissmar et al. 1994).

The amount of road-related sediment from NFS roads is expected to greatly decrease as a result of any of the action alternatives. Restriction of motor vehicles to designated and improved NFS routes will eliminate the direct contact of vehicle tires to soil and further reduce the likelihood of any mobilization and transport of fine sediment into channels.

The action alternatives would be beneficial to the sediment processes in the project area, and sediment is expected to be restored to properly functioning in specific areas influenced solely by NFS roads. National Forest System road-related sediment sources will be reduced, and percentage of fine sediment in the substrate will remain low (<12 percent) and will not impede spawning success, egg incubation, and fry emergence. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith river, road-related sediment will continue to be delivered to channels in areas of the Smith River basin.

Closing roads in riparian reserves that access streambanks and bars, and restricting vehicles to designated routes, will reduce the potential for oil and gasoline (petrochemical) contamination. However, due to the location and extent of county and state highways adjacent to streams, contamination will continue to be a risk.

Restoration of disturbed landscapes through NFS road decommissioning will help facilitate and augment the natural rate of watershed recovery. As road miles are reduced, forests in harvested areas mature, and mined and logged areas continue to stabilize over the long term, the legacy of effects from past activities will begin to recede. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith River, road-related disturbance will continue in close proximity to channels and the Smith River basin will continue to be at risk of future road disturbance.

Effects on Aquatic Biota Habitat Indicators; Threatened, Endangered and Sensitive Fish; Critical Habitat, and Essential Fish Habitat

Water Quality

Water Temperature: maintain

Riparian vegetation could potentially be disturbed during road decommissioning, culvert/bridge removal or replacement and upgrade, or stormproofing activities. Riparian trees may be cut and excavated to access each site and restore proper channel dimensions. This type of activity is likely to have no or only localized effects on stream shade and water temperature because of the small amount of vegetation being removed at any site. Road maintenance would potentially involve disturbance to riparian vegetation. Brushing along roads that parallel the stream channel for several miles could increase water temperatures due to reduction of shade. Generally, however, brushing is limited to within four feet of the road ditch line and outside shoulder. Maintenance of roads that do not closely parallel streams is likely to have little or no effect on water temperature, and therefore would not likely result in any adverse effects to threatened, endangered and sensitive fish, critical habitat, or essential fish habitat.

Water temperature would therefore remain as properly functioning. Water temperature will continue to be within the range that is beneficial for salmonid growth, reproduction, egg incubation, and survival.

Removal or closure of roads would have a positive effect on stream temperature in the long term. Trees and other riparian vegetation would re-colonize a decommissioned roadbed and, in time, help shade the stream.

Turbidity: maintain

Fine sediment introduced into a waterway can cause turbidity. An increase in turbidity can affect fish and filter-feeding macro-invertebrates downstream of the work site. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult fish (Spence et al. 1996, Berg and Northcote 1985).

The proposed road decommissioning actions would generally help to limit sediment input and turbidity from road systems over time. However, activities themselves could potentially contribute some short term sediment to streams. Fine sediment could be generated from culvert replacement and repair, stabilization of storm-damaged roads, road repairs and stabilization, and removal of material from small landslides. The amount of fine sediment which could potentially enter a stream as a result of road maintenance activities would be minimized through the implementation of the inherent standards and guidelines and best management practises. Where sediment does enter a stream, it is anticipated to be diluted and reduced to a discountable level that would not adversely affect listed fish and their critical habitat. This is primarily due to small intermittent streams (where activities would take place, outside of critical habitat) that are hydrologically connected to larger streams where coho salmon critical habitat exists. Disturbed soil will most likely be transported during the first heavy rains of winter after work has been completed. As sediment moves down these smaller streams, the amount of sediment is diluted from settling and dilution from other tributaries entering the transport stream. When sediment finally gets into coho salmon critical habitat the small amount of sediment and flow from the transport tributary stream is even further diluted by entering larger streams where coho salmon may be present. Therefore, the proposed action would not result in adverse effects. Pulses of sediment and increases in turbidity would be short term and at negligible levels that would not harm, or kill threatened, endangered and sensitive fish, or adversely affect critical habitat or essential fish habitat.

As discussed in the baseline channel conditions section, the overall potential for increased turbidity levels from the action alternatives is very low and is reflective of the hard basalt geology and subsequent coarse substrate that dominates streams of the Smith River basin. The Smith River will maintain a low turbidity range that allows for a high rate of success in salmonid incubation, rearing, feeding, and spawning. Turbidity is expected to not change from the proposed action and will remain properly functioning.

Sediment: maintain

Increases in sediment supply beyond the transport capability of a critical habitat or essential fish habitat stream can cause stream channel instability, aggradation (sometimes to the extent that perennial streams become intermittent; Cederholm and Reid 1987), widening, loss of pools, and a reduction in gravel quality (Sullivan et al. 1987, Furniss 1991, Swanston 1991). For salmon, these changes can mean reduced spawning and rearing success when spawning areas are covered, eggs and fry suffocate or are trapped in redds, food abundance is reduced, and over-wintering habitat is reduced (Cederholm and Reid 1987, Hicks et al. 1991).

The proposed action alternatives would reduce sediment input and turbidity from road systems over time. However, the work activities themselves can contribute some short term increases in sediment to streams. Fine sediment can be generated from culvert replacement, stabilization of storm-damaged roads, road repairs and stabilization, and removal of material from small landslides. The amount of fine sediment

which could potentially enter a stream as a result of these activities will depend on the road surface type, proximity of the road to the stream, whether road ditches are connected to streams, and the density and type of vegetation and other materials between the road and the stream. The inherent standards and guidelines and best management practises will limit the amount of fine sediment entering stream channels. Where sediment does enter a stream, it is anticipated to be diluted and reduced to a discountable level that would not adversely affect listed fish and their critical habitat. This is primarily due to small intermittent streams (where activities would take place) that are hydrologically connected to larger streams where coho salmon critical habitat exists. As sediment moves down these smaller streams, the amount of sediment is diluted from settling out and dilution from other tributaries. When sediment finally gets into coho salmon critical habitat the small amount of sediment and flow from the tributary stream is even further diluted by entering larger streams where coho salmon may be present. Therefore, the proposed action would not result in adverse effects. Pulses of sediment would be short term and would be at negligible levels that would not harm, or kill threatened, endangered and sensitive fish, or adversely affect critical habitat or essential fish habitat.

The proposed action would address the current potential sediment yield described in the baseline discussion through road decommissioning, culvert removal/replacement, and stormproofing. Table 33 summarizes the net reduction of the proposed action over the project area. The amount of road-related sediment from NFS roads is expected to greatly decrease as a result of the proposed decommissioning (culvert removals), culvert replacements, stormproofing, and road upgrading/downgrading. All road work activities entailing machinery and/or ground disturbance will occur in the dry season; minimizing the potential for mobilized or transported sediment, and subsequent turbidity increases. These activities will disperse precipitation runoff evenly from roads and prevent runoff concentration and subsequent rills and gullies from forming.

Table 33. Number and type of sites treated and amount of fine sediment reduced

Site Type	Total number of sites	Number of high priority sites	Number of medium priority sites	Fine sediment reduced (cubic yd.)
Stream Crossings (culverts and Humboldt crossings)	847	135	399	502,852
Cross Drains	924	104	140	N/A
Erosional Features	117	52	20	60,366
Totals	1,888	291	559	563,218

Restriction of motor vehicles to designated and improved NFS routes will eliminate cross-country motorized vehicle traffic, including on streambanks and gravel bars, and reduce the direct contact of vehicle tires to soil and further reduce the likelihood of any mobilization and transport of fine sediment into channels.

The proposed action alternatives would be beneficial to the sediment processes in the project area, and sediment is expected to decrease from NFS roads. National Forest System road-related sediment sources will be reduced, and the percentage of fine sediment in the substrate will remain low (<12 percent) and will not impede spawning success, egg incubation, and fry emergence. The proposed action would have long-term benefits to general water quality within the Smith River. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith river, road-related sediment will continue to be delivered to channels and the Smith River basin will continue to be at risk regarding this indicator.

Chemical Contaminants and Nutrients: maintain

Contamination to the stream channel from the proposed activities could occur from equipment leaks (e.g., diesel fuel, oil, hydraulic fluids, and antifreezes) or spills from refueling during project implementation. However, following the inherent standards and guidelines and best management practises will reduce the risk of these hazards. Overall risk to water quality should be negligible.

Closing roads in riparian reserves that access streambanks and bars, and restricting vehicles to designated routes and parking areas, will reduce the potential for oil and gasoline (petrochemical) contamination. Upon completion of any of the proposed action alternatives, risk of contamination will decrease from NFS roads. The actions would have long-term benefits by permanently reducing the risk of water contamination and related impacts to threatened, endangered and sensitive fish, critical habitat, and essential fish habitat. However, due to the location and extent of county and state highways adjacent to streams, this indicator will continue to be at risk.

Habitat Access

Physical Barriers: maintain

The project will not create any new barriers to fish migration. Therefore, the watershed will continue to properly function with regard to habitat access. Anadromous salmonids will continue to be able to access the anadromous reaches of the Smith River.

Habitat Elements

Substrate: maintain

Some sediment may enter stream channels because of heavy equipment use and disturbance of soils, particularly during road decommissioning, restoration, and culvert removal/replacements. Short-term sediment pulses in certain stream reaches may occur. However, effects are unlikely to result in decrease growth or survival of freshwater life stages of threatened, endangered and sensitive fish. Due to the distance sediment would have to travel downstream in hydrologically connected streams; it is unlikely that enough sediment would reach coho salmon and their critical habitat to cause adverse effects.

The project will reduce fine sediment, and substrate composition will be maintained at high quality for spawning, rearing, and for benthic fauna. Therefore, the Smith River will remain properly function with regard to substrate.

Large Woody Debris: maintain

Large woody debris is an important component of threatened, endangered and sensitive fish habitat, particularly coho salmon. Large woody debris regulates sediment and flow routing, influences stream channel complexity and stability, and provides hydraulic refugia and cover within stream systems (Bisson et al. 1987, Gregory et al. 1987, Hicks et al. 1991, Sedell and Beschta 1991, Bilby and Bisson 1998). Large woody debris also plays a key role in retaining salmon carcasses (Cederholm and Peterson 1985), a major source of nitrogen and carbon in stream ecosystems (Bilby et al. 1996).

In the mainstems and lower reaches of major tributaries of the Smith River basin, large woody debris has been reduced through a variety of human activities that include past timber harvest practices and associated activities, placer and hydraulic mining activities, as well as the mandated cleanup activities that removed wood from streams throughout the region from the 1950s through the 1970s (FEMAT 1993, Bilby and Bisson 1998). The removal of trees within a distance equal to one site-potential tree height of streams (approximately 170 to 240 feet for mature conifer trees west of the Cascades, FEMAT 1993) have

the potential to change the distribution, size, and abundance of large wood available for recruitment from streamside stands (Hicks et al. 1991, Ralph et al. 1994, Murphy 1995, Spence et al. 1996).

Headwater streams in the Smith River basin play an important role in watershed function. Large woody debris in headwater streams increases sediment retention by forming depositional areas and dissipating energy; retains non-woody organic matter, allowing it to be biologically processed prior to downstream export as dissolved and particulate nutrients; and delays surface water passage, allowing it to be cooled by mixing with ground water (Sullivan et al. 1987, Murphy 1995, Spence et al. 1996, Bisson and Bilby 1998). Additional wood can be recruited to fish-bearing streams from upslope and upstream areas through landslides and debris flows (McGarry 1994, Reeves et al. 1995). In some areas, wood transported in this manner may constitute up to 50 percent of the wood recruited to downstream reaches (McGarry 1994). McDade et al. (1990) could not account for 48 percent of the existing large woody debris pieces in a study of recruitment from streamside areas.

Large woody debris availability will not be altered by this project. Large woody debris will remain at risk in the Smith River. Until amounts of large woody debris sufficient to improve pool quality start to accumulate, much of the large woody debris will continue to occur above the bank full channel and potentially function during high flow periods. Juvenile and adult salmonids will continue to utilize these ephemeral habitats during winter storms as velocity refugia from potentially flushing flows. The proposed action alternatives would not affect how fish and other aquatic biota utilize large woody debris -associated habitats.

Pool Frequency: maintain

Pool/riffle ratio (by occurrence) will not be impacted by any of the proposed action alternatives and will remain at 1/3. Pool frequency will therefore continue to properly function. Pools at the current frequency and availability will continue to provide deep water juvenile salmonid rearing habitats, feeding areas, and adult salmonid resting and holding areas.

Pool Quality: maintain

The proposed action alternatives would not result in a change in pool quality; therefore pool quality in will remain properly functioning. As described in the previous large woody debris section, the quality of pools (e.g. amount of cover, spatial partitions, and substrate diversity) for overwintering coho salmon will likely remain as less than optimal (Meehan and Bjornn 1991).

Off-channel Habitat: maintain

Off-channel habitat will continue to properly function and will not be impacted by this project. This type of habitat will provide early rearing areas for newly-emerged juvenile salmonids as they feed, avoid predation, and grow.

Refugia: maintain

The proposed action alternatives would not impact or reduce the amount or quality of properly functioning fish habitat refugia, especially in relation to critical habitat and essential fish habitat. Watersheds will function to provide habitats and resources (food, water, dissolved oxygen) for salmonids in all freshwater life stages in the event of a catastrophic habitat loss in an adjacent stream, and serve as a refugia network of critical habitat and essential fish habitat for coho and Chinook salmon throughout the Smith River basin.

Channel Conditions and Dynamics

Width to depth Ratio: maintain

The proposed action alternatives would not impact the width/depth ratio and it will remain as properly functioning.

Streambank Condition: maintain

Streambanks may be disturbed when culverts are removed or replaced. Streambank vegetation may be potentially removed from a site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished. Maintenance activities may result in a loss of riparian vegetation if the road is close to the channel, which could cause some localized streambank instability. However, any resulting reduction of stability from these activities would be minor, and the effects to downstream threatened, endangered and sensitive fish and critical habitat and essential fish habitat would be negligible.

Streambank condition will be protected from the restriction of motor vehicles to designated routes and parking areas. Therefore, streambank condition will continue to properly function.

Floodplain Condition: maintain

The proposed action alternatives would not impact floodplain conditions. Floodplains will continue to properly function.

Flow and Hydrology

Peak and Base Flow: maintain

The proposed action alternatives would further protect watershed processes related to natural peak/base flow (described in the baseline section), and it is expected that the peak/base flow response will continue to function properly.

Increase in Drainage Network: maintain to restore

The proposed action alternatives would reduce hydrologic connectivity from the road system and improve the drainage network from roads. A significant amount of routes will be decommissioned or restored and the amount of connected ditches and road related gullies will be reduced. Drainage network processes will be improved and the landscape will have a more natural drainage pattern that is closer to what existed prior to route construction.

Watershed Conditions

Road Density and Location: maintain

Location of routes in relation to streams, specifically hillslope position, strongly influences how much surface and subsurface water flow a road intercepts. Mid-slope and lower slope roads in the Smith River basin can potentially intercept and re-rout flows. The proposed action would decrease runoff from maintained roads and therefore protect processes that maintain natural sediment transport efficiency and peak stream flow hydrology, and in turn protect stream channel stability. The removal of culverts, stormproofing, and improving surface drainage would restore natural hillslope drainage patterns.

The proposed action alternatives would reduce route density throughout the basin, with a portion of the reduction being near stream channels. This reduction is expected to be beneficial for downstream threatened, endangered and sensitive fish and critical habitat and essential fish habitat by reducing the

potential for road-related sediment delivery to the channel. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith river, road location will continue to be at risk.

Disturbance History: maintain

Restoration of disturbed landscapes through NFS road decommissioning, and routes restoration, will help facilitate and augment the natural rate of watershed recovery. As route miles are reduced, forests in harvested areas mature, and mined and logged areas continue to stabilize over the long term, this indicator will begin to approach a properly functioning condition. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith river, road-related disturbance will continue in close proximity to channels and the Smith River basin will continue to be at risk regarding this indicator.

Riparian Reserves: maintain

Because of their proximity and connections to streams, ecological conditions and processes in riparian areas can strongly influence threatened, endangered and sensitive fish critical habitat and essential fish habitat. Riparian areas function to provide shade, cover, and channel structural elements; supply and process nutrients; support food webs; supply substrate materials; stabilize streambanks; filter upland sediments; and provide linkages to side channels, floodplains, and groundwater (Sullivan et al. 1987, Gregory et al. 1991, FEMAT 1993, Spence et al. 1996).

Most riparian area functions affecting streams and anadromous fish (including bank stability, shade, litterfall, large wood recruitment) occur within a distance equal to the height of a site potential tree from the edge of the streambank (FEMAT 1993, p. V-27; Spence et al. 1996, p. 216-220) for streams without a floodplain, and decline rapidly beyond that distance. Where there is a floodplain, riparian area functions may extend for a distance equal to the height of a site-potential tree from the edge of the floodplain, since during a flood the entire floodplain can function as the stream channel (Rhodes et al. 1994).

The proposed action alternatives would further protect the processes that maintain the condition and function of riparian reserves, therefore riparian reserves will be maintained as properly functioning.

Effects of Specific Work Activities on Threatened, Endangered and Sensitive Fish; Critical Habitat, and Essential Fish Habitat

The following describes potential effects from each work activity listed above in the Proposed Action section. All activities incorporate standards and guidelines and best management practices as standard practice. Road decommissioning, culvert removal and replacement, downgrading, stormproofing, and upgrading would occur once on a given road or site. All other activities can be categorized as routine and would be done repeatedly on roads on a 3-10 year return cycle. Not all activities would necessarily occur in the same year.

Road decommissioning and route restoration – These actions would result in significant long-term benefits for aquatic habitats (Furniss et al. 1991; FEMAT 1993). Decommissioning and restoration would include a variety of measures associated with restoration of hydrologic functions including culvert removal, decompaction of road surfaces (ripping), outsloping, waterbarring, fill removal, revegetation with native species, and roadway barricading (to exclude vehicular traffic). Road decommissioning would not occur in critical habitat or essential fish habitat, therefore no direct adverse effects would occur from these activities. However, these actions could potentially result in sediment delivery to hydrologically connected streams. The inherent standards and guidelines and best management practises will limit the amount of fine sediment entering stream channels. Where sediment does enter a stream, it is anticipated

that it would be diluted and reduced to a discountable level that would not adversely affect listed fish and their critical habitat. This is primarily due to small streams (where activities would take place) that are hydrologically connected to larger streams where coho salmon critical habitat exists. As sediment moves down these smaller streams, the amount of sediment is diluted from settling out and dilution from other tributaries. When sediment finally gets into coho salmon critical habitat the small amount of sediment and flow from the tributary stream is even further diluted by entering larger streams where coho salmon may be present. Therefore, the proposed action alternatives would not result in adverse effects. Pulses of sediment would be short term and would be at discountable levels that would not harm or kill threatened, endangered and sensitive fish, or adversely affect critical habitat or essential fish habitat.

Contamination to a stream channel could occur from equipment leaks (e.g., diesel fuel, oil, hydraulic fluids, and antifreezes) or spills from refueling. However, following the inherent standards and guidelines and best management practises will reduce the risk of short-term adverse effects on threatened, endangered and sensitive fish, critical habitat, and essential fish habitat. Due to all of the work activities taking place outside of coho salmon critical habitat, it is unlikely that a spill of petroleum products or contaminants would adversely affect coho salmon or their critical habitat.

Streambanks may be disturbed when culverts are removed or replaced. Streambank vegetation may be potentially removed from a site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished. Decommissioning and reduction in road density would decrease runoff from maintained roads and therefore protect processes that maintain natural sediment transport efficiency and peak stream flow hydrology, and in turn protect stream channel stability. The removal of culverts, stormproofing, and maintaining proper road surface drainage would restore natural hillslope drainage patterns. This reduction is expected be beneficial for downstream threatened, endangered and sensitive fish and critical habitat and essential fish habitat by reducing the potential for road-related sediment delivery to the channel. Because of the potential for short-term pulses of sediment, each project site would be designed, timed, and implemented according to the relevant standards and guidelines and best management practises to minimize effects to threatened, endangered and sensitive fish species.

Downgrading to ML 1 – This activity would close the road for vehicle use but would maintain the option of future use. In addition, all stream crossings and cross drains are either removed as described in the road decommissioning section above, or are maintained if no impacts are occurring to threatened, endangered and sensitive fish. Potential for short-term localized effects may occur from culvert removal, roadbed ripping, outsloping, waterbarring, and fill removal. However, downgrading roads would not occur near critical habitat or essential fish habitat, and no direct effects would occur from this activity. Work would generally be accomplished with a backhoe, excavator, tractor, and compactor. Forest Plan: MA10-42, 44. best management practises 2-2, 2-3, 2-10, 2-14, 2-15, 2-17, 2-20 and 2-22 will apply to these activities and will insure that any resulting sediment or surface disturbance resulting in sediment and turbidity increases that would be discountable by the time it reaches coho salmon and their critical habitat.

Streambanks may be disturbed when culverts are removed or replaced. Streambank vegetation may be potentially removed from a site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished. However, any resulting reduction of stability from these activities would be minor, and the effects to threatened, endangered and sensitive fish and critical habitat and essential fish habitat would be negligible.

All roads that would be downgraded are more than 0.25 miles from any critical habitat or essential fish habitat, many are over 5 miles from critical habitat or essential fish habitat. All of the 65 upgrading/downgrading crossings are high in slope position and are intermittent crossings. Therefore, downgrading grading would not adversely affect listed fish due to proximity to listed fish and their habitat.

Contamination to a stream channel could occur from equipment leaks (e.g., diesel fuel, oil, hydraulic fluids, and antifreezes). However, following the inherent standards and guidelines and best management practises will reduce the risk of short-term adverse effects on threatened, endangered and sensitive fish, critical habitat, and essential fish habitat. Due to all of the work activities taking place away from coho salmon critical habitat, it is unlikely that a spill of petroleum products or contaminants would adversely affect coho salmon or their critical habitat.

Streambanks may be disturbed when culverts are removed through downgrading. Streambank vegetation may be potentially removed from a site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished. However, any resulting reduction of stability from these activities would be minor, and the effects to threatened, endangered and sensitive fish and critical habitat and essential fish habitat would be negligible.

After downgrading, ML 1 roads would have less runoff. The removal of culverts, roadbed ripping, outsloping, waterbarring, and fill removal would restore natural hillslope drainage patterns. This reduction is expected to be beneficial for downstream threatened, endangered and sensitive fish and critical habitat and essential fish habitat by reducing the potential for road-related sediment delivery to the channel during storms.

As described in the effects of decommissioning and restoration section above, these actions could potentially result in sediment delivery to downstream threatened, endangered and sensitive fish, critical habitat, and essential fish habitat. The inherent standards and guidelines and best management practises will limit the amount of fine sediment entering stream channels to negligible levels. Where sediment does enter a stream, it is anticipated to be diluted and reduced to a discountable level that would not adversely affect listed fish and their critical habitat. This is primarily due to small intermittent streams (where activities would take place) that are hydrologically connected to larger streams where coho salmon critical habitat exists. As sediment moves down these smaller streams, settling out and dilution from other tributaries would occur. When this sediment ultimately reaches coho salmon critical habitat, any remaining small amount of sediment and flow from the originating tributary stream would be even further diluted by the water volume of the larger streams where coho salmon may be present. Therefore, the proposed action would not result in adverse effects. Pulses of sediment would be short term and would be at discountable levels that would not harm or kill threatened, endangered or sensitive fish, or impact critical habitat or essential fish habitat.

Grading, Reshaping, Blading – As part of upgrading, this work consists of grading and shaping native or aggregate roadbeds to a condition that facilitates traffic and provides proper drainage by allowing water to disperse evenly off the roadbed to prevent rutting, rilling, and diversions – which will reduce transport of fine sediment to channels. This work is generally accomplished by a motor grader.

These road maintenance activities themselves can contribute some sediment to streams. The amount of fine sediment which could potentially enter a stream as a result of road maintenance activities will depend on the road surface type, weather conditions at the time the road maintenance is being performed, proximity of the road to the stream, whether road ditches are connected to streams, and the density and type of vegetation and other materials between the road and the stream. These actions are anticipated to generate only negligible amounts of sediment. Where sediment does enter a stream, it is anticipated to be diluted and reduced to a discountable level that would not adversely affect listed fish and their critical habitat. Furthermore, most roads are far away from coho salmon and their critical habitat. Upgrading actions are designed to limit the amount of sediment from roads and create a more natural surface drainage.

Best management practises 2-4, 2-7, 2-11, 2-19, 2-22, and 2-23 will limit the amount of fine sediment entering stream channels to negligible levels. Where sediment does enter a stream, it is anticipated to be diluted and reduced to a discountable level that would not adversely affect listed fish and their critical habitat. This is primarily due to small intermittent streams (where activities would take place) that are hydrologically connected to larger streams where coho salmon critical habitat exists. As sediment moves down these smaller streams, the amount of sediment is diluted from settling out and dilution from other tributaries. When sediment would ultimately reach occupied coho salmon critical habitat, the small amount of sediment would be further diluted to discountable levels. Therefore, the proposed action would not result in adverse effects. Pulses of sediment would be short term and would be at low negligible levels that would not harm or kill threatened, endangered or sensitive fish, or impact critical habitat or essential fish habitat. A long-term beneficial effect of reducing fine sediment transport to stream channels is expected.

Re-paving - This work consists of re-paving large sections of roads already surfaced with asphalt using a grader, dump truck, paver, roller and laborers. Best management practises 2-11, 2-19, 2-22 and 2-23 will be implemented with this activity. As described above, asphalt can leach out petroleum hydrocarbons, which can be toxic and influence pH. Because of the low amount of paved roads (ML 4 and 5), the extent of hydrocarbon leaching would be minimal and would not likely adversely affect threatened, endangered or sensitive fish, critical habitat, or essential fish habitat.

New Paving - This work consists of paving sections of existing dirt roads using a grader, dump truck, paver, roller and laborers. Best management practises 2-11, 2-19, 2-22 and 2-23 will be implemented with this activity. Asphalt used during new paving can leach out petroleum hydrocarbons, which can be toxic and influence pH. However, any new paving would involve small road segments during dry conditions. Therefore, the extent of hydrocarbon leaching would be minimal and would not likely adversely affect threatened, endangered or sensitive fish, critical habitat, or essential fish habitat.

Remove and end haul materials - This work consists of loading, hauling, and placing slide debris or excess materials (such as rock, soil, and vegetation) at designated disposal sites. No disposal sites will be designated within floodplains. This work would normally be accomplished with a wheel loader, excavator, and dump truck when excess materials are hauled to a disposal site. Best management practises 2-3, 2-7, 2-11, 2-19, and 2-22 will be applied with these activities. Removing and end hauling material will occur within road prisms and will not yield fine sediment to channels, and therefore is not likely to adversely affect threatened, endangered or sensitive fish, critical habitat, or essential fish habitat.

Culvert placement and replacement - This work includes removal of existing culverts, bed preparation, installation and backfill of new culverts of the size and length specified. Culvert replacements would involve stream crossings and road cross drains. Culvert replacements would not occur near critical habitat or essential fish habitat, and no direct or indirect adverse effects would occur from this activity. Work would generally be accomplished with a backhoe, excavator, tractor, and compactor. Forest Plan: MA10-42, 44. Best management practises 2-2, 2-3, 2-10, 2-14, 2-15, 2-17, 2-20 and 2-22 will apply to these activities and will insure that any resulting sediment or surface disturbance is minimized. Where sediment does enter a stream, it is anticipated to be diluted and reduced to a discountable level (due to proximity) that would not adversely affect listed fish and their critical habitat. This is primarily due to small intermittent streams (where activities would take place) that are hydrologically connected to larger streams where coho salmon critical habitat exists. As sediment moves down these smaller streams, the amount of sediment is diluted from settling out and dilution from other tributaries. When sediment finally gets into coho salmon critical habitat the small amount of sediment and flow from the tributary stream is even further diluted by entering larger streams where coho salmon may be present. Therefore, the proposed action would not result in adverse effects. Pulses of sediment would be short term and would be

at discountable levels that would not harm or kill threatened, endangered or sensitive fish, or impact critical habitat or essential fish habitat.

Streambanks may be disturbed when culverts are removed or replaced. Streambank vegetation may be potentially removed from a site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished. However, any resulting reduction of stability from these activities would be minor, and the effects to threatened, endangered or sensitive fish, critical habitat and essential fish habitat would be negligible.

Vegetation establishment - This work includes the application of seed, seedlings, saplings, fertilizer, and mulch, to roadways and disposal areas that have been restored. This work is usually accomplished by hand. However, seed, mulch, and tackifier may be applied mechanically. BMPs 2-2, 2-4, and 2-22 will be implemented with the described activities. Vegetation establishment would not affect threatened, endangered and sensitive fish, critical habitat, or essential fish habitat, and would limit sediment transport as vegetation holds soil in place.

Slide and Fill Stabilization - This work consists of a variety of stabilizing techniques including spreading seed, fertilizer and mulch (with or without hydro-mulch machines); hand installation of geo-textile support; and remediation using an array of construction equipment (cats, loaders, excavators, scrapers, and trucks). Best management practises 2-2, 2-3, 2-10, 2-14, 2-17 and 2-22 will apply to these activities. These activities will occur within the road prism and would only potentially release negligible levels of fine sediment that could be transported to downstream threatened, endangered and sensitive fish, critical habitat, and essential fish habitat. Therefore, slide and fill stabilization activities would not likely adversely affect threatened, endangered or sensitive fish, critical habitat, or essential fish habitat.

Storm proofing – This work may include slide and fill stabilization, road narrowing, road reshaping, berm removal, drainage structure and dip maintenance, drainage structure removal, and replacing stream crossings with larger culverts. This proposal does not involve replacing culverts in critical habitat or essential fish habitat. Best management practises 2-2, 2-3, 2-10, 2-14, 2-17 and 2-22 will apply to this activity and will insure that any resulting sediment or surface disturbance is minimized.

All roads that would be stormproofed (culvert replacement) are more than .25 miles from any critical habitat or essential fish habitat, many are over 5 miles from critical habitat or essential fish habitat. Of the 37 culverts identified above that would be stormproofed within the first 3 years, 21 are perennial crossings. Therefore, stormproofing would not adversely affect listed fish due to proximity to listed fish and their habitat.

Upgrading – this involves converting an ML 1 road to ML 2 to re-establish use on roads that are currently needed but are in a closed condition. Upgrading includes replacing or maintaining culverts and cross drains, improving surface drainage with drivable rolling dips, and grading and surfacing to reduce the risk to threatened, endangered and sensitive fish and provides access. Upgrading would not occur near critical habitat or essential fish habitat, and no direct effects would occur from this activity. Work would generally be accomplished with a backhoe, excavator, tractor, and compactor. Forest Plan: MA10-42, 44. Best management practises 2-2, 2-3, 2-10, 2-14, 2-15, 2-17, 2-20 and 2-22 will apply to these activities and will insure that any resulting sediment or surface disturbance is minimized.

Streambanks may be disturbed when culverts are removed or replaced. Streambank vegetation may be potentially removed from a site causing streambanks to be temporarily exposed to streamflow until new vegetation is reestablished. However, any resulting reduction of stability from these activities would be minor, and the effects to threatened, endangered or sensitive fish, critical habitat or essential fish habitat would be negligible.

All roads that would be upgraded are more than 0.25 miles from any critical habitat or essential fish habitat, many are over 5 miles from critical habitat or essential fish habitat. All of the 65 upgrading/downgrading crossings are high in slope position and are intermittent crossings. Therefore, upgrading would not adversely affect listed fish due to proximity to listed fish and their habitat, but would result in long-term beneficial effects by reducing road-related sediment risks.

Effects of Decommissioning and Restoration on Sediment and Turbidity Indicators in Areas of Close Proximity to Coho Salmon Critical Habitat within the Middle Fork Smith River.

The roads in closest proximity to critical habitat and essential fish habitat proposed for decommissioning or restoration are 18N03 and 18N09.102 and are within 500 feet of critical habitat and essential fish habitat. 18N03 is approximately 400 feet from the upper Middle Fork Smith River and has six intermittent culverts that would be removed. 18N03 has a stable road bed and is currently outsloped with no inboard ditches. This project would be done during the summer with no flow in any of the six intermittent streams. Disturbed soils would most likely have time to settle (over summer), erosion control efforts (standards and guidelines and best management practises) would limit the amount of material that could be potentially washed into the intermittent streams that are hydrological connected. Material (sediment) that does end up in these intermittent streams would be transported downstream towards coho salmon critical habitat. While this material is being transported downstream, some of the material (larger size particles) will settle out in slower reaches of these streams. Also, as streams move downhill other springs, seeps and tributaries that increase the amount of flow in them will dilute the level of sediment. When this transported material finally reaches the Middle Fork Smith River (much larger channel), the small amount of sediment and flow that would reach the river, would be quickly diluted even more from the large amount of water that it would be flowing into the Middle Fork Smith River.

Effects of Restoration on Sediment and Turbidity Indicators in Areas of Close Proximity to coho salmon Critical Habitat within Diamond Creek

Road 18N09.102 is approximately 300 feet from Diamond Creek and has only intermittent low water crossings and would only require approximately 1 mile of outsloping and waterbarring. Since this road already has low water crossings, little work or soil disturbance would take place in channel crossing areas. Outsloping of the road would create natural hydrological drainage and water would not get concentrated. Therefore, very little material is expected to be transported out of this area. All other roads proposed for decommissioning are more than 0.25 miles from critical habitat and essential fish habitat and would have discountable levels of turbidity and sediment reaching coho salmon and their critical habitat for the same reasons listed above (dilution of small amounts of sediment).

Effects Summary

Decommissioning, restoration, culvert placement and replacement, stormproofing, grading, reshaping, blading, downgrades and upgrades would result in significant long-term benefits for aquatic habitats (Furniss et al. 1991; FEMAT 1993). In total, these activities would improve hillslope drainage patterns, reduce hydrologic connectivity, and reduce road-related sediment delivery to streams. These actions however could potentially result in short-term indirect adverse effects including: 1) disturbance of stream substrates (outside of critical habitat) and downstream sediment delivery, 2) short-term loss of streambank vegetation and localized effect on stability, 3) small patches of riparian tree removal and minute losses in shade and changes in microclimate, and 4) risk of petrochemical leaks from heavy equipment. Because of the potential for short-term adverse effects, each project site would be designed, timed, and implemented according to the relevant standards and guidelines and best management practises to minimize adverse effects to threatened, endangered and sensitive fish species.

All activities include the application of standards and guidelines and best management practises to minimize the risk of project impacts, especially to minimize introduction of fine sediment into stream channels, and minimize the potential for adverse effects to threatened, endangered and sensitive fish, critical habitat, and essential fish habitat.

Table 34 summarizes the number and types of structures and sites treated, and the expected reduction in fine sediment sources from the proposed action alternatives.

Table 34. Number and type of sites proposed for treatment and resulting sediment source reduction from the Smith River Road Management and Route Designation Project

Site Type	Total number of sites	Number of high priority sites	Number of medium priority sites	Number of sites that need maintenance	Number of sites currently diverting	Number of sites with diversion potential	Fine sediment reduced (cubic yd.)
Stream Crossings	847	135	399	324	47	327	502,852
Cross Drains	924	104	140	358	N/A	728	N/A
Erosional Features	117	52	20	N/A	N/A	N/A	60,366
Totals	1,888	291	559	682	47	1,055	563,218

Conclusion

Motorized routes may have unavoidable effects on streams, no matter how well they are located, designed or maintained (FEMAT 1993). Routes can affect streams directly by accelerating erosion and sediment loadings, by altering channel morphology, and by changing the runoff characteristics of watersheds (Furniss et al. 1991). Hauge et al. (1979) discussed several ways that roads can affect hillslope drainage, including changes in infiltration rates, interception and diversion of subsurface flow, changes in the watershed area of small streams, changes in the time distribution of water yield to channels, and changes in fine (micro) details of drainage. Gibbons and Salo (1973 op cit Furniss 1991) found that sediment contributions per unit area from roads is much greater than that from all other land management activities combined, including log skidding and yarding. In general, motorized routes have been a primary source of sediment impacts in developed watersheds (Everett et al. 1994; Rhodes et al. 1994; Wissmar et al. 1994).

The effects of any of the action alternatives are expected to not adversely affect threatened, endangered and sensitive fish, critical habitat, and essential fish habitat and would be beneficial to threatened, endangered and sensitive fish, critical habitat, and essential fish habitat. Route-related sediment sources which can affect salmonid spawning, incubation, rearing, and feeding success, and impact coho critical habitat will be reduced by removing failing stream crossings associated with decommissioning and restoration. Hydrologic connectivity will be reduced through decommissioning, restoration, and route designation, which will further reduce the amount of fine sediment entering streams.

Cumulative Effects

Cumulative effects are those effects of future State or private activities, not involving Federal activities, which are reasonably certain to occur within the action area of the Federal action subject to consultation. Future private or state activities that are reasonably certain to occur within the project area include:

1) County road maintenance and bridge replacements on roads 305, 314, 315, 316, 324, 405, 411, and 427 (approximately 75 miles)

2) California state highway 199 road maintenance and bridge replacements, and re-alignment (approximately 31 miles)

The amount of sediment from NFS motorized routes is expected to greatly decrease as a result of any of the proposed action alternatives. NFS route-related sediment sources will be reduced, and percentage of fine sediment in the substrate will remain low (<12 percent) and will not impede spawning success, egg incubation, and fry emergence. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith river, road-related sediment will continue to be delivered to channels in areas of the Smith River basin.

Closing routes in riparian reserves that access streambanks and bars and restricting vehicles to designated routes and parking areas will reduce the potential for oil and gasoline (petrochemical) contamination. Upon completion of this proposed action, risk of contamination will decrease from NFS roads. However, due to the location and extent of county and state highways adjacent to streams, contamination will continue to be a risk.

Restoration of disturbed landscapes through decommissioning and restoration will help facilitate and augment the natural rate of watershed recovery. As road miles are reduced, forests in harvested areas mature, and mined and logged areas continue to stabilize over the long term, the legacy of effects from past activities will begin to recede. However, due to the location of county and state roads along valley floors and in close proximity to the Middle and South Forks Smith River, road-related disturbance will continue in close proximity to channels in the Smith River basin, but would not cause cumulative impacts due to the proposed action alternatives.

Wildlife

Introduction

Management activities on National Forest System (NFS) Lands are planned and implemented so that they do not jeopardize the continued existence of threatened or endangered species, or lead to a trend toward listing or loss of viability of Forest Service sensitive species. In addition, management activities are designed to maintain or improve habitat for management indicator species to the degree consistent with multiple-use objectives established in each Forest Plan. Management decisions related to motor vehicle travel can affect terrestrial species by increasing human-caused mortality, changing behavior due to disturbance, and modifying habitat (Gaines et al. 2003, Trombulak and Frissell 2000, Summers et al. 2011). It is Forest Service policy to minimize harassment to wildlife and minimize significant disruption of wildlife habitat while providing for motor vehicle use on NFS lands.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action as it affects terrestrial wildlife includes:

The Endangered Species Act of 1973 (ESA) states that each Federal agency shall, in consultation with and with the assistance of the Secretary insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of habitat of such species. Section 7 of the ESA, as amended, requires the responsible federal agency to consult the US Fish and Wildlife Service concerning threatened or endangered wildlife species under their jurisdiction.

Northern Spotted Owl Revised Recovery Plan: On June 28, 2011, the FWS released the Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*). The purpose of recovery plans is to describe reasonable actions and criteria that are considered necessary to recover a listed species. The

2011 Revised Recovery Plan (Recovery Plan) for the Northern Spotted Owl represents the "best available science." The 2011 Recovery Plan recognizes the importance of maintaining, and restoring, habitat for the recovery and long-term survival of the spotted owl. The 2011 Recovery Plan relies on Federal lands to provide the major contribution for recovery (USDI Fish and Wildlife Service 2011).

Northern Spotted Owl Revised Critical Habitat: On December 4, 2012 the Final 2012 Northern Spotted Owl Critical Habitat rule was published (77 Fed Reg. 71876-72068). Critical habitat consists of those areas which have "physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection." 16 U.S.C. § 1532(5)(A). Federal agencies are required to consult on any project that may affect newly designated critical habitat under the ESA.

The National Forest Management Act (NFMA) provides direction on selection of management indicator species, which represent larger groups of species filling similar ecological niches or occupying similar habitats. These species and their habitats have been aggregated and described in the Six Rivers Land and Resource Management Plan (Forest Plan). During the NEPA process, the project-level management indicator species effects to these aggregations are analyzed and disclosed. The intent is that the Forest will manage for the needs of representative species or for an assemblage of species using the same habitat.

Forest Service Manual 2670 provides direction regarding Forest Service sensitive species, which have been identified by the Regional Forester as species for which population viability is a concern. The Forest Service develops and implements management practices to ensure that rare plants and animals do not become threatened or endangered and ensure their continued viability on National Forests.

Forest Service Manual 2353.03(2) provides direction to minimize damage to vegetation, minimize harassment to wildlife, and minimize significant disruption of wildlife habitat while providing for motor vehicle use on National Forest System lands.

The Six Rivers National Forest Land and Resource Management Plan identifies the following standards and guidelines applicable to motor vehicle travel management and terrestrial wildlife (Table 35), which are applied to all alternatives and will be considered during the analysis process:

Table 35. Forest plan standards and guidelines for wildlife and travel management

Reference	Standard and Guideline
General Wildlife Management	
IV-97, 8-2	Activities generating loud or continuous noise (e.g., timber harvest, road construction, hauling, blasting, frequent vehicle traffic, power boats, large crowds of people, etc.) will be restricted during the periods shown in Table IV- 11 in the LRMP within the distances or areas listed for each species. (Restrictions may be waived after the dates listed in parentheses if the area is not occupied or has failed - use standardized protocol).
Endangered, Threatened, Proposed Candidate, and Sensitive Species	
IV-99, 8-4	Biological assessments/evaluations for endangered, threatened, proposed, candidate and sensitive species will be prepared for every project to determine if the project "may effect" these animals. This evaluation will determine the effects of the proposed activity on these species and their habitat (designated habitat area), including beneficial effect or likely to adversely affect. A field reconnaissance to determine if a species is present or expected should be completed as part of the biological evaluation process if the species or suitable habitat is likely to occur in the project area.

Reference	Standard and Guideline
Bald Eagle and Peregrine Falcon	
IV-99, 8-9	Eliminate or minimize disturbance to breeding birds from vehicle traffic in the locations and periods listed in Table IV- 11 in the Forest Plan. Vehicle use includes motorized vehicles such as automobiles, snowmobiles, and OHVs as well as riverway vehicles such as jet skis, rafts, and boats.
IV-99, 8-10	Disturbance-generating activities (e.g. road construction and reconstruction, hauling, dredging, blasting) should be restricted during the breeding season in proximity to nesting pairs during the period listed in Table IV- 11 in the Forest Plan.
Northern spotted owl	
IV-100, 8-14	Spotted owl habitat will be managed according to the direction in the FSEIS ROD until a recovery plan is completed and adopted by the U.S. Forest Service. Management direction regarding the northern spotted owl is contained in the special habitat management area section of this chapter. Reasonable and prudent measures identified by the USFWS during consultation will be incorporated in project plans. Habitat fragmentation in surrounding habitat should be minimized or reduced.
Marbled murrelet	
IV-100, 8-17	Marbled murrelet habitat will be managed according to the direction in the FSEIS ROD until a recovery plan is completed and adopted by the U.S. Forest Service. Management direction regarding the marbled murrelet is contained in the special habitat management area section in this chapter. Reasonable and prudent measures identified by the USFWS during consultation will be incorporated in project plans. Habitat fragmentation in surrounding habitat should be minimized or reduced.
IV-100, 8-18	Observe restrictions on loud and continuous activities within 0.25 mile of nest sites and activity centers during the period listed in Table IV- 11 in the Forest Plan.
Candidate Species	
IV-100, 8-19	Known nest sites, roost sites, den sites and associated micro-habitat conditions will be protected for candidate species.
California wolverine	
IV-100, 8-20	Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS Appendix B) at den sites
Fisher and American marten	
IV-102, 8-31 IV-102, 8-32	Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS Appendix B) at den sites within 500 ft. of known den sites
Pacific (Townsend's) big-eared bat	
IV-100, 8-22	Maintain essential habitat characteristics near roost sites (e.g., caves, mine tunnels, buildings). In areas with a high potential for disturbance, secure entrances to roost/maternity areas with a gate system which allow bats in and out but exclude humans. Reduce disturbance at occupied sites during critical time periods (see Table IV- 11 in the Forest Plan).
IV-100, 8-23	The management direction for all bats listed at the end of this section (other species from the FSEIS ROD) also applies for the Pacific big-eared bat.
Del Norte salamander	
	Management direction regarding the Del Norte salamander is contained in the Managed Habitat Management Area section of the Forest Plan.
Western pond turtle	
IV-100, 8-24	Maintain habitat characteristics consistent with their Habitat Capability Model (FEIS, Appendix B Table 12) within 300 feet around occupied pond and stream habitats.

Reference	Standard and Guideline
Northern goshawk	
The following standards and guidelines are intended to provide management direction for northern goshawks within the Klamath and California Coastal Provinces. Although intended for application in Matrix lands and Adaptive Management Areas, the habitat goals described should also be considered in assessments of Late Successional Reserves.	
IV-101, 8-28	III. Disturbance Restrict activities producing loud and/or continuous noise within 0.25 miles of active nest sites as shown in Table IV- 11 in the Forest Plan Normal levels of vehicle traffic on existing roads may be allowed in cases where goshawks appear to be habituated to such activities (see Table IV-I 1 in the Forest Plan).
IV-101, 8-28	IV. Implementation These guidelines may be superseded by the adoption of a conservation strategy for Northern Goshawk, and modified in response to new information.
Black bear	
IV-102, 8-38	Maintain vegetation near the den or wallow that provides a visual screen from roads, trails, and other areas frequented by people
Harvest Species	
IV-102, 8-33	Vegetative security/ screening cover along heavily used roads adjacent to high value areas for wildlife (meadows, glades, ponds, springs, seeps, key deer or elk areas) will be retained.
Species of Concern **State of California listed species have been addressed in previous sections as Federally listed threatened and endangered species or Forest Service sensitive species.**	
IV-103, 8-40	A management zone that maintains essential habitat characteristics and minimizes adverse disturbances will be designated around known nest sites of species of concern. Feeding areas and wintering areas may also require some level of protection.
Osprey	
IV-103, 8-42	Maintain essential habitat characteristics within 500 feet of nest trees, and minimize potential disturbances from developments (recreation/ roads).
Additional Species from the FSEIS ROD	
Bats	
Management standards and guidelines that may be included as mitigation measures in project or activity plans will be developed for the site. These standards will be developed following an inventory and mapping of resources. The purpose of the standards and guidelines will be protection of the site from destruction, vandalism, disturbance from road construction or blasting, or any other activity that could change cave or mine temperatures or drainage patterns. The size of the buffer, and types of activities allowed within the buffer, may be modified through the standards developed for the specific site. When Townsend's big-eared bats are found occupying caves or mines on federal land, the appropriate agency should be notified, and management prescriptions for that site should include special consideration for potential impacts on this species.	
Survey and Mange Species	
IV-84, 7-1	Management of known species sites should receive the highest priority. Activities implemented in 1995 and later must include provisions for these known sites.
IV-84, 7-2	Survey prior to ground-disturbing activities. Management standards will be developed to manage habitat for the species on sites where they are located

The Survey and Manage standards and guidelines were developed under the Northwest Forest Plan (amended in 2001) to benefit species closely associated with late-successional and old-growth forests. Species include plant (vascular and non-vascular), fungi, terrestrial mollusk, aquatic mollusk, and

vertebrate species. The Survey and Manage provision for each species would apply to the range (or portion of the range) of that species, to the particular habitats where concerns exists for species' persistence, and where management activities are considered "habitat-disturbing" for that species (USDA/USDI 2001).

Survey and Manage species are associated with late-successional forests which provide habitat components, microclimatic conditions and other life supporting attributes for the persistence of these species at a given site; therefore, only those activities associated with habitat removal coincident with mid-mature stands could potentially affect Survey and Manage species. This is supported by the Pechman exemptions, which are provisions ordered by the court in Northwest Ecosystem Alliance et al. v. Mark E. Rey et al., No. 04-844P, (W.D. Wash. October 10, 2006). Pre-project surveys are not required in the following situations:

- Thinning projects in stands younger than 80 years old;
- Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
- Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions; and
- The portions of projects involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and manage requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph.

The Smith Rivers National Recreation Area River Basin Assessment, Watershed Assessment and Late Successional Reserve Assessment identifies the management strategy for late-successional reserves on the Smith River NRA, including criteria for developing appropriate treatments.

Effects Analysis Methodology

In 2005, the Smith River NRA completed the Smith River NRA Roads Analysis and Off-Highway Vehicle Strategy (NRA RAP/OHV Strategy). Forest Service personnel evaluated the road system during the NRA RAP/OHV Strategy process to determine access needs and resource risks, with additional field verification during the development of the proposed action for this project. Since the RAP was completed, additional field review has been accomplished, which has refined mileage for both system and non-system roads and, in some cases, corrected risk ratings.

The RAP identified key questions and issues affecting road-related management on the Forest. Each team member used resource-specific evaluation criteria (NRA RAP/OHV Strategy, Appendix A) that had been developed to determine risk and/or need of each ML 1, 2 and unauthorized road/route. The issue concerning wildlife involved "the risk to threatened, endangered and sensitive wildlife and their habitats, habitat fragmentation, and direct impacts to wildlife".

The rating criteria for each resource are scientifically based and were developed by specialists across the Forest during the 2003 Six Rivers National Forest Forest-wide Roads Analysis Process. The risk to resources were determined based on information using the best available science from survey results, computer models, Forest GIS layers, resource-specific assessments (i.e. late-successional reserve Assessments), and research publications.

Every ML1 and ML 2 road and inventoried unauthorized route on the NRA was evaluated for the risk to wildlife using the evaluation criteria (NRA RAP/OHV Strategy, Tables 1 and 2). Risk ratings were assigned to each road in its entirety, even though the rating may be based on a single sensitive site. The RAP then recommended road- and route-specific management options to reduce risks to resources and to better meet the transportation needs of the public and the Forest Service.

Where possible, actions were proposed that could mitigate resource risks on high need roads/routes. If it was not possible or practical to mitigate the resource risk, the road/route was proposed for decommissioning or restoration.

Assumptions Specific to the Wildlife Analysis

- No surveys were conducted specifically for this project. Past surveys and data were used to determine breeding locations and occupancy of habitat. Where data are lacking, high-quality suitable habitat is assumed to be occupied.
- All routes provide the same level of disturbance, unless local data or knowledge indicates otherwise.
- All vehicle types result in the same amount of disturbance effect to wildlife.
- In the long-term, habitat on decommissioned roads and restored unauthorized routes will improve due to vegetation restoration and decreased fragmentation.
- ML1 roads are closed to vehicle use year-round and revegetate naturally, and therefore do not contribute to open road densities. Miles of road downgraded to ML 1 are analyzed with those being decommissioned or restored.
- Annual road maintenance activities are expected to occur on a subset of the District's roads/routes (depending on site-specific conditions) to ensure public and administrative safety and to reduce resource damage.

Data Sources

- Forest-level GIS habitat layers comparing proposed routes with specific suitable habitats, designated areas (i.e. Critical Habitat, Late Successional Reserves) and known wildlife sites.
- Site-specific personal knowledge of agency biologists was used where Forest-level data were not current or not available.
- The latest federal species list for the project area was obtained from the U.S. Fish and Wildlife Service website (http://www.fws.gov/arcata/specieslist/speciesreport.asp) dated October 30, 2013 (Document Number: 172973672-14331). The Region 5 Forest Service sensitive wildlife species list was identified from the US Forest Service – Pacific Southwest Region Sensitive Animal Species List, September 9, 2013.
- California Wildlife Habitat Relationships program (CWHR version 8.0; California Department of Fish and Game, 2008).

Indicators

- Miles of unauthorized routes or miles of routes proposed for addition to the NFTS in potential habitats and designated areas (late-successional reserves, critical habitat)
- Number of sensitive sites (location or site center for the most recent pair or territorial single) for threatened, endangered and sensitive species within ¼ mile of an added route or area
- Miles/Percent of system roads and unauthorized routes decommissioned/restored

- Road density by 5th field watershed > 3 miles/mi2 .Open road density includes NFTS roads and all unauthorized routes open to vehicle traffic. For Alternative 1, all unauthorized routes are considered to be open roads.

Affected Environment

There are an estimated 194 bird species (131 of which are on Forest Service lands), 68 mammal species, and 35 herptile species known or thought to occur on the Smith River National Recreation Area/Gasquet Ranger District (hereafter referred to as the Smith River NRA). Of these, 15 are listed as threatened, endangered, proposed, or Forest Service sensitive (Table 36).

Threatened, Endangered, Proposed, Candidate and Forest Service Sensitive Species

The list of threatened, endangered, proposed, and candidate species for the Six Rivers National Forest was provided by the US Fish and Wildlife Service (USFWS: updated via website and available at http://www.fws.gov/arcata/specieslist/search.asp). There are no wildlife species currently identified as "endangered" on the Forest. Forest Service sensitive species are identified on Pacific Southwest Region Regional Forester's Sensitive Species List (2013). This Forest Service sensitive list contains species that are of special concern. This list is updated periodically as species needs change. The recent list contains species that were not addressed in the Forest Plan, and removed certain species that were addressed. The 2013 Region Regional Forester's Sensitive Species List serves as an update to the Forest Plan regarding species considered.

Table 36. Threatened (T), proposed (P), candidate (C) and Forest Service sensitive species (FSS) occurring on the Smith River NRA

Species	Status	Critical Habitat Designated
Northern spotted owl (*Strix occidentalis caurina*)	T	Yes
Marbled murrelet (*Brachyramphus marmoratus*)	T	Yes
California wolverine (*Gulo gulo luteus*)	P	No
Pacific fisher (*Martes pennanti pacifica*)	C/FSS	-
Bald eagle (*Haliaeetus leucocephalus*)	FSS	-
Northern goshawk (*Accipiter gentilis*)	FSS	-
Humboldt marten (*Martes americana*)	FSS	-
Townsend's big-eared bat (*Corynorhinus townsendii*)	FSS	-
Southern torrent salamander (*Rhyacotriton variegatus*)	FSS	-
Foothill yellow-legged frog (*Rana boylii*)	FSS	-
Northern red-legged frog (*Rana aurora aurora*)	FSS	-
Western pond turtle (*Clemmys marmorata*)	FSS	-
Fringed Myotis (*Myotis thysanodes*)	FSS	-
Western bumblebee	FSS	-
Mardon Skipper (*Polites mardon*)	FSS	-

Management Indicator Species

The Six Rivers Forest Plan selected 41 species as management indicator species or assemblages (groups of species with similar habitat requirements) for a variety of habitats affected by resource management activities on the Forest (Table 37). Indicator species were selected based on their roles in their respective

biotic assemblage or community. Many management indicator species occupy a niche in their particular assemblage that may be extremely sensitive to management related disturbance. Other management indicator species were selected based on concern for their current population status. Management indicator species are indicative of the integrity of communities as a whole, and provide an assessment of the overall health of the represented habitats/ecosystems.

Table 37. Management indicator species and habitat assemblages – Six Rivers National Forest

Group	Species
Individual Species	
	Northern spotted owl
	Pileated woodpecker
	Black bear
	American marten
	Fisher
	Black-tailed deer
Bog/Seep/Spring/Wet Meadow Assemblage	
	Southern torrent salamander
Marsh/ Lake/ Pond/ Assemblage	
	Northern red-legged frog
	Western pond turtle
	Wood duck
River/Stream/Creek Assemblage	
	Cutthroat trout
	Rainbow trout
	Steelhead / Summer Steelhead
	Tailed frog
	Common merganser
	Ruffed grouse
	Winter wren
	American dipper
	Yellow-breasted chat

Group	Species
Tanoak/Madrone Assemblage	
	Hammond's flycatcher
	Western tanager
	Black-headed grosbeak
	Flammulated owl
	Western screech owl
	Red-breasted sapsucker
	Downy woodpecker
	Hairy woodpecker
	White-headed woodpecker
	Vaux's swift
	Brown creeper
	Western bluebird
	Douglas squirrel
Down Woody Debris Assemblage	
	Arboreal salamander
	Clouded salamander
	Blue grouse
	Dusky-footed wood rat
	Western fence lizard
Black Oak/White Oak Assemblage	
	Acorn woodpecker
	Scrub jay
	Lazuli bunting
	Western gray squirrel

Neotropical Migrant Birds

There are 61 neotropical migrant species known to occur on the NRA (Table 38). Under the National Forest Management Act (NFMA), the Forest Service is directed to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.” (P.L. 94-588, Sec 6 (g) (3) (B)). The Six Rivers National Forest Plan meets the objectives of maintaining wildlife populations by providing the variety, distribution and amount

of wildlife habitat types necessary to achieve this goal. Implementation of the project is in accordance with the objectives within Executive Order 13186 of which outlines responsibilities of federal land management agencies to the Migratory Bird Treaty Act.

Table 38. Neotropical migratory bird species and habitat associations of Del Norte County, CA and those known or thought to occur within the project area

Common Name	Habitat Association		Common Name	Habitat Association
Common Merganser	W		Northern Goshawk	F
Turkey Vulture	O		Cooper's Hawk	F, R, O
Sharp-shinned Hawk	F, R		Osprey	W
Red-tailed Hawk	O, F, R		Common Nighthawk	O, F
Flammulated Owl	F		Allen's Hummingbird	F, O
Band-tailed Pigeon	F, O		Northern Flicker	F, R, O
Anna's Hummingbird	R, F, O		Red-breasted Sapsucker	F
Rufous Hummingbird	F, O		Western Wood-Pewee	F, R
Yellow-bellied Sapsucker	F, O		Willow Flycatcher	R, O
Belted Kingfisher	W		Tree Swallow	R, O, W
Hammond's Flycatcher	F		N. Rough-winged Swallow	W
Olive-sided Flycatcher	F, O		Barn Swallow	O, R, F
Dusky Flycatcher	O, F		Golden-crowned Kinglet	F
Cordilleran and Pacific-slope Flycatcher	R, F		Cedar Waxwing	F, O
Violet-green Swallow	R, F, O		Swainson's Thrush	F
Cliff Swallow	O, R		American Robin	F, O, R
Ruby-crowned Kinglet	R, F		Cassin's Vireo	F
House Wren	O, F, R		Orange-crowned Warbler	F
Townsend's Solitaire	F		Yellow-rumped Warbler	F, O
Hermit Thrush	F		Townsend's Warbler	F
Warbling Vireo	R, F		Wilson's Warbler	F, R
Nashville Warbler	F, O		Yellow Warbler	F, R
Black-throated Gray Warbler	F, O		Black-headed Grosbeak	F, R
Hermit Warbler	F		Spotted Towhee	O
MacGillivray's Warbler	F, R, O		Fox Sparrow	O, R
Western Tanager	F		White-crowned Sparrow	O, F
Lazuli Bunting	O		Green-tailed Towhee	O
Chipping Sparrow	F, O		Brewer's Blackbird	O
Song Sparrow	O, F, R		Cassin's Finch	F
Dark-eyed Junco	O, F		Pine Siskin	F, R
Brown-headed Cowbird	O, R, F			

W – Wetland habitat including streams, ponds, lakes, reservoirs, rivers, marshes and associated wetland vegetation. F – Forested habitat including conifer forest, hardwood forest, mixed conifer/hardwood and oak woodlands. R – Riparian forests including willows and alder along streams, rivers and around ponds. O – Open country habitat including grasslands, meadows, burned areas, clearcuts, brushlands and residential areas.

Survey and Manage Species

Survey and Manage species are associated with late-successional forests which provide habitat components, microclimatic conditions and other life supporting attributes for the persistence of these species at a given site; therefore, only those activities associated with habitat removal coincident with mid-mature stands could potentially affect Survey and Manage species. The only wildlife Survey and Manage species that occurs on the Smith River NRA is the red tree vole (*Arborimus longicaudus*).

Existing Condition

There is little information available on wildlife species diversity, abundance and distribution in the Smith River Watershed. In view of this, models describing habitat requirements were used to assess potential suitable habitat within the watershed. These models were developed by the Six Rivers National Forest for the Forest Plan. The models describe the quality and distribution of the habitat needed to maintain viable populations of species or species assemblages. The species and assemblages vary in the type of habitat with which they are associated and were chosen to represent the diversity of habitats occurring on the Forest.

Vegetation data used to run the models included data from ecology plots, stand exams, and ecological unit inventories (vegetation series and seral stages). However a proper assessment of suitable habitat depends not only on a detailed description of the vegetation, but on data on special habitats (especially for riparian areas). The incompatibility between the available data and the variables required to run the models made it necessary to resort to estimates of potential suitable habitat based only on variables such as vegetation series and seral stage.

The results from the model runs are only an estimate of the amount of potential suitable habitat present in the watershed and should be used with caution. Determining the actual amount of preferred habitat for each species or species assemblage would require more detailed habitat data than the models and current databases provide. Updating and refining the habitat suitability models, (including field research to determine species habitat requirements), and tailoring vegetation data collection is required. No estimates of population size, distribution, or density were made based on estimates of potential suitable habitat from these model runs.

Coniferous forest is the dominant vegetation type within the Smith River Basin, with the majority of the remaining late-successional habitat in State and Federal ownership. Eighty-seven percent (287,393 acres) of the Smith River NRA is covered by coniferous forests. There are 161,444 (49 percent) acres of mature old-growth forests on the Smith River NRA, 92,051 (28 percent) acres of which are considered suitable (specific vegetation types) for the northern spotted owl and other late-successional forest species. Extensive logging on the private land to the west of the NRA has converted most of the late-successional forests to early seral stages, agricultural lands, or housing. Within the NRA, over 58,000 acres have been harvested by former private landowners and the Forest Service. Most of this harvest was concentrated in the late-seral Douglas-fir and Douglas-fir/tanoak series. Approximately 50 percent of this series and seral stage has been harvested within the NRA.

Habitat pattern and configuration has been altered in the Smith Basin as a result of natural and human disturbance. Wildfire, flood, wind throw, insect infestations, disease, timber harvest, mining, and development have all had an impact on the quality and quantity of habitat for many species within the basin, especially those associated with late-successional habitat. The amount and patch size of late-successional habitat affects the diversity, abundance, and distribution of late-seral dependent species. In addition, patch shape is very important as the amount of interior habitat appears to have the highest chance of influencing species survival (Picton 1979). Long, narrow patches may have no effective interior

habitat. Fragmentation and insufficient patch size and shape can lead to a reduction in available food and cover, and increased mortality by predation and competition by invasive edge species.

The distribution and connectivity of patches across the landscape affect the daily and seasonal movement of animals. Connectivity of habitat provides for movement of adults searching for mates and for juveniles dispersing from natal territories. Juveniles disperse in a random direction, so maintenance of stands to facilitate dispersal in all directions increases the likelihood of survival. Movement of adults increases the genetic fitness of the overall population and allows for recolonization of abandoned areas. Therefore, connectivity between patches is of concern.

Late-successional dependent species may have different patch size requirements; however, in general larger patch sizes with low perimeter to interior ratio are preferred due to the greater amount of interior habitat. Combining the mid-mature, late-mature, and old-growth seral stages, the greatest frequency of patch-size (91 percent) is in patches of 200 acres or less, with the lowest patch-size frequency (4 percent) occurring in patches of 500 acres or greater. However, the Forest Plan considers the North Zone of the Six River National Forest, which includes the Smith River NRA and a portion of the Orleans Ranger District, to have the lowest degree of fragmentation, relatively speaking, on the Forest. In addition, 57 percent of the North Zone has patch shapes with high interior acres.

Late-Successional Reserves

The Smith River National Recreation has 76,463 acres protected in five late-successional reserves. This includes two large late-successional reserves, two extensions from a larger late-successional reserve in Oregon, and one small 255-acre reserve. In addition, two 100-acre core areas have been mapped around known northern spotted owl pairs.

Northern spotted owls, and other late-successional dependent species, are strongly associated with dense, mature and old-growth forests. These habitats provide the structural characteristics required by these species for food, cover, nest sites, and protection for weather and predation. Desired late-successional forest characteristics (ROD, B-5) are: 1) multi-species and multi-layer assemblages of trees, 2) moderate to high accumulations of large logs and snags, 3) moderate to high canopy closure 4) moderate to high numbers of damaged, deformed trees, 5) moderate to high accumulations of fungi, lichens, and bryophytes. There are 39,593 acres of late-successional habitat in the Smith River late-successional reserves. The amount of acres meeting these criteria per late-successional reserve is listed in Table 39.

Table 39. Amount of suitable habitat by late-successional reserve in acres

Seral Stage	Haines #RC 303	Siskiyou #RC 302	Rowdy Creek #RC 250	Monkey Creek #RC 250	Rock Creek #RC 301
Mid Mature	8973	5320	1579	210	179
Late Mature	1160	411	145	150	5
Old Growth	9815	9867	1206	757	50
Total	19,948	15,598	2930,	1117	234

Roads

Roads have impacts on wildlife and wildlife habitat that are disproportionate to the area of land they occupy (Beebee 2013). The Forest road system and human use of those roads has altered terrestrial species habitat and populations. Negative effects can include habitat loss and fragmentation; avoidance or road kill; poaching, and over harvest. Roads can also undermine ecological processes through

fragmentation of wildlife populations, restrictions of wildlife movements, and the disruption of gene flow and metapopulation dynamics (Jackson 2000).

Roads and past timber harvest are major causes of forest habitat fragmentation on the Forest. Habitat quality can be reduced by breaking up blocks of continuous habitat and increasing the amount of edge habitat, which is detrimental to species that require interior habitat conditions (Marcot et al. 1994, Hann et al. 1997). Edge effects create unsuitable habitat along the boundary due to changes in microclimate (increased sunlight and temperatures, drying, etc.), which causes forest-dependent species shift activity away from edges, reducing abundance along edges (Semlitsch et al. 2007).

Natural populations of animal species are affected by the presence of roads by avoidance by some species and attractiveness to them by others. Roads and their adjacent environment qualify as a distinct habitat and can result in a change at the species, population, and landscape scales. Some species are associated with edges, including those that use roads as corridors to find food. Roads facilitate invasion by exotic species or of native species attracted to new habitat areas (i.e. nest parasites) that can disrupt the structure and function of the ecosystem (Jackson 2000; Gucinski et al. 2001).

Roads can also act as a barrier to terrestrial species movement. When populations of less mobile species (such as amphibians) become subdivided, there is increased risk of local extinction of subpopulations, reduced potential for recolonization after a local extinction, and a progressive loss of local biodiversity (Gucinski et al. 2001).

Road access can also facilitate harassment, in terms of noise disturbance during the breeding season. Harassment can lead to reductions in productivity or displacements in population distribution or habitat use. Many species also are vulnerable to increased mortality from highway accidents with motorized vehicles (Trombulak and Frissel 2000).

Most native terrestrial species located on the Forest are adversely affected by road-associated factors that can degrade habitats or increase mortality. In landscapes with moderate to high road density, habitats are likely underused by many species that are negatively affected by road-associated factors. Road use may cause a reduction of daily movements, which limits habitat use and home range size (Cole et al. 1997, Rowland et al. 2005).

The presence of roads on the landscape represents a direct loss of habitat. For example, one mile of road, with the associated clearing width (anywhere from 18 to 50 feet), can remove from 2 to 6 acres per mile respectively. In some cases, this could represent a permanent loss if the road surface prevents vegetation from becoming re-established. Also, as long as the road is in use and is not revegetated the habitat is lost to use by wildlife species.

In addition to habitat effects, use of District roads can generate noise that can disturb wildlife in adjacent areas. Ongoing public use and continued routine road maintenance is expected, although the project is not expected to substantially add to the existing or foreseeable use of roads in the area. The habitat along these roads is expected to continue to be of low to moderate value for many wildlife species due to high ambient noise level and human presence, and potential habitat degradation through the removal of dead and dying trees that pose a safety hazard.

The project area encompasses the Smith River Basin and is comprised of the North, Middle, and South forks of the Smith River. The North Fork is considered a barrier to dispersal of late-successional habitat species because of the low amounts of cover and small diameter trees naturally occurring on the serpentine soils characteristic of the area. Dispersal to the north is primarily outside of the serpentine area to the northwest along Rowdy Creek and to the northeast along Patrick's Creek and the upper reaches of

the Middle Fork into the Illinois Valley. Private land on the coast may present a barrier because of the high levels of timber harvest and development. Patches of second growth on these lands make dispersal through this area possible. The Middle Fork of the Smith along with Highway 199 and occasional development create a wide, non-forested strip that may preclude many species from crossing. Movement along the Middle Fork to the east or west is more likely for some species. Dispersal to the south and southeast in the South Fork Smith is facilitated by the Siskiyou Wilderness, which provides large, unfragmented patches of mature and old-growth habitats along the western edge of the Siskiyou Mountains.

The North Fork drainage has experienced little change in natural processes as a result of land management activities. It has the lowest miles of roads/routes in the basin, approximately 128.33 miles of Forest Service system roads and unauthorized routes and a one county road, with a current road density of 0.81 miles/mi2. The Middle Fork drainage has the highest current road density (2.46 miles/mi2), due to over 100 miles of State and County roads. There are also 229 miles of NFTS roads and unauthorized routes. The South Fork drainage is the largest of all three forks, with 350 miles of NFTS roads and unauthorized routes with a current road density of 1.93 miles/mi2 mile.

Threatened Species

Northern Spotted Owl

Northern spotted owls are strongly associated with dense mature and old-growth Douglas-fir forests. These habitats provide the structural characteristics required by the owls for food, cover, nest sites, and protection from weather and predation. Suitable spotted owl habitat, as defined by the Forest Service, is composed of mature timbered stands having multi-layered conditions, a canopy closure of 60 percent or greater and obvious decadence (large, live coniferous trees with deformities--such as cavities, broken tops, and dwarf-mistletoe infections). The overstory should be comprised of trees 21 inches dbh or greater and should comprise at least 40 percent of the total canopy closure (Forest Plan).

Habitats used for foraging in this portion of the owls range can be highly variable. Owls will often foraging in younger stands with high prey densities and access to prey (Carey et al. 1992; Rosenberg and Anthony 1992; Thome et al. 1999; Irwin et al. 2012). Foraging also often occurs in stands of nesting and roosting habitat with mature and old-forest characteristics. High quality foraging habitat characteristics can include multi-layered conifer stands with high canopy closure, forest patches within riparian zones of low-order streams and edges between conifer and hardwood forest stands; brushy openings and dense young stands or low-density forest patches within a mosaic of mature and older forest habitat; concentrations of downed woody debris and sufficient open space below the canopy for northern spotted owls to fly.

There are an estimated 92,051 acres of suitable spotted owl nesting/roosting habitat and 87,147 acres of potential foraging on the Smith River National Recreation Area. This comprises approximately 50 percent of the total land base of the NRA. Approximately 40,000 acres of what is considered nesting/roosting habitat for the northern spotted owl is in the mid-mature seral stage. Although this seral stage meets the size class and canopy cover requirements, it often lacks multi-layered conditions, large snags, downed logs, and trees with deformities necessary to meet the habitat needs of this species. Therefore the suitable habitat available to northern spotted owl and other late-successional species may be less than what is estimated here.

In 2010 and 2011 all on the Six Rivers National Forest northern spotted owl known activity centers were surveyed to determine current status of the activity centers. Using the information gained, a review was conducted in 2012 with concurrence of USFWS assessing the validity of the 374 established activity

centers on the Forest. Valid activity centers were determined based on the criteria presented in the Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls (USFWS 2011). During this review, 208 activity centers were considered valid and kept in their original location. A further 99 were moved from their original locations. Activity center locations were moved when the original location had been mapped incorrectly; when there were new detections that were higher in the hierarchy within activity center locations (i.e. new pair location replaced a territorial single location); or in the case of habitat disturbance or loss at the site center, activity center locations were moved to the nearest high quality habitat. Finally 67 activity centers were dropped or retired because they either did not meet the minimum criteria and should not have been delineated as an activity center in the first place or extensive habitat loss occurred throughout the activity center (e.g. fire). A total of 307 activity centers of varying reproductive and occupancy status are now recognized by the Forest.

There are 44 known northern spotted owl activity centers in the Smith River NRA. Of these, 34 have been confirmed as pairs and 10 as territorial singles (recorded from both historical records and survey data). There are 59,527 acres of northern spotted owl critical habitat designated in the watershed, 41,027 acres of which overlap with the late-successional reserves.

Marbled Murrelet

Murrelets nest from southeast Alaska to central California in old-growth and mixed stands of mature and old-growth coniferous forests within 50 miles of ocean waters (Carter and Sealy 1986). Marbled murrelets have been found to nest in mature and old-growth stands containing Douglas-fir, coast redwood, western red cedar, mountain hemlock, Sitka spruce, and western hemlock (Quinlan and Hughes 1990; Singer et al. 1991, 1995; Hamer and Nelson 1995; Nelson et al.2006). Generally, the habitat characteristics associated with marbled murrelet nesting are large trees with large branches or deformities which provide nesting platforms. This usually does not develop until trees are 150 to 175 years of age. The nesting platforms typically require some degree of protective canopy surrounding them. This protective canopy may come from the nest tree itself or from surrounding trees. The number of platforms, moss depth and vertical and horizontal cover of the nest appear to be key factors in marbled murrelet nest site selection (Nelson et al. 2006). The farthest inland nest in California was located 18 miles (29 km) from the ocean (Hamer and Nelson 1995). The majority of murrelet observations to date have been below 2,000 feet elevation, with some detections between 2,000 and 3,000 feet.

On the Smith River NRA, multiple birds were seen on multiple days in 1988 at the same Myrtle Creek location, during a distribution study at inland California sites conducted by Pacific Southwest Range and Experiment Station (Paton and Ralph 1988, Paton and Ralph 1990). Sightings were approximately 10 miles (18.5 km) inland. Vegetation in this drainage is predominantly old-growth Douglas-fir and Port-Orford-cedar. Nearby old-growth redwood stands at Jedediah Smith Redwoods State Park had higher activity levels. Surveys in the Myrtle Creek drainage were repeated in 1992, 1995, and 1996, with no detections. In 1992, an immature murrelet was found on the ground on private property near Panther Flat campground, approximately 15 miles (28 km) inland. There was no suitable nesting habitat in the vicinity of the bird, so it is not known where it came from (possibly blown off course during the large storm event the previous day). There were no other sightings on the Smith River NRA during survey efforts across the District between 1992 and 1996. In 1997, multiple sightings of marbled murrelet occurred in old growth Douglas-fir and redwood forest in the Copper Creek drainage on the western edge of the Smith River NRA. A radar study conducted by ABR, Inc. (Blaha and Cooper 2011) recorded 14 murrelet-like detections in 2010 and 17 murrelet-like detections in 2011 on the Smith River NRA. There were no audio-visual observations to confirm these, however, a suite of characteristics were used to minimize contamination of the dataset. These detections occurred in the Rowdy Creek drainage to the north and Blue Creek drainage to south. There have been no detections beyond the old-growth habitats on the western edge of the Forest.

The entire Smith River Basin occurs within Zone 1 for the marbled murrelet as described in the FEMAT Report. There are approximately 84,325 acres of potentially suitable murrelet habitat within the Smith River National Recreation Area, 9,894 in the North Fork, 23,346 in Middle Fork, and 51,085 in the South Fork sub-basins of the Smith. However, survey results show that key habitat areas appear to occur closer to the coast in old-growth (predominantly redwood) forests. Therefore the suitable habitat available to marbled murrelet may be less than what is estimated here. The State and National Redwoods Parks contain most of this key habitat remaining in the Basin.

Marbled murrelet critical habitat was revised in 2009 with a final rule published on October 5, 2011 (USDI 2011). Located primarily on Federal land, and to a lesser extent on State, county, city and private lands, this final critical habitat rule provides protection requirements under section 7 of the Endangered Species Act for federally regulated activities. There are 76,463 acres of marbled murrelet critical habitat on the NRA. Marbled murrelet critical habitat is entirely within late-successional reserve boundaries.

Proposed Species

California Wolverine

In North America, wolverines occur within a wide variety of alpine, boreal, and arctic habitats, including boreal forests, tundra, and western mountains throughout Alaska and Canada. The southern portion of the species' range extends into the contiguous United States, including high-elevation alpine portions of Washington, Idaho, Montana, Wyoming, California, and Colorado (USFWS 2011). Wolverines do not appear to specialize on specific vegetation or geological habitat aspects, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season (USFWS 2011). The requirement of cold, snowy conditions means that, in the southern portion of the species' range where ambient temperatures are warmest, wolverine distribution is restricted to high elevations, while at more northerly latitudes; wolverines are present at lower elevations and even at sea level in the far north (USFWS 2011).

Female wolverines use natal dens that are excavated in snow. Consistent snow cover greater than 5 feet deep appears to be a requirement for natal denning, because it provides security for offspring and buffers cold winter temperatures. Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States (USFWS 2011).

During the winter of 1993, the Six Rivers National Forest, in conjunction with the California Department of Fish and Game and the University of California Berkeley, conducted a cooperative wolverine study on multiple Forests and ownerships in potential or historic habitat areas using baited infrared camera stations. The Six Rivers stations were located in areas with historic incidental sightings or in potentially suitable habitat. No wolverines were detected. In 1996 and 1997 a systematic track plate survey was conducted across the Six Rivers National Forest, also with no detections of wolverine. Since that time numerous camera and track plate stations have been used across the NRA all without detections of wolverine.

There are no verified records of wolverine on the Forest: however, incidental sightings of wolverines have been reported on the NRA. Most of the sightings occurred in the 1970s and 80s. Considering their need for persistent spring snow cover, preference for subalpine and alpine habitats or climatic conditions and their aversion to human disturbance, wolverines are only likely to occur on the NRA at higher elevation area in the Siskiyou Wilderness.

Candidate Species

Pacific fisher

In northern California, fishers occupy mid-elevation, multi-storied mature and old-growth conifer, mixed conifer and mixed-conifer hardwood forests with contiguous canopy cover. Closed canopies (>50 percent) are typically selected but fishers will use areas of low to moderate canopy cover (25-40 percent) if there is sufficient understory (Lofroth et al. 2010). They do not occur in high-elevation alpine or subalpine habitats.

Foraging habitat varies with primary prey species. Since fishers in California prey primarily on small to medium-sized mammals (woodrats, squirrels etc.) they will use forests with hardwood components which provide mast for prey, structurally complex structures near the forest floor (brushy understories) and high abundance of downed, woody debris (Lofroth et al. 2010).

Thompson et al. (2007) determined that based on data from a 1994-1995 soot track plate study, 1996-1997 telemetry study and a 2002-2003 mark-site study fishers appear to be abundant and well distributed across “the managed forests of extreme northwest California”. An exact population estimate and distribution for the Forest are still unknown.

Systematic surveys occurred across the Forest in 1999 (Carroll, Zielinski, and Noss 1999) show the highest probability of detections centered on the Trinity River, with detection probability decreasing the farther north and south you go.

Survey results in the past indicate that the species occupies roughly 20 percent of its historical range in Washington, Oregon and California (USDI 2010). The population in the southern Oregon/northern California region may be the largest remaining in the western states (Zielinski et al. 2000, Powell and Zielinski 1994) with population estimates of 4,616 individuals (USDI 2010) and is critical to the restoration of fishers elsewhere in California and Oregon (Zielinski, pers. com.).

Incidental fisher sightings have occurred on the NRA, during all months of the year. Track plate and camera surveys have been conducted across the District on numerous occasions since 1993. Numerous detections of fisher have occurred.

Fisher occupy similar habitat to that of the northern spotted owl. There are approximately 92,051 acres of suitable fisher habitat on the NRA.

Forest Service Sensitive

Bald Eagle

Nesting habitat is composed of low elevation, open (less than 40 percent canopy cover), mature/old-growth stands near permanent lakes and free-flowing rivers. Nest trees are usually the largest in the stand, offer an unobstructed view of a body of water and are on prominent points of topography (USDI 1986). In California, 87 percent of nest sites are within 1 mile (1.6 km) of water (Zeiner et al. 1990). Platform stick nests are built in large trees (greater than 36 inches dbh) with open branches, but some foliage usually shades the nest (Anthony et al. 1982). Nests are usually located within the top 20 feet of the tree. Tree height, size, branch form and location appear to be more important than species. Adults use the same breeding territory, usually the same nest, year after year but may use alternate nest sites as well (USDI 2006).

Much of the forested land within one quarter mile of the Smith River is potentially suitable bald eagle habitat. Eagles feed primarily on warm-water fish in the summer, salmon and carrion in the winter. They

typically winter roost in groups of several individuals. The last known breeding record was in the early 1970s in the Rowdy Creek drainage, according to California Department of Fish and Game records; however bald eagles have been sighted in recent years during the breeding season. Subsequent surveys for nesting bald eagles have been sporadic and no nesting bald eagles have since been found on the NRA. A study evaluating the habitat suitability in Del Norte, Humboldt, Mendocino and Sonoma counties found that the Redwood State Parks in the Smith Basin offered the best overall combination of coastal nesting and foraging habitat in the entire study area (Detrich and Garcelon 1986). Other locations along the Smith also offered fair to good nesting opportunities. The limited nesting attempts in the Smith Basin may be tied to declining spring and summer anadromous fish runs.

Northern Goshawk

Goshawks appear to select habitat by forest structure rather than by tree species (Greenwald et al. 2005). Goshawks prefer mature and old-growth forests that are at middle to high elevations, have relatively dense canopy closures (>40 percent), have usually little understory vegetation, are in close proximity to riparian corridors, and have flat or moderately sloping terrain (Crocker-Bedford and Chaney 1988; Zeiner et al. 1990 USDI 1998, Daw and DeStefano 2001). Adequate canopy cover appears to be critical for occupancy and productivity of nest sites. Canopy cover is likely used to protect chicks from predation and for thermoregulation.

In California, goshawks select ponderosa pine, mixed-conifer and mixed-conifer hardwood stands with trees that are >20in dbh (Greenwald et al. 2005). Moderate and high quality habitats contain abundant large snags, logs and woody debris that provide prey habitat and plucking perches (Hall 1984, Weber 2006). Interspersed forest age classes, meadows or other openings near forested areas may be found within the home range and used for foraging. It has also been suggested that goshawks choose foraging sites based on prey availability (which relates to habitat structure and preferred foraging methods) rather than by prey abundance. Suitable habitat is used for nesting, foraging, and roosting.

Historically, there have been numerous sightings of goshawks on the NRA, with at least three reproductive territories known to occur. However, the most recent territory was discovered in 1992. Comprehensive surveys of nest territories across the entire Forest in 1994 and 1995 determined that none of the nesting territories, or any of the suitable habitat within a one mile radius of the territories, were occupied. Additional surveys have been conducted on 45,000 to 50,000 acres (project-level surveys) with no detections. The status of the goshawk on the NRA is unknown at this time.

Goshawks occupy similar habitat to that of the northern spotted owl. There are approximately 92,051 acres of suitable habitat on the NRA.

Humboldt Marten

Humboldt martens (*Martes americana humboldtensis*) utilize old-growth Douglas-fir stands on non-serpentine soils and late seral stage mixed-conifer and Western white pine and lodgepole pine on serpentine soils (Slauson et al. 2009). Martens require a dense shrub layer (>60 percent) in both habitat types for foraging and concealment from predators (Slauson and Zielinski, 2009).

The first verified Humboldt marten in 50 years was detected in 1996 by Zielinski and Golightly on the NRA in Del Norte County. Since then, survey work has been conducted using track plates, baited photograph stations and radio telemetry to determine the size and range of the population. The current occupied area is 267 square miles extending from the mouth of Rock Creek on the Smith River in the SNRA south to the Bluff Creek watershed on Orleans Ranger District, and east to the headwaters of Rock Creek drainage of the Klamath River in Siskiyou County (Slauson et al. 2009b). This area encompasses

lands on the Smith River National Recreation Area, Orleans Ranger District, Ukonom Ranger District, redwood state parks and private timber lands.

Current population estimates by Slauson et al. (2009b) show a decline from 2000-01 surveys from approximately 60 individuals to approximately 40 individuals in 2008. These estimates were determined using a multi-state occupancy method utilizing detection data from 2000-01 and 2008 surveys. These surveys did not cover all possible habitat but the population is likely to be <100 individuals.

Pacific Western (Townsend's) Big-eared Bat

The Townsend's big-eared bat occurs in a variety of habitats, and is strongly correlated with the availability of caves or cave-like roosting habitat. It has been found from sea level to 8700 foot elevation (Humphrey and Kunz 1976, Kunz and Martin 1982, Pierson and Rainey 1994) and occurs in xeric to mesic habitats; although throughout much of its range it occurs in mesic habitats characterized by deciduous and coniferous forests (Kunz and Martin 1982). The species tends to avoid open grassland when foraging and flying to and from roost sites. In coastal California, they prefer riparian habitats near streams and small tributaries, foraging along the edge of the forest (Fellers and Pierson, 2002). They have been observed at day roosts in cavities, created by decay or fire, of California bay (*Umbellularia californica*) and redwood. Because of this, it is difficult to define measurable habitat variables. The most limiting factor appears to be availability of suitable roost sites. They will use cave, mines and abandon buildings for maternity roosts and hibernacula, and have been known to use abandon bridges and large tree cavities for day and night roosts (Idaho State Conservation Effort 1995). They do not roost in crevices but rather on exposed surfaces, often close to the entrance of the cave making them extremely vulnerable to disturbance and may abandon a site with one human entry (Pierson et al. 1991). Factors in the decline of the species are disturbance, pesticide use, habitat loss, and roost destruction (Idaho State Conservation Effort 1995).

Little is known on the species abundance and distribution, although potentially suitable roost sites exist within the NRA. This species is known to roost in caves, mine shafts and abandoned buildings. No surveys have been conducted for this species; however, incidental sightings have been recorded.

Fringed Myotis

The fringed myotis is rare across its range but may be quite common locally from sea level to 1,950 meters (6,400 feet). It occurs in a wide range of habitats from desert scrub to high elevation coniferous forests (Pierson and Rainey, 1998). It uses open habitats, early successional stages, streams, lakes and ponds as foraging areas. They roost in snags, caves, mines, crevices and man-made structures (Zeiner et al. 1990).

Maternity and overwintering roosts have been most commonly reported in caves, buildings and mines. However, tree roosting has been observed in heavily forested environments in the northern part of the range (Pierson and Rainey, 1998).

Like other tree-roosting Myotis species, the fringed myotis switches roosts less than every two days on average (Weller and Zabel, 2001) and requires a large number of suitable roost sites in an occupied area. Roost choice appears to vary throughout the range of the fringed myotis with snags exhibiting greater importance in California, New Mexico and Arizona and a heavy reliance on rock crevices in South Dakota, Oregon and Washington (Lacki and Baker, 2007). Weller and Zabel (2001) found that fringed myotis prefer large (>30cm dbh) snags in decay class 2 or 3 that are the tallest in the stand and have reduced canopy cover (necessary for thermoregulation). This is consistent with the few snags reported by Lacki and Baker (2007) who also found that female the fringed myotis in arid climates used rock crevices

that were 1-4cm wide and located in non-forested areas. It is unclear if the fringed myotis actually prefers rock crevices in these areas or if there is a deficient amount of quality snags.

Little is known on the species abundance and distribution, although potentially suitable roost sites exist within the NRA. This species is known to roost in caves, mine shafts and abandoned buildings. No surveys have been conducted for this species; however, incidental sightings have been recorded.

Foothill Yellow-legged Frog

The yellow-legged frog occupies larger streams and rivers, typically on the edges of rocky pools formed during low water. This species is most common in streams that have a rocky or gravelly substrate, that are large enough to develop bar and backwater habitat (Jones et al. 2005). There are numerous sighting records of yellow-legged frogs within the NRA. The frog is found in most of the tributaries to the Smith, and has been frequently been recorded during herptile and fisheries surveys.

Western Pond Turtle

Turtles are often concentrated in low gradient and low velocity sections of creeks and rivers, especially in sloughs, side channels, and backwater areas. They prefer creeks that have deep, still water and sunny banks. They utilize a variety of upland habitats for overwintering as well as the network of creek, ponds, and ephemeral bodies of water associated with riverine systems (Reese and Welsh 1997, Bondi 2009). Hatchlings are small and cryptic, and require shallow, edge water areas with minimal currents. Adults concentrate in deep-water pools with lots of underwater debris (USDA 2013). The pond turtle has been sighted in the Smith River estuary and Lower Smith River, but there have been no sightings anywhere else on the Smith River. There have been no surveys conducted for the specifically for turtles, however, there is little suitable habitat for the species on the NRA, due to the geology and geomorphology of the Smith River.

Northern Red-legged Frog

Red-legged frogs are inhabitants of moist forests and riparian areas usually below 2876 feet (850 meters) in elevation. They are generally found near permanent bodies of quiet water including small ponds, quiet pools along streams, springs, lakes, and marshes (Nussbaum et al. 1983, Stebbins 2003). Deep pools are necessary for many aspects of the red-legged frogs' life cycle. Intermittent streams and pools must retain water long enough for larvae to metamorphose. Red-legged frogs require cool water. The northern red-legged frog has the lowest upper (21º C) and lower (4 ° C) lethal embryonic temperatures of any North American ranid frog.

Red-legged frogs require dense riparian vegetation that is contact with, or close to water 2.3 feet (0.7 meters) or greater in depth (Hayes and Jennings 1988). At sites with adult red-legged frogs, vegetation typically shades a substantial portion of water surface area right at or near water level (ibid.)

Habitat for this species is limited on the NRA. Incidental sightings have been recorded in the northwestern edge of the NRA and the Yurok Experimental Forest.

Southern Torrent Salamander

This species is found from near sea level to 4820 feet in elevation (Welsh and Lind 1996). Preferred habitat is described as cold, permanent seeps and small streams with a rocky substrate (Jennings and Hayes 1994). Welsh and Lind (1996) found that this species is associated with cold, clear headwater to low-order streams with loose, coarse substrates in humid forest habitats with large conifers, abundant moss, and greater than 80 percent canopy cover. These conditions are mostly found within late seral stage forests.

Little is known on the species abundance and distribution, although suitable habitat exists within the NRA. This species has been recorded during herptile and fisheries surveys.

Mardon Skipper

The mardon skipper inhabits early seral stage open grasslands that are dominated by short-statured grasses or sedges and forbs and are generally free of overstory trees and shrubs. Areas as small as 0.5 acres will support small populations of mardon skippers but most areas consist of mixed forest-grassland complexes with some connectivity between habitat patches for dispersal and movement of individuals. In northwestern California and southwestern Oregon, mardon skipper is found in small meadows (0.5-5 acres) dominated by Idaho fescue in sparse Jeffrey pine forests. Sites are 7-15 miles inland from the Pacific coast and range in elevation from 1,500-3,000 feet. These sites are associated with serpentine based soils and are within the fog belt (USDI 2012).

The mardon skipper was petitioned for listing in 2002 and placed on the candidate list as “warranted but precluded” (evaluation delayed due to limited funding that was dedicated to court-ordered or higher priority listings). On September 4, 2012, the USFWS released a 12-month finding which determined that listing was not warranted at this time. An increased survey effort from 2003-2011 found an additional 165 sites which was a dramatic increase from the 14 documented sites in the 2002 petition.

There are two main population sites on the NRA, each containing multiple meadows. One of the sites is believed to be the largest population in California based on a one day count of 204 individuals in 2008 (Black and Mazzacano 2010). Monitoring at these sites over the last 5 years indicate that populations at the sites on the NRA appear to be stable.

Western Bumblebee

Western bumblebees require open meadows with rich supplies of floral resources with continuous blooming from spring to autumn. Western bumblebees have been observed taking nectar from a variety of flowering plants.

Historically the western bumblebee ranged from central California north to Alaska, east through Alberta and western South Dakota and southward into Arizona and New Mexico. Surveys in 2007 found isolated populations in northern Arizona, Utah, Nevada and northern California. The species has declined dramatically in the west (Washington, Oregon, California, British Columbia and Alaska) since the mid-1990s with most areas seeing a complete absence of the species from 2002-2007. Although the general distribution trend is steeply downward, especially in the west coast states, some isolated populations in Oregon and the Rocky Mountains appear stable (Rao et al. 2011, Koch and Williams 2012). The overall status of populations in the west is largely dependent on geographic region: populations west of the Cascade and Sierra Nevada mountains are experiencing dire circumstances with steeply declining numbers, while those to the east of this dividing line are more secure with relatively unchanged population sizes. The reasons for these differences are not known.

Probable causes for the population decline include the spread of *Nosema bombi* and other diseases from *B. occidentalis* and *B. impatiens* colonies that were raised in Europe and then shipped back to the U.S. and used commercially, loss of genetic diversity, livestock grazing, urban development, habitat fragmentation, habitat encroachment due to fire suppression and pesticide use (Thorp et al. 2008).

There is little information regarding the western bumblebee on the Forest. There are currently no detections recorded for the Forest. The nearest confirmed detections were of two workers in 1997 in the Marbled Mountain Wilderness on Klamath National Forest.

Management Indicator Species

Per the requirements in 36 CFR 219, the Forest Plan identified management indicator species to be used in Forest level planning. These species were selected because their population changes were believed to indicate the effects of management activities on fish and wildlife populations.

Under the Six Rivers Forest Plan, project level analysis of effects to management indicator species involves an analysis of the effects (direct, indirect, and cumulative) to habitat. The Six Rivers Forest Plan does not require population monitoring or surveys at the project level. Project level impacts to habitat are then related to broader scale (generally Forest, and in some cases, bioregional) population and/or habitat trends.

The Smith River NRA is diverse in both its geology and vegetation. Many habitat-types occur throughout the basin. These include small lakes, bogs, seeps, springs, talus slopes, meadows, caves, cliffs, and hardwood stands.

Bog/Seep/Spring/Wet Meadow Assemblage

There are 15 wet meadows, 19 springs, and 5 bogs that are known to occur within the Smith NRA. Southern torrent salamanders are known to occur in the watershed. It is likely that other suitable habitat for this species remains unmapped. Special microhabitat characteristics are required by the species dependent on these habitat types. Most are especially sensitive to variations in water temperature, chemistry, siltation levels, adjacent forested habitats, down woody debris, and disturbance.

Snag Assemblage

Snag density estimates are based on ecology plot and ecological unit inventory information for series and seral stages across the Forest. Jimerson (1989) found snag densities within the Smith River NRA varied by size class and conifer series; however this difference was not statistically significant for all categories. Snag densities per acre are as follows (Table 40):

Table 40. Snag densities per acre by series and size class

Series	Small	Medium	Large
Tanoak/Douglas-fir	13.64	1.6	1.57
Port-Orford-cedar	25.00	2.86	3.07
White fir	26.86	2.57	2.31
Red fir	40.32	3.36	2.48

Large snags are defined as greater than or equal to 20 inches dbh and greater than 50 feet tall. Medium snags are defined as greater than or equal to 20 inches dbh and from 20-50 feet tall. The small snag category includes all other snags.

All the species in the assemblage are known to occur in the watershed except the white-headed woodpecker.

Marsh/Lake/Pond Assemblage

There are 32 ponds, 7 lakes, 2 vernal pools, and 24 man-made ponds located throughout the Smith River NRA. All three species of this assemblage are known to occur in the watershed, however the pond turtle has only been found in the Smith River Estuary and Lower Smith. Special microhabitat characteristics are required by the species dependent on these habitat types. As with other aquatic species, all are extremely sensitive to any changes in microhabitat temperature, chemistry or siltation levels.

River/Stream/Creek Assemblage

There are approximately 3,100 miles of streams within the Smith River NRA. The amount of suitable habitat for this assemblage varies between and within drainages. All the species in this assemblage are known to occur in the watershed. These species are also sensitive to variations in microhabitat conditions.

Downed Woody Debris Assemblage

There is approximately 255,472 acres of potentially suitable habitat for this assemblage in the Smith River NRA. The model is based on the size and density of downed woody debris in two different decay classes, (as well as vegetation and seral stage for the dusky-footed woodrat): decay class 1 or 2 with greater than 2 logs per acre (20" bottom diameter and 30 foot length) or decay class 3-5 with greater than 1 log per acre (12" bottom diameter and 20 foot length). The information on log densities is based on expected densities per series/seral stage and therefore may over-estimate the number of acres providing adequate habitat. Also the number of acres meeting both decay class requirements is unknown, but it is unlikely that all the potential acres meet both requirements.

There are no detections of arboreal salamanders and only a single detection of a clouded salamander (unverified) within the watershed, despite extensive surveys for herptile and mollusk species. Dusky footed woodrats have been detected numerous times during track-plate surveys. Blue grouse (now known as the sooty grouse) and western fence lizard are also common in the watershed.

Black Oak /White Oak Assemblage

There are less than 500 acres of black oak/white oak stands on the Smith River NRA. It is unlikely that this small, isolated amount of habitat supports populations of the species listed in the assemblage. All the species have been sighted on the NRA, although most are uncommon on the NRA.

Tanoak/Madrone Assemblage

Tanoak and Pacific madrone are common components of the Douglas-fir/mixed evergreen type. Tanoak is valuable to wildlife because it produces acorns and has a greater abundance of natural cavities compared to conifers. Madrone produces berries which provide an important food source for wildlife, particularly in the fall. It also frequently used as a nest tree by cavity excavators. There are 119,795 acres of this habitat type in the Smith River NRA. Tanoaks need to be mature (30-40 years of age) before they can produce acorns, therefore the analysis included the early-mature to old-growth seral stages. All three species of this assemblage occur on the NRA.

Individual Species

Individual management indicator species include the northern spotted owl, marten, fisher, pileated woodpecker, black bear, and black-tailed deer. The northern spotted owl, marten and fisher were addressed above under threatened, endangered and sensitive species.

Pileated Woodpecker

Pileated woodpecker occupies dense, mature forests with large numbers of snags, stumps, and logs for cover, and prefers areas with at least 40 percent canopy cover; it frequents Douglas-fir, white fir, and red fir more than other conifers (CWHR 2008). It may also use younger forests that have scattered large dead trees (Bull and Jackson 1995). Pileated woodpecker prefer multi-storied mature and late-successional conifer forests with moderate to dense canopy closure, and scattered patches of large snags and downed logs. This species forages primarily in dead wood, therefore both standing snag and downed log densities are important indicators of habitat quality (USDA 2009). There are 92,051 acres of potentially suitable habitat for this species within the watershed. Snag estimates per seral stage may over-estimate the actual

amount of habitat capable of supporting pileated woodpeckers. There are numerous sighting of this species on the NRA.

Black-tailed Deer

The black-tailed deer is a widespread, common to abundant resident distributed throughout most of California, except in deserts and intensively farmed areas without cover (Ingles 1965, CWHR 2008). The species occurs in early to intermediate successional stages of most forest, woodland, and brush habitats. Habitat preferences include a mosaic of various-aged vegetation that provides woody cover, meadow and shrubby openings, and free water.

The Six Rivers is located within North Coast Management Unit (DAU-1). Black-tailed deer populations on are monitored by California Department of Fish and Wildlife (CDFW). The CDFW has noted that the North Coast Management Unit is the most productive in terms of deer/square mile. The deer population has been considered stable in recent years with population surveys yielding census counts from 170,000 to 250,000 individuals.

A deer herd management plan for the Smith River deer herd was developed by the Department of Fish and Game in 1984. The plan identified population goals, key wintering and fawning areas, and management for these critical areas. The population at that time was estimated to be close to 3,200 animals. The Patrick's Creek and Big Flat areas were identified as key habitat areas.

Black Bear

The black bear is a widespread, common to uncommon resident occurring from sea level to high mountain regions. The black bear occurs in dense, mature stands of forest habitats, and feeds in a variety of habitats including brushy stands of forest, valley foothill riparian, and wet meadow. This species requires large trees and various cavities and hollows in trees, snags, stumps, logs, uprooted trees, talus slopes, or in the earth for denning. These habitat elements must be in mature, dense vegetation, and on sheltered slopes for adequate denning (CWHR 2008).

The black bear was selected as an management indicator species because of its habitat association with mid and late–successional stages of all forest vegetation types, meadow types, and it’s large down log requirements. The CDFW monitors black bear populations within northwestern California. CDFW estimates the population in 2012 to be approximately 25,000 to 30,000 animals and reports the population to be increasing, which is reflected in the increase of bear tags being issued in recent years. The northern portion of California is continually noted by CDFW as supporting the highest density of bears of any area within the western United States. Black bear are commonly sighted on the NRA.

Survey and Manage Species

The Survey and Manage standards and guidelines were developed to benefit species closely associated with late-successional and old-growth forests. Species include plant (vascular and non-vascular), fungi, terrestrial mollusk, aquatic mollusk, and vertebrate species. The Survey and Manage provision for each species would apply to the range (or portion of the range) of that species, to the particular habitats where concerns exists for species’ persistence, and where management activities are considered “habitat-disturbing” for that species (USDA/USDI 2001). Projects are not considered “habitat-disturbing” if they do not occur in potential habitat for the species being considered or if they occur in previously disturbed areas. Projects are exempt from pre-project surveys if the project will not disturb potential habitat.

In addition, pre-project surveys are not required when the Pechman exemptions apply; which are provisions ordered by the court in Northwest Ecosystem Alliance et al. v. Mark E. Rey et al., No. 04-844P, (W.D. Wash. October 10, 2006). Pre-project surveys are not required in the following situations:

1. Thinning projects in stands younger than 80 years old;
2. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
3. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions; and
4. The portions of projects involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and manage requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph.

No construction or reconstruction will occur under this project; therefore, no changes in the distribution or abundance of habitat available to Survey and Manage species are anticipated. Reducing road/route miles across the District will result in a reduction of fragmentation across the landscape.

Neotropical Migrant Bird Species

The Six Rivers National Forest Plan meets the objectives of maintaining wildlife populations by providing the variety, distribution and amount of wildlife habitat types necessary to achieve this goal. Implementation of the project is in accordance with the objectives within Executive Order 13186 of which outlines responsibilities of federal land management agencies to the Migratory Bird Treaty Act.

Within the National Forests, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales and ensuring that bird conservation is addressed when planning for land management activities.

As part of the Travel Management process, the District conducted an analysis of existing roads and trails. No construction or reconstruction will occur under this project; therefore, no changes in the distribution or abundance of habitats available to migratory birds are anticipated. Reducing road/route miles across the District will result in a reduction of fragmentation and disturbance across the landscape.

Other Species of Concern/Interest

Elk

Roosevelt elk inhabit old-growth forest, semi-open forests with patches of meadows (Schroer et al. 1986), and prairies and grasslands (McCoy 1986, Grenier 1990). Although now found in significant numbers, the Roosevelt Elk (*Cervus canadensis*) approached extinction in the early 20th century, with no more than a few dozen animals in California. Roosevelt elk were extirpated from the Smith River NRA in the early 1900s due to over-hunting for mining camps. Elk have gradually recolonized the coastal areas and now occur in numbers where CDFW is allowing limited hunting. Limited sightings of elk have occurred on the NRA, although the herd has not yet reestablished consistent use areas.

Environmental Consequences

Effects Common to All Species Groups

Motor vehicle use of roads and trails affects wildlife, directly and indirectly, in a variety of ways that can generally be placed into three categories: effects resulting from human-caused injury or mortality; effects resulting from changes in behavior (disturbance-based); and effects resulting from habitat modification or loss.

Direct effects due to disturbance include causing individuals to move or alter behavior. Species could be disturbed during the breeding or nesting season. Disturbance could lead to reduced time on the den or nest, thereby threatening eggs, or young, with exposure. Disruption of foraging activities of nocturnal species is considered to be unlikely, since most vehicle use occurs during daylight hours. Use of routes near occupied sites could affect reproductive functions. Summer et al. (2011) found that traffic noise is not the main cause of the negative relationship between bird species richness/abundance and proximity to road but rather that traffic mortality may be the main mechanism causing the reduction.

Hayward et al. (2011) examined the effects of acute off-highway vehicle use on the northern spotted owl by measuring hormone levels. Prolonged (1 hour or more of motorcycle exposure simulating “Enduro” events) was found to increase stress hormones in the short term, although results varied with the age, sex, and body condition of the owls. Hayward et al. (2011) also found that the tendency for traffic exposure to increase stress hormones over the long-term was offset by nutritional gains associated with proximity to roads. Northern spotted owl close to noisy roads fledged significantly fewer young than northern spotted owl near quiet roads, indicating that routine traffic exposure may decrease northern spotted owl reproductive success over time; however, the relationship of stress hormones to body condition indicated that impacts from roads may be lessened when habitat quality is higher. It is important to note that areas that would be suitable for OHV or Enduro events (loop routes or long trails) are very limited on the NRA, and do not occur in suitable late-successional species habitats. Speeds of vehicles on the NRA traveling on ML2 roads and motorized trails are generally low. The potential for human-caused injury or mortality from this type of vehicle use is limited.

Effects to a species may occur as a result of noise disturbance when vehicle activity occurs within suitable habitat or adjacent to known sites. Effects due to noise disturbance are not expected in areas where noise levels generated by the project do not exceed ambient levels. Many unauthorized routes (especially short routes leading to dispersed recreation sites) are associated with designated ML2 or ML3 roads which receive regular motorized use, and individuals using habitat within 0.25 miles of these roads are expected to be habituated to vehicle noise. In addition, all unauthorized routes have received some level of repeated motorized use for years. Noise associated with motorized use of these routes is considered ambient.

A review and synthesis of the scientific information regarding noise disturbance and avian species completed by the USFWS indicates that the likelihood of noise-generating activities adversely affecting northern spotted owls and marbled murrelets is a function of activity-generated noise levels relative to pre-project noise levels (USDI 2006). When project-generated noise levels reach or exceed a threshold noise level above ambient noise level, an individual may respond with an adverse behavioral response, physiological responses, or both. Research indicates that spotted owls may flush in response to noise generated within 200 feet, but almost never flush at longer distances (Delaney et al. 1997). Data also suggest that continued presentation of noise disturbance might cause birds to habituate to some types of noise. Research indicates that stress hormones increased in male northern spotted owls when they were located less than 0.25 mile from major logging roads (Wasser et al. 1997). Long-term effects from elevated stress hormones are unknown, but physical condition or reproductive success may be compromised (Marra and Holberton 1998, in Gaines et al. 2003). Delaney et al. (1999) corroborates the USFWS recommended 400 meter (0.25 miles) zone around spotted owl nest sites as a reasonable distance for evaluating significant effects for noise disturbance activities. There are few data available to indicate how, or to what degree, other late-successional forest species are affected by noise disturbance, although anecdotal information suggests they are fairly tolerant of chronic (ongoing or ambient) noise and less tolerant of acute (sudden or unexpected) noise. Zielinski et al. (2007) found that OHV use does not affect marten distribution or habitat occupancy. Summer et al. (2011) found that traffic noise is not the main cause of the negative relationship between bird species richness/abundance and proximity to roads. Due

to lack of data on other species, the 0.25 miles effects zone for noise disturbance used for northern spotted owl will be utilized for this group as a whole.

Road and route densities are an important variable in habitat capability models. For certain species, the Forest Plan describes desired road densities to achieve certain levels of habitat capability. For fisher, road density of less than 0.5 miles of road per square mile is considered high capability and from 0.5 to 2 mi/mi2 is consider moderate capability. For marten, less than 1 mi/ mi2 is considered high capability and from 1 to 2 mi/ mi2 is consider moderate capability. Less than 1.5 mi/mi2 is considered to provide high capability for black tailed deer and 1.5– 3 mi/mi2 is considered to provide moderate capability. Anything over 2 to 3 mi/mi2, depending on the species, is low or marginal capability.

Threatened, Endangered, Proposed, Candidate and Forest Service Species

Direct, indirect and cumulative effects to threatened, endangered, proposed, candidate and Forest Service sensitive wildlife species are disclosed in the Biological Assessment/Evaluation (BA/BE) for this project, (located in the project file) and the results are summarized here. The BA/BE contains the list of species considered and suitable habitat descriptions on which effects of proposed projects are evaluated.

All action alternatives will reduce road densities of ML 1, 2 roads and unauthorized routes across the NRA. Reducing road density across the District will reduce fragmentation of habitat as the decommissioned roads revegetate, increase patch size, reduce sedimentation in stream channels, and reduce disturbance and direct mortality. In addition, cross-country travel is prohibited under the Smith River NRA Act of 1990. An overall reduction of road densities across the NRA will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration. The project will benefit threatened, endangered, proposed, candidate or Forest Service sensitive species.

Management Indicator Species, Neotropical Migrant Species, Survey and Manage Species, and other wildlife species of concern

The direct, indirect, and cumulative effects to management indicator species, neotropical migrant, and Survey and Manage were analyzed in project specialist reports for this project (located in the project file) and the results are summarized here. The proposed project is in compliance with these standards and guidelines set forth in the Forest Plan for management indicator species, neotropical migrant, Survey and Manage, and other wildlife species.

No construction or reconstruction will occur under this project; therefore, no changes in the distribution or abundance of habitat available to management indicator species, neotropical migrant, and Survey and Manage species are anticipated. All action alternatives will reduce road densities of ML 1, 2 roads and unauthorized routes across the NRA. Reducing road density across the District will reduce fragmentation of habitat as the decommissioned roads revegetate, increase patch size, reduce sedimentation in stream channels, and reduce disturbance and direct mortality. In addition, cross-country travel is prohibited under the Smith River NRA Act of 1990. An overall reduction of road densities across the NRA will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration. The project will benefit management indicator species, neotropical migrant, Survey and Manage, and other wildlife species.

Alternative 1, No Action

Direct and Indirect Effects

Under the No Action alternative, there would be no reduction in road density across the District, and no habitat restoration would occur for threatened, endangered, proposed, candidate or Forest Service

sensitive, management indicator, neotropical migrant, Survey and Manage, and other wildlife species from decommissioning roads and restoring unauthorized routes. Disturbance and direct mortality from on-going road use would not be eliminated on removed roads. Sedimentation into streams would not be reduced.

The No Action alternative will not remove any habitat at culvert sites on roads to be decommissioned or restored; therefore, there will be no short term habitat degradation. No noise disturbance would occur from decommissioning/restoration activities during the breeding season.

Cumulative Effects

The No Action alternative will not provide beneficial cumulative effects because no road reduction or restoration activities would occur. The No Action alternative will continue to degrade conditions for sensitive resources.

Alternatives 3, Modified Proposed Action

Direct and Indirect Effects

Alternative 3 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 30 percent (Table 41). Road density will be reduced from 1.59 mi/ mi^2 to 1.34 mi/mi^2 across the District, varying from 0.68 mi/ mi^2 to 2.07 mi/ mi^2 depending on the 5th field watershed (Table 42). No unauthorized routes will be added in late-successional habitat or within 0.25 miles of known threatened, endangered, sensitive or proposed nest or other sensitive sites. Approximately 137 (82.8 miles) NFTS roads/unauthorized routes will be removed (decommissioned or restored) from within known northern spotted owl territories.

Table 41. Comparison of alternatives in regards to effects to wildlife

Indicator	Alternative 1	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Miles/number of routes of UAR added in late successional habitat	0	0	0.42 mi (3 routes)	0	0.16 mi (3 routes)
Miles of UAR added in within 0.25 mile of known threatened, endangered, sensitive or proposed nest or sensitive sites	2.41 (existing)	0	0	0	0
Miles/number of routes of UAR added in late-successional reserves / marbled murrelet critical habitat[a]	0	1.47 (4)	0.2 (6)	0.24 (2)	1.93 (8)
Miles /number of routes of UAR added in northern spotted owl critical habitat	0	1.74 (1)	2.31 (6)	1.74 (1)	1.92 (5)
Miles /number of routes system roads and UAR decommissioned/restored in late-successional reserves and marbled murrelet critical habitat	0	52.17(94)	50.48 (98)	60.13 (112)	60.13 (112)
Miles/number of system roads and UAR decommissioned/restored in northern spotted owl critical habitat	0	48.44 (94)	45.3 (91)	52.1 (97)	52.1 (97)
Miles/number of system roads and UAR decommissioned/restored in northern spotted owl territories	0	82.79 (137)	83.4 (146)	105.58 (174)	80.39 (157)
Total percent restored/decommissioned	0	30%	29%	47%	36%

UAR=unauthorized route;

a – Late-successional reserves and marbled murrelet critical habitat share the same boundaries

Marbled murrelet critical habitat boundaries overlap late-successional reserves on the NRA. Unauthorized routes are proposed to be added to the system within late-successional reserve/marbled murrelet critical habitat units (4 routes for a total of 1.47 miles) and northern spotted owl critical habitat (1 route for 1.74 miles). None of the roads to be added to the system occur in suitable habitat for the marbled murrelet, northern spotted owl or habitat for other late-successional habitat species. A total of 94 roads/roads/routes (52.17 miles) will be removed from late-successional reserves/marbled murrelet critical habitat units and 94 roads/routes (48.44 miles) will be removed from northern spotted owl critical habitat units.

Road Density

Road/route densities are an important variable in habitat capability models. For certain species, the Forest Plan describes desired road densities to achieve certain levels of habitat capability. For fisher, a road density of less than 0.5 miles of road per square mile is considered high capability and from 0.5 to 2 mi/mi2 is consider moderate capability. For marten, less than 1 mi/ mi^2 is considered high capability and from 1 to 2 mi/ mi^2 is consider moderate capability. Less than 1.5 mi/ mi^2 is considered to provide high capability for black tailed deer and 1.5– 3 mi/ mi^2 is considered to provide moderate capability. Anything over 2 to 3 mi/ mi^2, depending on the species, is low or marginal capability.

Alternative 3 reduces road density in all 5th field watersheds (Table 42). None of the 5th field watersheds exceed 3 mi/ mi^2 and only the Middle Fork Smith, which contains State Highway 199 and multiple Del Norte County roads, exceed 2 miles per square mile (2.07 mi/ mi^2) under Alternative 3.

Depending on the species, moderate to high habitat capability is maintained in all watersheds except for the Middle Fork Smith (2.07 mi/ mi^2), which would be considered moderate to low capability for the fisher and marten.

Table 42. Road density by 5th field watershed of the Smith River basin

5th Field Watershed	Alternative 1 Road Density (mi/mi^2)	Alternative 3 Road Density (mi/mi^2)	Alternative 4 Road Density (mi/mi^2)	Alternative 5 Road Density (mi/mi^2)	Alternative 6 Road Density (mi/mi^2)
Lower Smith River	0.97	0.79	0.78	0.62	0.73
Middle Fork Smith River	2.46	2.07	2.11	1.8	2.02
North Fork Smith River	0.81	0.68	0.72	0.6	0.67
South Fork Smith River	1.93	1.67	1.7	1.44	1.64

Includes road miles on non-Forest Service lands

No new road construction or reconstruction will occur under as part of this alternative. Therefore, no additional northern spotted owl or marbled murrelet critical habitat will be removed through road construction and no suitable habitat will be removed for any threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, Survey and Manage, or other wildlife species. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 78 culverts would be removed across the District under Alternative 3; therefore approximately a total of 8 acres of vegetation may be removed. This is an overestimate of the amount of vegetation to be removed in that not all culverts sites have been brushed in, the roads may occur in naturally open areas, or the amount of vegetation to be removed is less than one-tenth of an acre.

Suitable habitat for threatened, endangered, proposed, candidate or Forest Service sensitive species may be degraded by removing understory vegetation for late-successional species such as the northern spotted owl, but impacts are negligible in any one area and the habitat will remain suitable post-project.

Minor vegetation removal at culvert sites may degrade suitable habitat for management indicator, neotropical migrant, Survey and Manage and other wildlife species by removing habitat for early-seral stage species such as the winter wren; however the removal will be negligible in any one area. Culvert removal activities could also affect threatened, endangered and sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Primary constituent elements of the 2012 northern spotted owl critical habitat units include forested stands that qualify as nesting/roosting, foraging, or dispersal habitat. One-tenth acre of brush and small diameter trees will be removed in any one area. Impacts to northern spotted owl critical habitat units will be negligible. Although multi-layered conditions contributing to nesting/roosting and foraging habitat may be slightly reduced by removing brush and understory trees less than 11” dbh, it will result in a reduction of fragmentation and long-term improvement of primary constituent elements in the critical habitat units. northern spotted owl critical habitat unit primary constituent elements may be modified but current habitat function will be maintained in all treatment areas.

Primary constituent elements of marbled murrelet critical habitat units include: 1) individual trees with potential nesting platforms, and 2) forested areas within 0.5 miles of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site-potential tree height. It is possible that some saplings (up to 11” dbh) could be removed at culvert removal sites, and that they could be ½ site potential tree height; however the amount removed at any one site (one-tenth acre) is negligible. The project will not change the function of nesting habitat in marbled murrelet critical habitat units.

Due to different habitat requirements, not all culvert sites occur in suitable or critical habitat for all threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, and other wildlife species, therefore 16 acres of habitat degraded under this alternative greatly overestimates the amount of habitat potentially affected for any one species.

Roads and routes determined to have a high risk to aquatic resources will need to have the restoration work accomplished during the breeding season of the northern spotted owl, marbled murrelet, and Forest Service sensitive species such as the pacific fisher, marten, and northern goshawk. Work on these roads will include decommissioning and upgrading. Delaying implementation until after the breeding season would mean that the project would require multiple years of work on the same road, which greatly increases the cost of the work as well as increasing risk to aquatic resources. Therefore no limited operating period will be imposed on activities proposed for these roads. Not all the roads or all segments of each road are within 0.25 of suitable habitat for these species. Several roads are within the Highway199 corridor, and have high ambient noise levels. Others occur in unsuitable habitat. There are 76 high risk roads to be removed or upgraded 70 of which that occur, at least partially, in suitable nesting habitat for northern spotted owl, marbled murrelet, and Forest Service sensitive species. Of these 45 will be decommissioned or downgraded to ML 1 (culverts removed and drainage issues corrected) and 31 will be upgraded (larger culverts installed and drainage issues corrected) under Alternative 3.

Determinations:

Alternative 3 of the Smith River Transportation Management project was determined to have minimal habitat effects (maximum 8 acres across the District at culvert removal sites) with long term benefits of reducing road density across the District.

Alternative 3 would result in a 30 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration.

Implementation of Alternative 3 during the breeding season will cause noise disturbance for the northern spotted owl, marbled murrelet, and Forest Service sensitive species. The project is likely to adverse effects on the northern spotted owl and marbled murrelet in the short term from noise disturbance during the breeding season but will have long-term beneficial effects through the reduction of road density. The project is not likely to adversely affect northern spotted owl and marbled murrelet critical habitat units through minor habitat removal at culvert sites, and is expected to improve habitat conditions in the long term through the reduction of road density.

Alternative 3 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species.

Alternative 3 complies with the Six Rivers Forest Plan in regards to the analysis of effects to management indicator, neotropical migrant, Survey and Manage, and other wildlife species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), all action alternatives will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include the reduction of habitat fragmentation for threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, and other wildlife species reducing road-related disturbance and mortality for wildlife, increasing Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

The trend for wildlife habitats on the NRA is towards recovery. Since the 1990 NRA Act, timber harvest on the NRA has been limited and geared towards habitat restoration (thinning in younger stands). Fuel treatments have been developed to help restore natural fire regimes and to protect existing habitats. Since the NRA Act in 1990, 884 acres have been thinned using silvicultural prescriptions designed to accelerate the development of late-successional habitat characteristics and 1,966 acres have had fuels reduction treatments completed to restore habitat through the reintroduction of fire and to protect existing late-successional habitat from stand-replacing fire. The Big Flat Vegetation Management and Fuels Reduction Project is currently being implemented and will improve habitat conditions on 1084 acres and protect existing habitat through fuels reduction on 735 acres. The Gordon Hill Vegetation Management and Fuels Reduction Project is currently in the planning stage, and proposes to improve habitat conditions on 1515 acres and protect existing habitat through fuels reduction on 1273 acres. Accelerating the development of late-successional characteristics, and protecting existing habitat, will move the area toward the historic range of variability of seral stages and reduce fragmentation of habitat, improving habitat conditions for threatened, endangered, sensitive or proposed, management indicator, neotropical migrant, Survey and Manage and other wildlife species.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 3 of the Smith River NRA project will remove 134.31 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment (noise disturbance) while decommissioning or upgrading roads. However, reducing road density across the District will reduce fragmentation of habitat, increase patch

size, and reduce disturbance and direct mortality. In the long term, the project will benefit threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, elk, and other wildlife species.

Alternative 4

Direct and Indirect Effects

Alternative 4 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 29 percent (Table 41). Road density will be reduced from 1.59 mi/ mi^2 to 1.34 mi/mi2 across the District, varying from 0.72 mi/ mi^2 to 2.11 mi/ mi^2 depending on the 5th field watershed (Table 42). Three routes (0.42 mi total) will be added within late-successional habitat. These sites are dispersed camping sites that have been in use for many years. No unauthorized routes will be added within 0.25 miles of known threatened, endangered, sensitive or proposed nest or other sensitive sites. Approximately 146 (83.4 miles) NFTS roads/unauthorized routes will be removed (decommissioned or restored) from within known northern spotted owl territories.

Unauthorized routes are proposed to be added to the system within late-successional reserve/marbled murrelet critical habitat units (6 routes for a total of 0.2 miles) and northern spotted owl critical habitat (6 route for 2.31 miles). None of the roads to be added to the system occur in suitable habitat for the marbled murrelet, northern spotted owl or habitat for other late-successional habitat species. A total of 98 roads/roads/routes (50.48 miles) will be removed from late-successional reserve/marbled murrelet critical habitat units and 91 roads/routes (45.3 miles) will be removed from northern spotted owl critical habitat units under this alternative.

Road Density

Alternative 4 reduces road density in all 5th field watersheds (Table 42). None of the 5th field watersheds exceed 3 mi/ mi^2 and only the Middle Fork Smith, which contains State Highway 199 and multiple Del Norte County roads, exceed 2 miles per square mile (2.11 mi/ mi^2) under Alternative 4.

Depending on the species, moderate to high capability is maintained in all watersheds except for the Middle Fork Smith (2.11 mi/ mi^2), which would be considered moderate to low capability for the fisher and marten.

No new road construction or reconstruction will occur under as part of this project and only minor expansion of existing open areas (brush removal) will occur under Alternative 4 to allow parking along 17N49 which does not occur in potential habitat for any wildlife species of concern. Therefore, no additional northern spotted owl or marbled murrelet critical habitat will be removed through road construction and no suitable habitat will be removed for any threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, Survey and Manage, or other wildlife species. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 82 culverts would be removed across the District under Alternative 4; therefore approximately a total of 8 acres of vegetation may be removed. This is an overestimate of the amount of vegetation to be removed in that not all culverts sites have been brushed in, the roads may occur in naturally open areas, or the amount of vegetation to be removed is less than one-tenth of an acre.

Suitable habitat for threatened, endangered, proposed, candidate or Forest Service sensitive species may be degraded by removing understory vegetation for late-successional species such as the northern spotted owl, but impacts are negligible in any one area and the habitat will remain suitable post-project.

Minor vegetation removal at culvert sites may degrade suitable habitat for management indicator, neotropical migrant, Survey and Manage and other wildlife species by removing habitat for early-seral stage species such as the winter wren; however the removal will be negligible in any one area. Culvert removal activities could also affect threatened, endangered, sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Primary constituent elements of the 2012 northern spotted owl critical habitat units include forested stands that qualify as nesting/roosting, foraging, or dispersal habitat. One-tenth acre of brush and small diameter trees will be removed in any one area. Impacts to northern spotted owl critical habitat units will be negligible. Although multi-layered conditions contributing to nesting/roosting and foraging habitat may be slightly reduced by removing brush and understory trees less than 11” dbh, it will result in a reduction of fragmentation and long-term improvement of primary constituent elements in the critical habitat units. northern spotted owl critical habitat units primary constituent elements may be modified but current habitat function will be maintained in all treatment areas.

Primary constituent elements of marbled murrelet critical habitat units include: 1) individual trees with potential nesting platforms, and 2) forested areas within 0.5 miles of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site-potential tree height. It is possible that some saplings (up to 11” dbh) could be removed at culvert removal sites, and that they could be ½ site potential tree height; however the amount removed at any one site (one-tenth acre) is negligible. The project will not change the function of nesting habitat in marbled murrelet critical habitat units.

Due to different habitat requirements, not all culvert sites occur in suitable or critical habitat for all threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, and other wildlife species, therefore 8 acres of habitat degraded under this alternative greatly overestimates the amount of habitat potentially affected for any one species.

Roads determined to have a high risk to aquatic resources will need to have the restoration work accomplished during the breeding season of the northern spotted owl, marbled murrelet, and Forest Service sensitive species such as the pacific fisher, marten, and northern goshawk. Work on these roads will include decommissioning and upgrading. Delaying implementation until after the breeding season would mean that the project would require multiple years of work on the same road, which greatly increases the cost of the work as well as increasing risk to aquatic resources. Therefore no limited operating period will be imposed on activities proposed for these roads. Not all the roads or all segments of each road are within 0.25 of suitable habitat for these species. Several roads are within the Highway199 corridor, and have high ambient noise levels. Others occur in unsuitable habitat. There are 76 high risk roads to be removed or upgraded 70 of which that occur, at least partially, in suitable nesting habitat for northern spotted owl, marbled murrelet, and Forest Service sensitive species. Of these, 43 will be decommissioned or downgraded to ML 1 (culverts removed and drainage issues corrected) and 33 will be upgraded (larger culverts installed and drainage issues corrected) under Alternative 4.

Determinations:

Alternative 4 of the Smith River Travel Management project was determined to have minimal habitat effects (maximum 8 acres across the District at culvert removal sites) with long term benefits of reducing road density across the District.

Alternative 4 would result in a 30 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration.

Implementation of Alternative 4 during the breeding season will cause noise disturbance for the northern spotted owl, marbled murrelet, and Forest Service sensitive species. The project is likely to adverse effects on the northern spotted owl and marbled murrelet in the short term from noise disturbance during the breeding season but will have long-term beneficial effects through the reduction of road density. The project is not likely to adversely affect northern spotted owl and marbled murrelet critical habitat units through minor habitat removal at culvert sites, and is expected to improve habitat conditions in the long term through the reduction of road density.

Alternative 4 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species.

Alternative 4 complies with the Six Rivers Forest Plan in regards to the analysis of effects to management indicator, neotropical migrant, Survey and Manage, and other wildlife species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), all action alternatives will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include the reduction of habitat fragmentation for threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, and other wildlife species reducing road-related disturbance and mortality for wildlife, increasing Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

The trend for wildlife habitats on the NRA is towards recovery. Since the 1990 NRA Act, timber harvest on the NRA has been limited and geared towards habitat restoration (thinning in younger stands). Fuel treatments have been developed to help restore natural fire regimes and to protect existing habitats. Since the NRA Act in 1990, 884 acres have been thinned using silvicultural prescriptions designed to accelerate the development of late-successional habitat characteristics and 1,966 acres have had fuels reduction treatments completed to restore habitat through the reintroduction of fire and to protect existing late-successional habitat from stand-replacing fire. The Big Flat Vegetation Management and Fuels Reduction Project is currently being implemented and will improve habitat conditions on 1084 acres and protect existing habitat through fuels reduction on 735 acres. The Gordon Hill Vegetation Management and Fuels Reduction Project is currently in the planning stage, and proposes to improve habitat conditions on 1515 acres and protect existing habitat through fuels reduction on 1273 acres. Accelerating the development of late-successional characteristics, and protecting existing habitat, will move the area toward the historic range of variability of seral stages and reduce fragmentation of habitat, improving habitat conditions for threatened, endangered, sensitive or proposed, management indicator, neotropical migrant, Survey and Manage and other wildlife species.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 4 of the Smith River NRA project will remove 133.28 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment (noise disturbance) while decommissioning or upgrading roads. However, reducing road density across the District will reduce fragmentation of habitat, increase patch size, and reduce disturbance and direct mortality. In the long term, the project will benefit threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, elk, and other wildlife species.

Alternative 5

Direct and Indirect Effects

Alternative 5 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 47 percent (Table 41). Road density will be reduced from 1.59 mi/ mi^2 to 1.17 mi/ mi^2 across the District, varying from 0.6 mi/ mi^2 to 1.8 mi/ mi^2 depending on the 5th field watershed (Table 42). No unauthorized routes will be added in late-successional habitat or within 0.25 miles of known threatened, endangered, sensitive or proposed nest or other sensitive sites. Approximately 174 (105.58 miles) NFTS roads/unauthorized routes will be removed (decommissioned or restored) from within known northern spotted owl territories.

Unauthorized routes are proposed to be added to the system within late-successional reserve/marbled murrelet critical habitat units (2 routes for a total of 0.24 miles) and northern spotted owl critical habitat (1 route for 1.74 miles). None of the roads to be added to the system occur in suitable habitat for the marbled murrelet, northern spotted owl or habitat for other late-successional habitat species. A total of 112 roads/roads/routes (60.13 miles) will be removed from late-successional reserve/marbled murrelet critical habitat units and 97 roads/routes (52.1 miles) will be removed from northern spotted owl critical habitat units under this alternative.

Road Density

Alternative 5 reduces road density in all 5th field watersheds (Table 42). None of the 5th field watersheds exceed 2 mi/mi2 under Alternative 5. Depending on the species, moderate to high capability is maintained in all watersheds.

No new road construction or reconstruction will occur under as part of this project. Therefore, no additional northern spotted owl or marbled murrelet critical habitat will be removed through road construction and no suitable habitat will be removed for any threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, Survey and Manage, or other wildlife species. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 251 culverts would be removed across the District under Alternative 5; therefore approximately a total of 25 acres of vegetation may be removed. This is an overestimate of the amount of vegetation to be removed in that not all culverts sites have been brushed in, the roads may occur in naturally open areas, or the amount of vegetation to be removed is less than one-tenth of an acre.

Suitable habitat for threatened, endangered, proposed, candidate or Forest Service sensitive species may be degraded by removing understory vegetation for late-successional species such as the northern spotted owl, but impacts are negligible in any one area and the habitat will remain suitable post-project.

Minor vegetation removal at culvert sites may degrade suitable habitat for management indicator, neotropical migrant, Survey and Manage and other wildlife species by removing habitat for early-seral stage species such as the winter wren; however the removal will be negligible in any one area. Culvert removal activities could also affect threatened, endangered and sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Primary constituent elements of the 2012 northern spotted owl critical habitat units include forested stands that qualify as nesting/roosting, foraging, or dispersal habitat. One-tenth acre of brush and small diameter trees will be removed in any one area. Impacts to northern spotted owl critical habitat units will be negligible. Although multi-layered conditions contributing to nesting/roosting and foraging habitat

may be slightly reduced by removing brush and understory trees less than 11” dbh, it will result in a reduction of fragmentation and long-term improvement of primary constituent elements in the critical habitat units. northern spotted owl critical habitat units primary constituent elements may be modified but current habitat function will be maintained in all treatment areas.

Primary constituent elements of marbled murrelet critical habitat units include: 1) individual trees with potential nesting platforms, and 2) forested areas within 0.5 miles of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site-potential tree height. It is possible that some saplings (up to 11” dbh) could be removed at culvert removal sites, and that they could be ½ site potential tree height; however the amount removed at any one site (one-tenth acre) is negligible. The project will not change the function of nesting habitat in marbled murrelet critical habitat units.

Due to different habitat requirements, not all culvert sites occur in suitable or critical habitat for all threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, and other wildlife species, therefore 25 acres of habitat degraded under this alternative greatly overestimates the amount of habitat potentially affected for any one species.

Roads determined to have a high risk to aquatic resources will need to have the restoration work accomplished during the breeding season of the northern spotted owl, marbled murrelet, and Forest Service sensitive species such as the pacific fisher, marten, and northern goshawk. Work on these roads will include decommissioning and upgrading. Delaying implementation until after the breeding season would mean that the project would require multiple years of work on the same road, which greatly increases the cost of the work as well as increasing risk to aquatic resources. Therefore no limited operating period will be imposed on activities proposed for these roads. Not all the roads or all segments of each road are within 0.25 of suitable habitat for these species. Several roads are within the Highway199 corridor, and have high ambient noise levels. Others occur in unsuitable habitat. There are 76 high risk roads to be removed or upgraded 70 of which that occur, at least partially, in suitable nesting habitat for northern spotted owl, marbled murrelet, and Forest Service sensitive species. Of these, 52 will be decommissioned or downgraded to ML 1 (culverts removed and drainage issues corrected) and 24 will be upgraded (larger culverts installed and drainage issues corrected) under Alternative 5.

Determinations:

Alternative 5 of the Smith River Travel Management project was determined to have minimal habitat effects (maximum 25 acres across the District at culvert removal sites) with long term benefits of reducing road density across the District.

Alternative 5 would result in a 47 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration.

Implementation of Alternative 5 during the breeding season will cause noise disturbance for the northern spotted owl, marbled murrelet, and Forest Service sensitive species. The project is likely to adverse effects on the northern spotted owl and marbled murrelet in the short term from noise disturbance during the breeding season but will have long-term beneficial effects through the reduction of road density. The project is not likely to adversely affect northern spotted owl and marbled murrelet critical habitat units through minor habitat removal at culvert sites, and is expected to improve habitat conditions in the long term through the reduction of road density.

Alternative 5 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species.

Alternative 5 complies with the Six Rivers Forest Plan in regards to the analysis of effects to management indicator, neotropical migrant, Survey and Manage, and other wildlife species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), all action alternatives will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include the reduction of habitat fragmentation for threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, and other wildlife species reducing road-related disturbance and mortality for wildlife, increasing Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

The trend for wildlife habitats on the NRA is towards recovery. Since the 1990 NRA Act, timber harvest on the NRA has been limited and geared towards habitat restoration (thinning in younger stands). Fuel treatments have been developed to help restore natural fire regimes and to protect existing habitats. Since the NRA Act in 1990, 884 acres have been thinned using silvicultural prescriptions designed to accelerate the development of late-successional habitat characteristics and 1,966 acres have had fuels reduction treatments completed to restore habitat through the reintroduction of fire and to protect existing late-successional habitat from stand-replacing fire. The Big Flat Vegetation Management and Fuels Reduction Project is currently being implemented and will improve habitat conditions on 1084 acres and protect existing habitat through fuels reduction on 735 acres. The Gordon Hill Vegetation Management and Fuels Reduction Project is currently in the planning stage, and proposes to improve habitat conditions on 1515 acres and protect existing habitat through fuels reduction on 1273 acres. Accelerating the development of late-successional characteristics, and protecting existing habitat, will move the area toward the historic range of variability of seral stages and reduce fragmentation of habitat, improving habitat conditions for threatened, endangered, sensitive or proposed, management indicator, neotropical migrant, Survey and Manage and other wildlife species.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 5 of the Smith River Travel Management project will remove 312.29 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment (noise disturbance) while decommissioning or upgrading roads. However, reducing road density across the District will reduce fragmentation of habitat, increase patch size, and reduce disturbance and direct mortality. In the long term, the project will benefit threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, elk, and other wildlife species.

Alternative 6

Direct and Indirect Effects

Alternative 6 will reduce overall ML 1, 2 road and unauthorized route miles on the NRA by 36 percent (Table 41). Road density will be reduced from 1.59 mi/ mi^2 to 1.32 mi/ mi^2 across the District, varying from 0.67 mi/ mi^2 to 2.02 mi/ mi^2 depending on the 5th field watershed (Table 42). Three routes (0.16 mi total) will be added within late-successional habitat. These sites are dispersed camping sites that have been in use for many years. No unauthorized routes will be added within 0.25 miles of known threatened, endangered, sensitive or proposed nest or other sensitive sites. Approximately 157 (80.39 miles) NFS roads/unauthorized routes will be removed (decommissioned or restored) from within known northern spotted owl territories.

Unauthorized routes are proposed to be added to the system within late-successional reserve/marbled murrelet critical habitat units (8 routes for a total of 1.93 miles) and northern spotted owl critical habitat (5 route for 1.92 miles). None of the roads to be added to the system occur in suitable habitat for the marbled murrelet, northern spotted owl or habitat for other late-successional habitat species. A total of 112 roads/roads/routes (60.13 miles) will be removed from late-successional reserve/marbled murrelet critical habitat units and 97 roads/routes (52.1 miles) will be removed from northern spotted owl critical habitat units under this alternative.

Road Density

Alternative 6 reduces road density in all 5th field watersheds (Table 42). None of the 5th field watersheds exceed 3 mi/ mi^2 and only the Middle Fork Smith, which contains State Highway 199 and multiple Del Norte County roads, exceed 2 miles per square mile (2.02 mi/ mi^2) under Alternative 6.

Depending on the species, moderate to high capability is maintained in all watersheds except for the Middle Fork Smith (2.02 mi/ mi^2), which would be considered moderate to low capability for the fisher and marten.

No new road construction or reconstruction will occur under as part of this project and only minor expansion of existing open areas (brush removal) will occur under Alternative 6 to allow parking along 17N49 which does not occur in potential habitat for any wildlife species of concern. Therefore, no additional northern spotted owl or marbled murrelet critical habitat will be removed through road construction and no suitable habitat will be removed for any threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, Survey and Manage, or other wildlife species. Culvert removal on roads/routes to be decommissioned or restored may require minor amounts of brush and smaller diameter trees (saplings up to 11” dbh) to be removed at culvert inlets and/or outlet (usually 0.1 acre or less); however, the removal will be negligible in any one area. Approximately 170 culverts would be removed across the District under Alternative 6; therefore approximately a total of 17 acres of vegetation may be removed. This is an overestimate of the amount of vegetation to be removed in that not all culverts sites have been brushed in, the roads may occur in naturally open areas, or the amount of vegetation to be removed is less than one-tenth of an acre.

Suitable habitat for threatened, endangered, proposed, candidate or Forest Service sensitive species may be degraded by removing understory vegetation for late-successional species such as the northern spotted owl, but impacts are negligible in any one area and the habitat will remain suitable post-project.

Minor vegetation removal at culvert sites may degrade suitable habitat for management indicator, neotropical migrant, Survey and Manage and other wildlife species by removing habitat for early-seral stage species such as the winter wren; however the removal will be negligible in any one area. Culvert removal activities could also affect threatened, endangered and sensitive and management indicator amphibians such as the yellow-legged frog and southern torrent salamander from heavy equipment use during project implementation; however channel restoration will benefit aquatic species in the long term.

Primary constituent elements of the 2012 northern spotted owl critical habitat units include forested stands that qualify as nesting/roosting, foraging, or dispersal habitat. One-tenth acre of brush and small diameter trees will be removed in any one area. Impacts to northern spotted owl critical habitat units will be negligible. Although multi-layered conditions contributing to nesting/roosting and foraging habitat may be slightly reduced by removing brush and understory trees less than 11” dbh, it will result in a reduction of fragmentation and long-term improvement of primary constituent elements in the critical habitat units. northern spotted owl critical habitat units primary constituent elements may be modified but current habitat function will be maintained in all treatment areas.

primary constituent elements of marbled murrelet critical habitat units include: 1) individual trees with potential nesting platforms, and 2) forested areas within 0.5 miles of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site-potential tree height. It is possible that some saplings (up to 11” dbh) could be removed at culvert removal sites, and that they could be ½ site potential tree height; however the amount removed at any one site (one-tenth acre) is negligible. The project will not change the function of nesting habitat in marbled murrelet critical habitat units.

Due to different habitat requirements, not all culvert sites occur in suitable or critical habitat for all threatened, endangered, proposed, candidate or Forest Service sensitive, management indicator, neotropical migrant, and other wildlife species, therefore 17 acres of habitat degraded under this alternative greatly overestimates the amount of habitat potentially affected for any one species.

Roads determined to have a high risk to aquatic resources will need to have the restoration work accomplished during the breeding season of the northern spotted owl, marbled murrelet, and Forest Service sensitive species such as the pacific fisher, marten, and northern goshawk. Work on these roads will include decommissioning and upgrading. Delaying implementation until after the breeding season would mean that the project would require multiple years of work on the same road, which greatly increases the cost of the work as well as increasing risk to aquatic resources. Therefore no limited operating period will be imposed on activities proposed for these roads. Not all the roads or all segments of each road are within 0.25 of suitable habitat for these species. Several roads are within the Highway199 corridor, and have high ambient noise levels. Others occur in unsuitable habitat. There are 76 high risk roads to be removed or upgraded 70 of which that occur, at least partially, in suitable nesting habitat for northern spotted owl, marbled murrelet, and Forest Service sensitive species. Of these, 46 will be decommissioned or downgraded to ML 1 (culverts removed and drainage issues corrected) and 30 will be upgraded (larger culverts installed and drainage issues corrected) under Alternative 6.

Determinations:

Alternative 6 of the Smith River Travel Management project was determined to have minimal habitat effects (maximum 17 acres across the District at culvert removal sites) with long term benefits of reducing road density across the District.

Alternative 6 would result in a 36 percent reduction of ML 1, 2 roads and UARs across the NRA which will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration.

Implementation of Alternative 6 during the breeding season will cause noise disturbance for the northern spotted owl, marbled murrelet, and Forest Service sensitive species. The project is likely to adverse effects on the northern spotted owl and marbled murrelet in the short term from noise disturbance during the breeding season but will have long-term beneficial effects through the reduction of road density. The project is not likely to adversely affect northern spotted owl and marbled murrelet critical habitat units through minor habitat removal at culvert sites, and is expected to improve habitat conditions in the long term through the reduction of road density.

Alternative 6 may impact individuals but will not cause a trend towards listing for any Forest Service sensitive species.

Alternative 6 complies with the Six Rivers Forest Plan in regards to the analysis of effects to management indicator, neotropical migrant, Survey and Manage, and other wildlife species.

Cumulative Effects

Regarding all the past impacts from land uses (mining, timber harvest, road constructions), all action alternatives will reduce the current effects from old failing roads, and will accelerate the recovery rate of disturbed areas and facilitate restoration by reducing road density across the District. The beneficial cumulative effects include the reduction of habitat fragmentation for threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, and other wildlife species reducing road-related disturbance and mortality for wildlife, increasing Port-Orford-cedar protection (important riparian canopy species), reducing the extent of hydrologic connectivity and road-related sedimentation to aquatic species habitat. All action alternatives are beneficial to sensitive resources when compared the cumulative effects from past actions.

The trend for wildlife habitats on the NRA is towards recovery. Since the 1990 NRA Act, timber harvest on the NRA has been limited and geared towards habitat restoration (thinning in younger stands). Fuel treatments have been developed to help restore natural fire regimes and to protect existing habitats. Since the NRA Act in 1990, 884 acres have been thinned using silvicultural prescriptions designed to accelerate the development of late-successional habitat characteristics and 1,966 acres have had fuels reduction treatments completed to restore habitat through the reintroduction of fire and to protect existing late-successional habitat from stand-replacing fire. The Big Flat Vegetation Management and Fuels Reduction Project is currently being implemented and will improve habitat conditions on 1084 acres and protect existing habitat through fuels reduction on 735 acres. The Gordon Hill Vegetation Management and Fuels Reduction Project is currently in the planning stage, and proposes to improve habitat conditions on 1515 acres and protect existing habitat through fuels reduction on 1273 acres. Accelerating the development of late-successional characteristics, and protecting existing habitat, will move the area toward the historic range of variability of seral stages and reduce fragmentation of habitat, improving habitat conditions for threatened, endangered, sensitive or proposed, management indicator, neotropical migrant, Survey and Manage and other wildlife species.

Since the signing of the Six Rivers Forest Plan in 1995, 51.6 miles of road have been decommissioned or downgraded to ML 1 on the NRA. Alternative 6 of the Smith River RMT project will remove 154.98 miles of road/routes and reduce road density across the NRA. Short-term negative impacts could occur from the use of heavy equipment (noise disturbance) while decommissioning or upgrading roads. However, reducing road density across the District will reduce fragmentation of habitat, increase patch size, and reduce disturbance and direct mortality. In the long term, the project will benefit threatened, endangered and sensitive, management indicator, neotropical migrant, Survey and Manage, elk, and other wildlife species.

Summary of Effects to Wildlife

As stated above, all action alternatives will reduce road densities of ML 1, 2 roads and unauthorized routes across the NRA, although the beneficial effects vary between alternatives. Table 43 rates each alternative relative to the indicators used to evaluate the impacts of the project to wildlife.

Table 43. Ranking of alternatives relative to wildlife indicator and overall benefit to wildlife

Indicator- Wildlife	Rankings of Alternatives for Each Indicator[a]				
	Alt 1	Alt 3	Alt 4	Alt 5	Alt 6
Miles/number of routes of UAR added in late successional habitat	5	5	1	5	4
Miles of UAR added in within 0.25 mile of known threatened, endangered, sensitive or proposed nest or sensitive sites	1	5	5	5	5
Miles/number of routes of UAR added in late-successional reserve/marbled murrelet critical habitat	5	2	3	4	1
Miles /number of routes of UAR added in northern spotted owl critical habitat	5	4	2	4	3
Miles /number of routes system roads and UAR decommissioned/restored in Late Successional Reserves and marbled murrelet critical habitat	1	3	2	5	5
Miles/number of system roads and UAR decommissioned/restored in northern spotted owl critical habitat	1	3	2	5	5
Miles/number of system roads and UAR decommissioned/restored in northern spotted owl territories	1	3	4	5	2
Total percent restored/decommissioned	1	3	2	5	4
Average rank by alternative for wildlife relative to the indicators	2.5	3.5	2.6	4.6	3.75
Overall ranking: most beneficial for wildlife	1	3	2	5	4

a - A score of 5 indicates the alternative is the best for wildlife relative to the indicator and a score of 1 indicates the alternative is the worst for wildlife relative to the indicator.

Reducing road density across the District will reduce fragmentation of habitat as the decommissioned roads revegetate, increase patch size, reduce sedimentation in stream channels, and reduce disturbance and direct mortality. In addition, cross-country travel is prohibited under the Smith River NRA Act of 1990. An overall reduction of road densities across the NRA will benefit wildlife in the short-term through elimination of noise disturbance on closed roads/routes and in the long-term through the reduction of fragmentation and habitat restoration. The project will benefit wildlife.

Botany

Of the Forest Service Regions, the Pacific Southwest Region contains the largest assemblage of sensitive plant species in comparison to its land base. Of the more than 8,000 vascular plant species occurring in California, well over half are known to occur on National Forest System (NFS) lands. This is due to topography, geography, geology and soils, climate, and vegetation, the same factors that account for the exceptionally high endemic flora of the State. Over 100 plant species are found only on NFS lands and nowhere else in the world (Powell 2001).

Management of plant, lichen, bryophyte and fungi species and habitat, and maintenance of a diversity of plant communities, is an important part of the mission of the Forest Service (Resource Planning Act of 1974, National Forest Management Act of 1976). Management activities on NFS lands must be planned and implemented so that they do not jeopardize the continued existence of threatened or endangered species or lead to a trend toward listing or loss of viability of Forest Service Sensitive species. In addition, management activities should be designed to maintain or improve habitat for rare plants and natural communities to the degree consistent with multiple-use objectives established in each Forest Plan. Key parts include: developing and implementing management practices to ensure that species do not become

threatened or endangered because of Forest Service actions; maintaining viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on NFS lands; and developing and implementing management objectives for populations and/or habitats of rare species. The Pacific Southwest Region has over 425 rare plant species to manage.

Management decisions related to motor vehicle travel can affect plant, lichen, bryophyte and fungi species, their habitats, and natural communities. Effects include, but are not limited to, death or injury to botanical resources and habitat modification, habitat fragmentation, and habitat quality, including increased risk of weed introduction and spread, change in hydrology, increased erosion, compaction, and sediment, risk to pollinators, loss of vegetation, over-collection, or other factors reducing or eliminating plant growth and reproduction (including Trombulek and Frissell 2000). The Forest Service provides a process and standard through which rare plants, lichen, bryophyte and fungi species receive full consideration throughout the planning process, reducing negative impacts on species and enhancing opportunities for mitigation by developing and implementing management objectives for populations and/or habitats of sensitive species. It is Forest Service policy to minimize damage to soils and vegetation, avoid harassment to wildlife, and avoid significant disruption of wildlife habitat while providing for public motor vehicle use on NFS lands (FSM 2353.03(2)).

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action as it affects botanical resources includes:

Endangered Species Act (ESA). It is forest service policy to analyze impacts to threatened or endangerd species to ensure management activities are not be likely to jeopardize the continued existence of a threatened or endangered species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical. This assessment is documented in a Biological Assessment (BA) and is summarized or referenced in this Chapter.

E.O. 13112 Invasive Species 64 FR 6183 (February 8, 1999). To prevent and control the introduction and spread of invasive species.

Fore**st Service Manual and Handbooks (FSM/H 2670)** - Forest Service Sensitive species are species identified by the Regional Forester for which population viability is a concern. It is forest service policy to analyze impacts to sensitive species to ensure management activities do not create a significant trend toward federal listing or loss of viability. This assessment is documented in a Biological Evaluation (BE) and is summarized or referenced in this Chapter.

The Northwest Forest Plan (NWFP) – The Bureau of Land Management and Forest Service adopted standards and guidelines for the management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl, commonly known as the Northwest Forest Plan. The NWFP included measures for management of known sites, site-specific pre-habitat disturbing surveys, and/or landscape scale surveys for about 400 rare and/or isolated species. The standards and guidelines for these mitigation measures are known as Survey and Manage.

To be in compliance with the 2001 Record Of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guideline (USDA and USDI 2001), projects must have pre-disturbance surveys conducted if the activity is potentially considered to be “habitat-disturbing.” “Habitat-disturbing activities are defined as those disturbances likely to have a significant negative impact on the species’ habitat, its life cycle, microclimate, or life support requirements” (USDA USDI 2001 - Standards and Guidelines, p. 22). Species-specific standards and guidelines from the Northwest Forest Plan are identified below under species effects analysis.

McDonald's Rock-cress Recovery Plan (USDI 1984) - Summarizes current knowledge of the taxonomy, former and current distribution, and biology of the species, and presents recommendations for a program to restore it to threatened status.

Conservation Assessment for *Buxbaumia viridis* (DC.) Moug. and Nestl. (USDA 2006) - Synthesizes known information about the biology, distribution, threats, management, and conservation of the species.

Conservation Assessment for *Cypripedium fasciculatum* and *Cypripedium montanum*. (USDA 2005) – Addresses the biology, management and conservation of the species within California.

Conservation Assessment for *Ptilidium californicum* (Aust.) Underw. (USDA 2006) - synthesizes known information about the biology, distribution, threats, management, and conservation of the species.

Six Rivers Land and Resource Management Plan (USDA Forest Service 1995)

The Six Rivers National Forest Plan contains the following management direction applicable to motorized travel management and botanical resources:

Sensitive Plant Species Management Goals (Forest Plan Ch.4, p.83):

Maintain the health and well-being of threatened, endangered and sensitive species and their habitats. Take all steps necessary to ensure that actions authorized, funded, or carried out by the Forest Service are not likely to jeopardize the continued existence of these species.

Standards and Guidelines

- Federally listed threatened and endangered plants and their habitats will be managed to achieve recovery plan objectives. If an approved plan is not available, all known populations and their occupied habitat will be protected from negative impacts associated with forest management activities.
- Before the NEPA process is completed, projects will be assessed through a biological evaluation to determine if management activities are likely to adversely affect sensitive plant resources. After completion of the evaluation, proposed actions will be prohibited if they are found likely to jeopardize the continued existence of the species or the maintenance of the viable populations through their existing range. Appropriate mitigation measures will be required if activities are not prohibited.

Invasive Exotic Plant Species (Forest Plan Ch.4, p.131):

Invasive exotic plant species are those that are ecologically harmful and have the ability to alter the natural or historic scene and impair the natural functioning of native plant communities.

Standards and Guidelines

- Sites for which ground disturbing activities are planned shall be evaluated for the presence of invasive exotic plant species.
- Invasive exotic species shall be prioritized and selected for management action based on their disruptive nature, distribution and the feasibility of successful control.
- Practices that prevent the introduction or spread of invasive exotic plant species shall be incorporated into planning and analysis for all management activities that have the potential to introduce or spread these species.
- Sites treated to eradicate invasive exotic plant species shall receive follow-up monitoring.

Survey and Manage (Forest Plan Ch.4, p. 84 – 85):

The survey and manage provision will apply to the range of that species and the particular habitats that it is known to occupy. The "survey and manage" standards and guidelines will provide benefits to amphibians, mammals, bryophytes, mollusks, vascular plants, fungi, lichens, and arthropods.

Standards and Guidelines

- **Manage known sites**: Management of known species sites should receive the highest priority of these four categories. Efforts must be undertaken to acquire information on these known sites and to manage this information so that it is available to all project planners.
- **Survey prior to ground-disturbing activities**: These surveys may be conducted at a scale most appropriate to the species. For most species, this survey would start at the watershed analysis level with identification of likely species locations based on habitat. Those likely locations would then be thoroughly searched prior to implementation of activities. Survey protocols and proposed site management should be incorporated into interagency conservation strategies developed as part of ongoing planning efforts coordinated by the Regional Ecosystem Office.
- **Guidelines for Extensive and General Regional surveys** are also described in the Forest Plan but are not detailed here as these are inventory efforts and not pertinent to the project level analysis contained herein
- **Manage Recreation Areas to Minimize Disturbance to Species**: This standard and guideline applies throughout all land allocations. This Standard and guideline will benefit a number of fungi and lichen species whose known locations are predominantly within established recreation sites.
- **Six Rivers National Forest Survey Status Change** for the category A lichen, *Leptogium cyanscens* Taxonomic Update for this Species: The current taxonomic treatment of this species has removed California from its known or suspected geographic range removing the requirement to survey for this species on Six Rivers National Forest (USDA 2009).

Table 44. Survey and Manage species

Relative Rarity	Pre-Disturbance Surveys Practical	Pre-Disturbance Surveys Not Practical	Status Undetermined
Rare	Category A · Manage All Known Sites · Pre-Disturbance Surveys · Strategic Surveys	Category B · Manage All Known Sites · N/A · Strategic Surveys	Category E · Manage All Known Sites · N/A · Strategic Surveys
Uncommon	Category C · Manage High Priority Sites · Pre-Disturbance Surveys · Strategic Surveys	Category D · Manage High Priority Sites · N/A · Strategic Surveys	Category F · N/A · N/A · Strategic Surveys

(USDA/USDI 2001)

Survey and Manage species 2001 and 2003 category assignments can be found in Appendix I, Table 182. Species range changes (expansions and contractions) that were approved through the 2001-2003 Annual Species Reviews are considered valid and are incorporated into the survey and management requirements for the species included in this list.

Research Natural Areas (Forest Plan Ch.4, p.30 – 31):

Research natural areas are part of a national network of field ecological areas designated for non-manipulative research, observation, and to study and maintain biological diversity on National Forest System lands.

Standards and Guidelines

- Recreation activities and uses within a research natural area will be discouraged if they threaten the values for which the research natural area is established. If other recreation uses threaten research or education values, closures or permits should be instituted.
- Existing trails may be allowed to remain as long as the research natural area objectives are not compromised.
- Recreational access shall be addressed on an area-by-area basis.
- Maintain a ROS class of primitive.
- High-intensity recreational development is inconsistent with the management area direction for these areas.

Special Interest Areas (Forest Plan Ch. 5, p. 50 – 53):

These areas are set aside to manage for their unique ecological values for public use, education, and enjoyment. The goal is to promote public use, education, interpretation, and enjoyment of the special interest values of the area when such activities do not harm the values for which the area was designated.

Special Interest Area management strategies are identified in the section that follows under that title.

Botanical Areas: Botanical areas are classified under 36 CFR 294.1 and managed to protect areas of the Forest with important botanical resources. These areas include some of the best examples of indigenous and sensitive plant concentrations, sensitive plant habitat, conifer diversity and unique plant communities on the forest.

Geologic Areas: The complex geologic history of the Forest has produced an equally complex distribution of interesting geologic materials and features, including bedrock structures and landforms. The goals and desired future conditions of geologic areas are similar to those of botanical areas.

Recreation: Recreation opportunities exist within the special interest area but shall be secondary to managing for the botanical, ecological, and/or geologic features of the area. Education and interpretation shall be the focus of recreational use and should be encouraged to the extent that the special values of the areas are not compromised.

1. The Recreation Opportunity Spectrum (ROS) classes provided within these areas include roaded natural, semiprimitive motorized and semiprimitive nonmotorized. Opportunities exist to manage portions of the areas as semiprimitive nonmotorized to avoid resource conflicts.
2. When issuing special use permits for organized events, primary consideration will be given to the botanical, ecological, geologic, and/or cultural values of the area.
3. Due to the threat of introduction of non-natives to the area and the potential for resource damage, pack animals shall be restricted to designated access routes in some areas and prohibited in others.
4. Primitive camping is permitted in designated areas. Campsites will be located to minimize adverse impacts. Impacts associated with heavy visitor use may warrant site closure for camping or the development of appropriate support facilities.

5. Recreational access will be determined on an area-by-area basis.
6. The use of sites within special interest areas as shooting ranges shall be discouraged.

Transportation and Facilities: Facilities development and the identification of access routes shall be identified in the management plan for each area.

Consider existing routes (old roads, trails) within the areas for designation as multiple-use routes where possible and appropriate. If identified as appropriate during special interest areas recreation planning, use existing routes for public access. Construct new routes as necessary to direct use so as not to impact sensitive areas and/or to encourage access to areas with interpretive values.

Special Interest Area Management Strategy (USDA 1998) – identifies issues and concerns, opportunities, and possible management practices that protect each special interest area's unique values and encourages public use and enjoyment compatible with the protection of the unique ecological, botanical, cultural and geologic features for which they were established.

Bear Basin Butte Botanical Area

Bear Basin Butte Botanical Area was established due to the extraordinarily high diversity of conifers found therein.

Issues and Concerns

- Access within the special interest area has the potential to spread the Port-Orford-cedar root disease into the Upper South Fork Smith (the largest uninfested area within the Smith River Basin), the Siskiyou Fork Smith, and the Clear Creek (currently uninfested) drainages.
- There is the potential to introduce and increase the cover of exotic plants into Bear Basin Meadow. This high elevation meadow is an ecosystem that has limited presence on the Forest. It is a unique example of meadow biodiversity across the province. Disturbance in the meadow creates the conditions where exotic plants can invade the meadow and compete with native plants. Possible introduction agents are pack animals, vehicle access, and the use of the primitive campsite
- Public vehicle use of the access road leading to the tanker fill at the upper end of the meadow is impacting the meadow.
- There is a potential for stand-replacing wildfires due to aggressive fire suppression (result: an accumulation of dead vegetation, altered fuel arrangements, and a change in vegetative structure and composition), presence of plantations, likelihood of lightning strikes, and limited access for suppression. Stands of concern include old-growth, Brewer's spruce, and mountain hemlock.
- Stand development in the area is little understood.
- There is little public awareness of the unique resources in the special interest area.

Opportunities

- Minimize the risk of introducing Port-Orford-cedar root disease into the Upper South Fork Smith, Siskiyou Fork Smith, and Clear Creek drainages. Possible routes of introduction are 16N02, 16N10 (accesses a private inholding), and the Doe Flat trailhead (end of 16N02).
- Maintain or enhance the component of native plants within the Bear Basin meadow.
- Protect the meadow from vehicle access.
- Reduce the risk of stand-replacing wildfires where fuel loadings have accumulated.

- Provide recreational opportunities for visitors to the Bear Basin Butte Botanical Area that are consistent with the values for which the area was designated.

North Fork Smith Botanical Area

The North Fork Smith Botanical Area was established due to its large number of rare and endemic plant species, distinctive plant habitats and plant communities. The landscape featured within this botanical area is part of the Klamath-Siskiyou mountain region and is one of the most extensive representations of an ultramafic landscape in North America (Kruckeberg 1992). The soil chemistry of soils weathered from ultramafic (serpentine) parent material is exclusionary to most plant species yet tends to support an extraordinary number of rare an endemic plant species. Environments that are limited in their distribution (i.e. serpentine) in association with habitat specialization within thee environments (i.e. bogs, outcrops) also contribute to rarity (Fiedler 2001).

Issues and Concerns

- The Forest is required to provide access to mining claims with valid existing rights while minimizing resource impacts. Impacts include potential introduction of Port-Orford-cedar root disease and loss of rare plant habitat.
- Existing roads have the potential to divert drainage patterns in some areas that can negatively impact Darlingtonia fens and Port-Orford-cedar communities. Areas of concern: the old roads beyond Judy Mine; roads off Long Ridge.
- Access to areas within the special interest area has the potential to introduce Port-Orford-cedar root disease into uninfested drainages with the potential loss of communities associated with Port-Orford-cedar and riparian areas that dissect ultramafic terrain. Rare species include western white bog violet, Siskiyou indian paintbrush, Waldo gentian, great burnet, horned butterwort, Vollmer's lily, and California lady's slipper. Routes of concern include 18N09 and the Plateau Flats, 18N13, the Elk Camp Ridge Trail (18N10), non-system roads, areas along the Wimer Road, and trespass/gate-busting of routes with current seasonal closures. Drainages of concern include Stony, Peridotite Canyon, High Plateau, and Bear Creeks.
- There is a potential for both vehicular and pedestrian cross-country travel in areas with relatively flat topography and open vegetation. Such travel could impact unique botanical features within these areas such as rare species in Jeffrey pine woodlands and rocky barrens. Areas of concern include: High Plateau, the top of the Wimer Road, Stony Creek, the area east of Major Moore’s (ARMA habitat), and sites along the Elk Camp Ridge Trail.
- Past strip mining activities have impacted plant habitat and altered the scenic quality of the area (e.g. tailing piles, old mining equipment, illegally dumped materials); some of the mining sites pose a safety risk. Check with hydrology on possible water quality impacts, and consider the historic values of mining sites when considering restoration options.
- Management on State and private parcels in T17N, R2E, Sec 16 (Stony Creek) may impact Darlingtonia fens.
- There is a lack of information on the ecological needs of many plants found in the area.
- There is little public awareness of the unique resources in the special interest area.

Opportunities

- Minimize the impacts of potential mining on the primary and other resource values of the special interest area.
- Identify locations where drainage is a problem and correct/improve drainage patterns.

- Ensure that access to special interest area has a low risk of introducing Port-Orford-cedar root disease into uninfested areas.
- Prevent cross-country travel off existing roads within the area.
- Learn more about the population dynamics and ecological requirements of rare plant species.
- Provide recreational activities for visitors to the North Fork Smith Botanical Area that are consistent with the values for which the area was designated.

Myrtle Creek Botanical and Cultural Area

The Myrtle Creek Botanical and Cultural Area was established to represent an ecotone between the redwood forest type and the mixed evergreen forest and to display the cultural history of the area.

Issues and Concerns

- Visitors must cross the highway to reach the interpretive trail. This is a safety concern.
- There is a potential for collection of Darlingtonia alongside the Myrtle Creek trail. The plant is sold commercially for use in water gardens, and the plants along the trail are easily accessed.
- Bough collecting, which is not permitted in special interest areas, takes place along the trail.
- There is potential for the spread of Port-Orford-cedar root disease within the area and export of the disease to other areas.

Opportunities

- Develop the cabin site as a day use interpretive site for historical mining.
- Develop a trailhead and parking at the cabin site
    - Provide a bridge across Myrtle Creek to the interpretive trail.
    - Build a new trail on the same side of the river as the cabin site.
- Install a turn lane on Highway 199 and a sign directing visitors to the special interest area.
- Extend the existing trail to the waterfall.
- Revise and reprint the brochure for this area.
- Provide trailhead signing.

Research Natural Areas (Forest Plan Ch.4, VI-30)

Research natural areas are part of a national network of field ecological areas designated for non-manipulative research, observation , and to study and maintain biological diversity on Nation Forest System lands. Standards and guidelines pertinent to recreation recommend discouraging recreation activities if they threaten the values for which the research natural area was established. Existing trails may be allowed to remain as long as the research natural area objectives are not compromised. Maintain a ROS (recreation opportunity spectrum) of primitive. High intensity recreational development is inconsistent with the management area direction for these areas.

There are two research natural areas on the Smith River National Recreation Area, the L. E. Horton Research Natural Area and the Craigs Creek Research Natural Area which were established to enhance long term ecosystem and plant research. The L. E. Horton Research Natural Area was established to protect an extensive serpentine wetland, referred to as a Darlingtonia bog, containing the Mendocino gentian and the western white bog violet, both Forest Service sensitive plants. The Craigs Creek Research

Natural Area was designated because it is an unusually good representation of the knobcone pine vegetation type.

Effects Analysis Methodology

The analysis of effects on rare botanical species (Federally listed, Forest Service sensitive and Survey and Manage botanical species) involved a process that starts with reviewing existing data sources (FSM 2672.43). In the first step, Federally listed, sensitive, watch list and Survey and Manage botanical species that are known or are believed to have potential to occur in the analysis area were reviewed to identify potential affected botanical species associated with the proposed actions. A list of species to review for the analysis was compiled using the Arcata U.S. Fish and Wildlife Office on-line species list search page (USDI Fish and Wildlife Service 2014), the USDA Forest Service Region 5 Sensitive Species List (USDA Forest Service 2013), the Six Rivers National Forest watch list species list, the list of Survey and Manage Species to be protected through survey and management standards and guidelines as amended for which suitable habitat exists within and whose range includes Six Rivers National Forest (USDA/USDI 2001) and the list of watch list species for Six Rivers National Forest. As a result of the pre-field exercise, a list of species for further analysis was developed (Table 45). Species that were eliminated from further analysis and those that are carried forward are described in the section titled ‘Affected Environment’.

The second step in the analysis of effects on rare botanical species was field reconnaissance surveys. Field surveys were conducted at the time of year when plants were evident and identifiable. Additionally, information on rare plants from past field surveys, monitoring, and personal field observations were utilized during the analysis. Surveys were performed on a subset of inventoried unauthorized routes contained in the proposed action, specifically in those areas where target species could be affected to determine the presence or absence of Federally listed plant species, sensitive plant or watch list plant species. National Forest Transportation System roads were not surveyed as their highly altered, engineered surfaces are not considered suitable habitat for the target species nor are the target species known to occur on these surfaces.

Several sensitive plant species, particularly the Waldo buckwheat, the western white bog violet and the serpentine catchfly, produce multiple above ground stems from subterranean meristem tissue. To obtain an accurate count of the number of plants one would have to dig each one up. A less invasive approach was taken and stems were counted and these counts appear in the tables in the alternative analysis where they are referred to as individual plants. Although the actual number of plants would be less, this approach was consistent across alternatives providing a meaningful comparison.

The numbers of plants provided in the following tables associated with each alternative do not present a complete picture of the population size within the project area, but rather what is known based on limited surveys. It is likely that there are more sensitive plants within and adjacent to the project area than is currently known. Casual observations made on Pine Flat Mountain indicate a number of sensitive plants exist outside the surveyed area. Because of its remoteness and the absence of inventoried unauthorized routes, High Plateau has not been surveyed to any extent. Historic locations of the sensitive species carried forward in the analysis occur on High Plateau but the number of individuals at these locations is not known. The High Plateau sites were artificially assigned one individual each for the purpose of this analysis. Possible outcomes for this assumption are either these sites are mis-mapped and contain no plants, or they have been extirpated and contain no plants, or they are extant and they contain one to many plants. Judging by what is known of the sites found in the project area it is likely that there are more plants at High Plateau of the Waldo buckwheat, McDonald’s rockcress, the Mendocino gentian and Howell’s jewelflower than the assumption of one plant per site would yield.

Site locations of sensitive and watch list species that are separated by a distance of less than ¼ mile were combined into “occurrences” as a means of aggregating species locations into subpopulations. Occurrences, for species analyzed herein, are similar to subpopulations which are defined as geographically distinct groups within the overall population between which there is little demographic or genetic exchange.

It is important to emphasize that surveys associated with this project were not conducted at the occurrence level. If surveys had been performed at the occurrence level, extending more than 100 feet beyond proposed inventoried unauthorized routes, the ratio of plants on routes to plants off routes would likely have been lower. Also because data was not collected at the occurrence level a rigorous qualitative analysis and ranking of the scope and severity of threats to specific occurrences cannot be performed. Hence, the artificial use of the term occurrence herein is strictly for comparing the magnitude of effects between alternatives based on the number of occurrences affected.

Impacts relevant to botanical resources

Examples of human caused and habitat modification effects include but are not limited to: death and damage to plants and habitats when run over, and/or damage to seed banks resulting in reduced seed production or diminished seed bank; loss of viability and vigor; increase in access resulting in collection and over-collection of flowers, bulbs, and botanical products (for example, tribal basketry materials), habitat loss and fragmentation, edge effects, changes in hydrology, changes to soils, especially erosion and sedimentation, changes in mycorrhizal associations, and increase in risk of weed introduction and spread.

Several studies have addressed the impacts of roads and off-highway vehicle (OHV) use on native vegetation (Trombulak and Frissell 2000, others). Off-highway vehicle use, or off road vehicle use, in the context of the following discussion of effects may refer to motorized use on routes. Neither the no action alternative nor other alternatives herein include cross-country travel, hence it is not addressed. The effects of off road vehicle use on vegetation include both the immediate direct effects of running over plants or parts of plants, as well as altering habitat capability in numerous ways. The direct impacts on vegetation caused by vehicles include crushing of the foliage, root systems, and seedlings by the wheels; uprooting; and disruption of root systems of larger plants by shear stresses induced in the soil. Root exposure and/or direct root damage may occur due to vehicle passes over vegetation, particularly in loose soils, or in wet soils susceptible to rutting, also affecting plant vigor and survival success. In addition, plant foliage and stems can be damaged and plants uprooted by the overhanging body of vehicles, so that actual plant damage may occur over an area larger than the track width. Damage to plants from vehicles can potentially lead to reductions in photosynthetic capacity, poor reproduction, mortality, increases in bare ground, diminished litter cover, and a reduction in the overall cover and frequency of plant species, including a loss of biotic crusts.

Blankets of fugitive dust raised by vehicle traffic can disrupt photosynthetic processes, thereby suppressing plant growth and vigor, especially immediately adjacent to heavily used routes. Dust can block photosynthesis, respiration, and transpiration, and may even be sufficient in some cases to alter community structure (Trombulak and Frissell 2000).

In addition, these impacts to native plants and changes in habitat can lead to the eventual replacement of native plant species with non-native species more adapted to frequent disturbances and altered soil conditions, such as invasive non-native species (weeds). Many invasive species have life forms that are adapted to persist in disturbed habitats such as roadsides and areas with frequent vehicle use.

All of the effects discussed above are of particular concern with rare plant species which are typically represented by a limited number of populations and/or individuals due to their potential to affect the long term viability of rare plant populations by increasing mortality and decreasing the vigor and productivity of populations. The magnitude of these various effects of vehicle use on rare plant species on the Forest will be assessed through the use of the indicator measures introduced in the Effects Analysis Methodology section of this document. Impacts to rare botanical species that may be affected by the impacts discussed above, are quantified for each alternative below.

It is important to note that the proposed action concerns the designation of existing inventoried unauthorized routes that have experienced motorized recreation use and the negative effects to plants noted above have occurred through past use. As a result of the low level of use these routes have experienced, the plant cover is low and bare ground cover is high. Rare plant species that are not tolerant of vehicular use that may have been present on routes prior to the construction are now present in lower numbers or no longer present at all. Plants that are present, including rare species, have a tolerance for the low level of use that has been occurring as indicated by the relatively high numbers found on proposed inventoried unauthorized routes. This is indicative of the fact that some plant species are less susceptible than others to disturbance from motor vehicles. Some have adapted to persist in disturbed habitats and are tolerant of low levels of disturbance and may benefit through improved conditions for seed germination and reduction in competition from more aggressive plant species.

Assumptions specific to botanical resources analysis:

- Vehicle use on and off established routes has affected or has the potential to affect rare plant populations, either directly by damage or death to individual plants from motor vehicles (stem breaking, crushing, etc.), or indirectly by altering the habitat through soil disturbance, changes in hydrologic functioning, or by the introduction of non-native, invasive plant species that can out-compete sensitive species for water, sunlight, and nutrients.
- Motor vehicle use is unlikely to impact certain rare plant habitats due to the steep or rocky nature of the surrounding terrain or where dense vegetation acts as a barrier.
- Motor vehicle use is more likely to impact sensitive rare plant habitats, such as serpentine wetlands, which exist on gentle slopes or flat terrain with little or no vegetation or natural barriers to motor vehicles.
- Without specific prevention and/or control measures, invasive non-native plants (weeds) will continue to spread along and within surfaced and unsurfaced motor vehicle roads/trails/areas. (For more detail, see noxious weed section.)
- Motor vehicle use of unsurfaced roads/trails/areas will increase sediment production and erosion. As use increases, sediment production and erosion will increase.
- Vehicle use on and off established routes has to potential to indirectly benefit rare plants populations that are tolerant of low levels of disturbance indirectly through improved conditions for seed germination and reduction in competition from more aggressive plant species that are not tolerant.
- National Forest Transportation System roads are not considered suitable habitat for the rare plant species analyzed due to their altered engineered surfaces, nor are the target species known to occur on these surfaces.
- Direct effects to plants analyzed will occur within 30 feet of the center of inventoried unauthorized routes. Indirect effects will occur 30 to 100 feet from the center of inventoried unauthorized routes.
- The most important benefit to watch list and sensitive plant species by proposed actions results from barricading routes not added which will mitigate the negative effects of past unauthorized use of these

routes. Hence, the number of plants and the number of occurrences of Federally listed endangered, watch list and sensitive plant species protected by barricading is used as the indicator measure to assess the impacts of the alternatives.

- Regarding Survey and Manage species, actions proposed in this project are not habitat disturbing, hence pre-disturbance surveys for Category A and C Survey and Manage Species are not required.

Data Sources:

- Route-specific botanical data including site-specific surveys for rare species with a focus on unauthorized routes proposed to be added to the NFTS.
- Existing sensitive and known sites Survey and Manage data stored in Six Rivers National Forest MicroSoft Access database and in the National Resource Information System (NRIS) database.
- GIS layers of road inventories, serpentine and wetland habitats, botanical areas, Research Natural Areas, National Agricultural Imagery Program (NAIP) satellite imagery.
- Professional knowledge of species habitat and distribution on the Forest to determine which species would be considered for pre-disturbance surveys.
- Route inventories collected in Step 1 of Travel Management and associated tabular data sets.
- Records from the California Natural Diversity Data Base (CNDDB) and the Consortium of California Herbaria.
- U. S. Fish and Wildlife Service Listed/Proposed Threatened and Endangered Species for Del Norte County (Candidates Included), March 14, 2014, Document number: 379794579-104935.

Botanical Resource Indicators

The following indicator measures related to motor vehicle routes located in or near rare plant locations were used to compare impacts among alternatives.

- Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.
- Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Botanical Resources Methodology by Action

Direct and indirect effects

Where the number of plants and the number of occurrences affected by the proposed action are listed they will be followed, in parentheses by the percentage of the total number of plants and the percentage of the total number of occurrences for that species within the Smith River National Recreation Area.

1. Adding Inventoried Unauthorized Routes as roads to the NFTS.

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Project Area within 30 feet for direct effects and 30 to 100 feet for indirect effects of inventoried unauthorized routes proposed for addition to the NFTS.

Indicator(s):

1) Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

2) Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Methodology: GIS analysis of added routes and sensitive sites/habitat.

2. Adding Inventoried Unauthorized Routes as motorized trails to the NFTS.

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Project Area within 30 feet for direct effects and 30 to 100 feet for indirect effects of inventoried unauthorized routes proposed for addition to the NFTS.

Indicator(s):

1)Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

2) Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Methodology: GIS analysis of added routes and sensitive sites/habitat.

3. Seasonal gate closure of roads and motorized trails.

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Project Area within 30 feet for direct effects and 30 to 100 feet for indirect effects of inventoried unauthorized routes proposed for addition to the NFTS.

Indicator(s): (1) Number of seasonal gate closures added.

Methodology: GIS analysis of added routes and Sensitive sites/habitat.

4.Mixed-use of Forest Service road 17N49.

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Project Area within 30 feet for direct effects and 30 to 100 feet for indirect effects of inventoried unauthorized routes proposed for addition to the NFTS.

Indicator(s):

1)Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

2) Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Methodology: GIS analysis of added routes and sensitive sites/habitat.

5. The decommissioning of currently open and currently closed NFTS roads.

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Project Area within 30 feet for direct effects and 30 to 100 feet for indirect effects of inventoried unauthorized routes proposed for addition to the NFTS.

Indicator(s):

1)Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

2) Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Methodology: GIS analysis of added routes and sensitive sites/habitat.

6. The restoration of Hydrological Function to Inventoried Unauthorized Routes

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Project Area within 30 feet for direct effects and 30 to 100 feet for indirect effects of inventoried unauthorized routes proposed for addition to the NFTS.

Indicator(s):

1)Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

2) Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Methodology: GIS analysis of added routes and sensitive sites/habitat.

7. Cumulative Effects

Short-term timeframe: not applicable; cumulative effects analysis will be done only for the long-term time frame.

Long-term timeframe: 20 years

Spatial boundary: Six Rivers National Forest.

Indicator(s):

1)Number of plants of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

2) Number of occurrences (sub-populations) of each Federally listed endangered, watch list and sensitive botanical species protected from motorized use by barricading.

Methodology: GIS analysis of added routes and sensitive sites/habitat.

The cumulative effects analysis herein will not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a 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. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the Council on Environmental Quality 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.”

The cumulative effects analysis in this EIS is also consistent with Forest Service National Environmental Policy Act (NEPA) Regulations (36 CFR 220.4(f)) (July 24, 2008), which state, in part:

CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions. Once the agency has identified those present effects of past actions that warrant consideration, the agency assesses the extent that the effects of the proposal for agency action or its alternatives will add to, modify, or mitigate those effects. The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonable foreseeable future actions) on the affected environment. With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations, however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision making. (40 CFR 1508.7)”

For these reasons, the analysis of past actions is based on current environmental conditions.

Affected Environment

The Smith River National Recreation Area (Smith River NRA) is located in the Klamath-Siskiyou Ecoregion of Northwest California and Southwest Oregon which is recognized as an area of extraordinary biodiversity (Whittaker 1954; Kruckeberg 1984). The region is regarded as an “area of global botanical significance” (one of seven in North America as defined by the World Conservation Union [IUCN], a global “center of plant diversity, and a proposed “world heritage site” and UNESCO “biosphere reserve” (Vance-Borland et al. 1995, Olson et al. 2002). More than 1,859 plants, including 150 endemics are known to occur in the Klamath-Siskiyou Ecoregion (Olson et. al. 2002).

Of the endemism characteristic of the Klamath-Siskiyou Ecoregion, the majority is represented within habitats associated with the Josephine ultramafic sheet that extends from Northwestern California to Southwestern Oregon. This belt of ultramafic parent material is one of the largest in North America and has the greatest concentration of endemic plant species restricted to this substrate (Kruckeberg 1984). Ultramafic parent materials, generically called serpentine, weather into soils that are high in heavy metals and low in essential nutrients. This serpentine soil chemistry along with other biological and physical factors, gave rise to distinctive plant communities that support a preponderance of rare plant species, many of which only occur on serpentine soils, resulting in their characterization as serpentine endemics. . Serpentines make the clearest statement on the power of geology to influence plant life (Kruckeberg2002).

The important role serpentine plays in providing habitat to support a significant number of rare species in California is exemplified by the fact that only 1.5 percent of the State is underlain by ultramafic rock and yet 13 percent of the plant species endemic to California are serpentine endemics (Safford et. al. 2005). The Centre for Plant Diversity's tracking of endemism notes that within the California Floristic Province the Josephine ultramafic sheet is one of the richest in endemics. In addition, serpentine settings support the highest number of plant associations described in the Klamath Province which includes the Six Rivers and Klamath National Forests (Jimerson 1993).

Plant Habitats

Habitats within the area that support the highest number and diversity of rare plants include seasonally dry serpentine settings and serpentine wetlands. Within these habitats there are at least 27 plants considered rare by the California Native Plant Society, 8 which are members of the Region 5 Sensitive Plant list, and one Federally Endangered plant species.

Seasonally dry settings include outcrops and bouldery serpentine barrens, Jeffrey pine woodlands, and shrub dominated areas. Low vegetative cover, and high bare soil and surface rock cover characterize these habitats. Due to their ridge position, gradual slopes, and openness, some of the barren and woodland habitats are vulnerable to cross-country travel that can result in the loss of plants and vegetative material, habitat fragmentation, and potential water diversion.

Serpentine wetlands have saturated soils or running water year round and are generically referred to here as Darlingtonia fens. Wetland habitats are characterized by the presence of surface (perennial or intermittent) water or sub-surface water in the form of spring or seep flow. Topographically flat serpentine wetlands are generally termed fens and composed of rare plant species, sedges, and ericaceous shrubs with a low canopy cover dominated by Port-Orford-cedar. Fens can be relatively extensive, for example, L.E. Horton Research Natural Area spans approximately 40,000 square meters (1,560 acres). Serpentine wetland seeps are usually very localized sites where sub-surface water intersects the ground surface. Serpentine wetland riparian habitats for rare plants are associated with a perennial to intermittent flow of surface water across a gradient, boulder-lined stream banks with a low cover of ericaceous shrubs (western azalea being a common associate) and a moderate canopy cover dominated by Port-Orford-cedar.

Due to the array of sensitive and rare species and their habitats and diverse plant communities in the serpentines of the Josephine ultramafic sheet, 21,370 acres of the sheet in the North Fork Smith River watershed was established as a botanical area- the North Fork Smith Botanical Area (USDA Forest Service 1995). Botanical areas are established to protect areas of the Forest with important botanical resources (36 CFR 294.1). Also associated with the Josephine ultramafic sheet is the L.E. Horton Research Natural Area. Research natural areas are established to study and maintain biological diversity

on National Forest system lands (FSM 4063). L.E. Horton research natural area supports an extensive Darlingtonia fen with numerous rare and sensitive species.

While the serpentine soil chemistry is a primary factor influencing the botanical distinctiveness of this area, it is the heavy metals (i.e. chromium, nickel) within the parent material that has also driven minerals mining and exploratory mining. As a result, the environment has been altered by development of roads, exploratory grids, mining spoil sites, mining pits and adits. The most recent exploratory mining occurred approximately 40-45 years ago. Mining-related disturbance is particularly evident on Gasquet Mountain.

Inventoried unauthorized routes analyzed herein have a long history of use. Current use is apparent from observations indicating vehicle tracks and low vegetative cover. Based on knowledge resulting from limited surveys a greater number of Forest Service sensitive plants grow on and adjacent to these routes as opposed to areas surveyed that are more than 40 feet beyond in spite of damage and death that can result from motorized vehicle use, hence it appears that vehicle related disturbance provides some benefit under the current level of use.

Motorized recreation vehicles have impacted a location of the Federally listed endangered Mcdonald's rockcress adjacent to County Road 305 approximately 1.5 miles before it enters Oregon. The Forest Service has attempted to mitigate impacts to the site by placing large boulders around the plants. The site is being monitored to evaluate the effectiveness of the boulders. Additionally, a location of the Waldo wild buckwheat adjacent to the inventoried unauthorized route on Pine Flat Mountain (305.109) has been impacted by motorized recreation vehicles. The Waldo wild buckwheat was moved from the Forest Service Sensitive list to the Six Rivers National Forest watch list in 2013.

Survey and Manage, sensitive, and watch list plants known or thought to occur on the Smith River National Recreation Area are listed in Table 45.

Table 45. Endangered, sensitive and watch list botanical species, Smith River NRA

Scientific Name	Taxa Group	Status
Bochera koehleri	vascular plant	Sensitive
Arabis macdonaldiana	vascular plant	Endangered
Boletus pulcherrimus	fungi	Sensitive and Survey and Manage
Buxbaumia viridis	bryophyte	Sensitive and Survey and Manage
Calicium adspersum	lichen	Survey and Manage
Cypripedium fasciculatum	vascular plant	Sensitive and Survey and Manage
Cypripedium montanum	vascular plant	Sensitive and Survey and Manage
Dendrocollybia racemosa	fungi	Sensitive and Survey and Manage
Draba carnosula	vascular plant	Sensitive
Epilobium oreganum	vascular plant	Sensitive
Eriogonum hirtellum	vascular plant	Sensitive
Eriogonum pendulum	vascular plant	Watch List
Erythronium hendersonii	vascular plant	Sensitive
Gentiana setigera	vascular plant	Sensitive
Lewisia oppositifolia	vascular plant	Sensitive
Lobaria oregana	lichen	Sensitive and Survey and Manage
Packera hesperia	vascular plant	Sensitive
Pedicularis howellii	vascular plant	Sensitive

Scientific Name	Taxa Group	Status
Phaeocollybia olivacea	fungi	Sensitive and Survey and Manage
Prosartes parvifolia	vascular plant	Sensitve
Ptilidium californicum	bryophyte	Watch List
Ramalina thrausta	lichen	Sensitive
Silene serpentinicola	vascular plant	Sensitive
Smilax jamesii	vascular plant	Watch List
Sowerbyella rhenana	fungi	Sensitive and Survey and Manage
Streptanthus howellii	vascular plant	Sensitve
Tauschia howellii	vascular plant	Sensitive
Tricholomopsis fulvescens	fungi	Sensitive and Survey and Manage
Usnea longissima	lichen	Watch List
Viola lanceolata	vascular plant	Sensitive

Survey and Manage Species

The Survey and Manage species analysis is consistent with the current direction associated with the Survey and Manage standards and guidelines in the Northwest Forest Plan. Relative to Survey and Manage species, neither the addition of inventoried unauthorized routes (UARs), the restoration of hydrologic function to inventoried UARs, the barricading of inventoried UARs, the decommissioning of NFTS roads, the addition of 4 parking sites along 17N49, the pulling over to let other vehicles pass within 30 feet of routes, nor indirect effects 30 to 100 feet from either inventoried UARs or NFTS routes are not likely to have a significant negative impact on Survey and Manage species' habitat, life cycle, microclimate, or life support requirements. Hence, the actions proposed do not constitute "habitat disturbing" activities (USDI, USDA 2001) and pre-disturbance surveys are not required.

There is only one record of a known site of a Survey and Manage species within 80 feet of any inventoried unauthorized route (UAR) or NFTS road included in one of the action alternatives. The species at this known site near Patricks Creek is a category B fungi, *Collybia racemosa*, which is 45 feet from 316.1, a UAR, which is proposed for addition to the NFTS as a road, only under Alternative 3. This site was recorded in 1937 and has not been revisited. Known sites of Survey and Manage species are to be managed to insure the species persistence. The addition of 316.1 to the NFTS will not affect species persistence at this site. Actions proposed for 316.1 under alternative 3 include rocking the entire length of the UAR and installing rolling dips. These actions have the potential to benefit the species by reducing erosion and runoff.

In all alternatives, unless also treated as sensitive species, Survey and Manage species will not be analyzed further.

Watch List Species

In addition to the sensitive plant species, the Six Rivers National Forest maintains a "watch list" of plants that are of special interest. Watch list plants are species that do not currently meet the criteria to be included on the Regional Forester's sensitive list, but are of sufficient concern that they should be considered in the planning process. The watch list may include species that are locally rare, are of special interest, are widely disjunct from the main distribution of the species, are largely endemic to the Forest, or are species for which very little, if any, information is available but existing information may indicate some cause for concern. Watch list species are typically represented by more individuals, more

occurrences, and/or a wider overall distribution than most sensitive species; however, in general, there is less information on specific numbers and locations of occurrences, and on habitat requirements for watch list species than for sensitive species. There are 17 watch list plant species currently designated on Six Rivers National Forest. Of these 17 watch list plant species 16 were eliminated from further analysis for reasons stated in the following table.

Table 46. Six Rivers National Forest watch list botanical species

Species Name	Rationale
Arctostaphylos canescens ssp. sonomensis	Taxonomic uncertainity due to hybridization
Arctostaphylos manzanita ssp. *elegans*	Not found to occur in analysis area (known from Trinity Co.)
Botrypus virginianus	Not found to occur in analysis area (known from Siskiyou County)
Didymodon norrisii	Restrictive nature of habitat (rock outcrops)
Eriastrum tracyi	Not found to occur in analysis area (Not know from west Trinity County)
Leptogium teretiusculum	Restrictive nature of habitat (tree boles)
Meesia uliginosa	Restrictive nature of habitat (lichen on tree bole)
Montia howellii	Not found to occur in analysis area (known from Trinity and Humboldt Co.)
Nephroma bellum	Restrictive nature of habitat (lichen on tree bole)
Ophioglossum pusillum	Restrictive nature of habitat (wetlands) and population extent (Siskiyou Co.)
Peltigera pacifica	Restrictive nature of habitat and population extent (coastal species)
Platismatia lacunosa	Restrictive nature of habitat and population extent (riparian)
Ptilidium californicum	See below
Silene campanulata ssp. campanulata	Taxonomic uncertainity due to hybridization
Smilax jamesii	See below
Usnea longissima	See below

Ptilidum californicum and *Usnea longissima* are Watch list lichens that occur within the project area. They were dropped from further analysis because critical habitat components, host trees and canopy cover will not be affected by the proposed actions.

Smilax jamesii is a Watch list vascular plant which occurs in riparian areas within the Siskiyou Wilderness and east of the wilderness. It was not found within the project area and was dropped analysis.

The Waldo wild buckwheat (*Eriogonum pendulum*), a Watch list vascular plant which was moved from the Sensitive plant list to the Watch list in 2013 occurs on inventoried unauthorized routes and will be addressed under each alternative.

Federally Listed Endangered Species

A query of the Arcata Field Office U.S.F.W.S. database for Del Norte County was performed on March 14, 2014 (Document number: 379794579-104935). The query yielded two Federally Listed species, McDonald's rock cress (*Arabis macdonaldiana*) and the western lily (*Lilium occidentale*) that are known to occur in Del Norte County. The western lily is a coastal species whose geographic range does not

extend inland onto Six Rivers National Forest. McDonald's rock-cress occupies barrens and outcrops derived from ultramafic substrate. Habitat for this species is present in the project area.

It is important to note that in the recent 5 year review of McDonald's rock-cress (USFWS 2013) the Service states that "recent genetic work (Harbaugh-Reynaud andVorobik 2012) indicates that *Arabis macdonaliana* is confined to Red Mountain, Mendocino County, California. Hence, the Service no longer considers populations in Del Norte County to be the Federally endangered McDonald's rock-cress and states in the review that the Del Norte County and Oregon linages will be revised to be a distinct species (yet to be named), or a subspecies of *Arabis aculeolata*. Currently several databases of record including the California Natural Diversity Database (CNDDB), the Consortium of California Herbaria, and the Nature Resource Information System (NRIS) maintained by the Forest Service will continue to show records of McDonald's rock-cress as occurring in Del Norte County until such time that these records can be updated. For now, during the draft phase of the EIS, the Del Norte population will be referred to as McDonald's rock-cress.

McDonald's rock cress is a rare herbaceous perennial forb. It is typically found in very open settings on serpentine commonly referred to as serpentine barrens. McDonald's rock cress occurs less frequently in areas with well-developed shrublands or Jeffrey pine woodlands with a dense herbaceous layer. Of the apparently suitable habitat within the Forest, much is not occupied. Even within barrens, McDonald's rock cress individuals are found in the outcrops scattered throughout the barrens; therefore, the distribution of plants is considered "patchy". Where topography is not flat a majority of the plants are located along ridge faces, which are naturally fragmented.

Field reconnaissance of the project area for McDonald's rockcress first took place in 2006 and were timed to coincide with blooming season. Additional effectiveness monitoring field surveys were completed in each year between 2010 and 2013. These field surveys were performed by Forest Service botanists.

Sensitive Botanical Species

Sensitive species are those eligible for listing under the Endangered Species Act, or whose viability is of concern. These are protected by USDA Forest Service regulations and manual direction. The Region 5 Sensitive Plant List was updated and signed July 3, 2013 by the Regional Forester. This new list supersedes earlier lists and is the one used for this biological evaluation.

There are 30 sensitive botanical species on the Smith River NRA. Sensitive species considered for this analysis are those that the proposed action potentially affects (FSM 2672.42). The following sensitive bryophyte, lichen and fungi species were not include in this analysis because critical habitat components, host trees and canopy cover will not be affected by the proposed action. Limited vegetation removal will occur at culvert removal sites at stream crossings on roads that will be decommissioned, and is not expected to exceed 16 acres total across the entire District. These species include *Boletus pulcherrimus , Buxbaumia viridis, Calicium adspersum, Cudonia monticola, Dendrocollybia racemosa, Fissidens pauperculus, Leptogium siskiyouensis,Mielichhoferia elongate, Otidea smithii, Peltigera gowardii, Phaeocollybia olivaceae, Ramalina thrausta, Sulcaria badia,*and *Tricholomopsis fulvescens*. The following sensitive species will not be affected by the proposed action because their range does not extend onto the project area nor have botanical surveys found them to be present within the project area. These species include *Cypripedium montanum, Epilobium oreganum, Erigeron maniopotamicus, Eriogonum hirtellum, Erythronium hendersonii, Eucephalus vialis, Draba carnosula, Illiamna latibracteata, Lewisia kelloggii ssp. kelloggii, Pedicularis howellii, Sanicula tracyi,*and *Tauschia howellii*. The nearest location for *Cypripedium montanum, Lewisia kelloggii ssp. kelloggii* and *Thermopsis robusta* is over 20 miles south in Humboldt County on the Orleans Ranger District. *Epilobium oreganum, Eriogonum hirtellum, Draba carnosula, Eucephalus vialis, Illiamna latibracteata, Pedicularis*

howellii,*Smilax jamesii* and *Tauschia howellii* are known to occur several miles east of the project area on the Siskiyou and Klamath National Forests. The nearest location of *Tauschia howellii* is over 4 miles east of Prescott Mountain in the Siskiyou Wilderness. The closest known sites for *Lathyrus biflorus, Lupinus constancei, Minuartia decumbens* and *Aniscocarpus scabridus* are many miles south of the project area in or adjacent to the Lassics Botanical Area in Trinity County. The closest known sites for *Erigeron maniopotamicus, Frasera umquaensis, Sanicula tracyi*,*Sedum obtusatum ssp. paradisum* and *Streptanthus oblanceolatus* are in Trinity County, a substantial distance from the project area. The closest known site for *Bensoniella oregana* is in Humboldt county over 45 miles from the project area. *Tracyina rostrata* is not known to occur on Six Rivers National Forest and known sites are located south of the Forest.

Forest Service Sensitive Species Identified for Further Analysis

The Forest Service sensitive species considered in the project area that have the potential to be affected by the proposed actions are displayed in Table 47 and will be addressed under each alternative.

Table 47. Species identified for further analysis

Common Name	Scientific Name	Status
McDonald's rockcress	*Arabis mcdonaldiana*	Federally Listed Endangered
Howell's jewelflower	*Streptanthus howellii*	Sensitive
Koehler's rockcress	*Boechera koeleri*	Sensitive
Clustered ladys-slipper	*Cypripedium fasciculatum*	Sensitive
Opposite-leaved lewisia	*Lewisia oppositifolia*	Sensitive
Serpentine catchfly	*Silene serpentinicola*	Sensitive
Siskiyou bells	*Prosartes parvifolia*	Sensitive
Waldo gentian	*Gentiana setigera*	Sensitive
Western white bog violet	*Viola primulifolia ssp. occidentalis*	Sensitive
Western ragwort	*Packera Hesperia*	Sensitive
Waldo buckwheat	*Eriogonum pendulum*	Watch List

A total of 25.9 miles of routes were surveyed from May 9 to June 23 2006, 5.0 miles were surveyed during September 2011, 1.1 miles were surveyed from April – May 2012 and 5.0 miles from May to September 2013 by Forest Service botanists. 2013 surveys focused primarily on inventoried unauthorized routes within the known range of the Siskiyou bells (*Prosartes parvifolia*), unauthorized routes to dispersed campsites, proposed parking areas on 17N49 and incidental findings associated with effectiveness monitoring of Mcdonald's rockcress sites prioritized for surveys in 2013. A majority of the inventoried unauthorized routes surveyed are associated with old mining roads within the North Fork and main stem Smith River watersheds on the Smith River NRA and located on the Gasquet, High Divide, High Plateau, and Hiouchi 7.5 minute USGS quads. In addition to surveys of inventoried unauthorized route surfaces, surveys were also conducted on their edges out to 100 feet on either side if suitable habitat was present.

In essence the population data with regards to the high percentages of plants found on route surfaces is a result of the fact that a majority of the surveys performed for the project occurred within 100 feet of inventoried unauthorized routes. It is also of interest to note that within this 100 foot strip on either side of the routes all plants found were within 33 feet of the center of the routes and no plants were found between 33 feet from the center of unauthorized routes and out 100 feet.

Sensitive botanical species not found to be present or not effected by the proposed action are herein removed from further analysis. The following sensitive botanical species were found to be present within 33 feet of inventoried unauthorized routes. The proceeding Methodology section provides an explanation for how an individual plant was defined.

Table 48. Species present on or within 100 feet of inventoried unauthorized routes on Smith River NRA

Common Name	Scientific Name	Habitat	Number of Occurrences	Number of Plants
Mcdonald's rockcress	*Arabis mcdonaldiana*	Seasonally Dry Serpentine	40	8988
Howell's jewelflower	*Streptanthus howellii*	Seasonally Dry Serpentine	50	1466
Opposite-leaved lewisia	*Lewisia oppositifolia*	Seasonally Dry Serpentine	17	7681
Serpentine catchfly	*Silene serpentinicola*	Seasonally Dry Serpentine	29	24285
Waldo gentian	*Gentiana setigera*	Serpentine Wetland	8	1617
Western white bog violet	*Viola primulifolia ssp. occidentalis*	Serpentine Wetland	20	10498

Species Accounts

Howell's jewelflower (Strepthanthus howellii) STHO

Howell's jewelflower (species code = STHO) is a rare herbaceous perennial forb that is considered to be a strict serpentine endemic (Stafford 2005), only found on serpentine substrate. It is often found were large rocks and boulders provide protection and along roads surrounded by dense shrub cover. It is often observed in disturbed niches which may be due to such factors as improved conditions for seed germination, the reduction in competition from more aggressive plant species, passive avoidance, or morphological traits that afford some protection from negative effects and adaption to fire disturbance. Howell's jewelflower is confined to dry, brushy serpentine exposures on the Josephine ophiolite in the Siskiyou Mountains of Josephine and Curry counties, Oregon and Del Norte County in California. The California Native Plant Society rates it as List 1B.2 - Rare, threatened, or endangered in California and elsewhere. It is a Forest Service Region 5 and Region 6 sensitive species and is included on the BLM Oregon State Office Sensitive Species List.

There are 33 element occurrences[2] known to exist in Curry and Josephine Counties, Oregon (OHNPDB 2013). Of the 33 occurrences known from Oregon, 10 have not been observed in over 20 years and 15 have not been observed in at least 10 years. Twelve have fewer than 12 ramets[3], 22 have a "poor estimated viability" rating, 4 lack population counts and 5 have "good" to excellent" estimated viability in the Oregon Natural Heritage Program database.

[2] The biologically neutral term "occurrence," as defined by the state Natural Heritage Program, denotes geographically distinguishable sites (within ¼ mile of each other) for rare species (NatureServe 2006).

[3] Ramets represent the number of vegetative units or stems produced by a plant. For multi-stemed plants that branch below ground they represent what is visible to the observer.

Howell's jewelflower has been assigned a global conservation status rank of G2 (Imperiled) with a high risk of extinction due to its very restricted range, very few occurrences, small number of individuals, intrinsic vulnerability, and environmental specificity. Federal land management agencies (especially the Forest Service and BLM) have placed increasing emphasis on NatureServe ranks to prioritize their conservation and planning efforts.

Survey results regarding the number of plants found either on or adjacent to the travel surface of inventoried unauthorized routes proposed for designation as motorized trails are addressed in each alternative. The high number of Howell's jewelflower plants found on routes displaying obvious use can be attributed to several factors. First, Howell's jewelflower is rhizomatous in nature. An underground stem gives rise to one to several shoots making a count of actual plants impossible without digging plants up. Excavation of one plant of Howell's jewelflower revealed that it produced 3 shoots. Hence an individual plant of Howell's jewelflower may produce 1 to 3 shoots at a minimum. Census data displayed under each alternative records the number of shoots observed and are recorded as number of plants. This ability of mature plants to produce multiple above ground stems contributes to their persistence. If one stem out of 3 is crushed a plant has greater odds of surviving than a plant with a single stem crushed to the point where nutrient transport ceases. Odds for survival are improved where more than one stem has to be crushed to avoid significant damage leading to loss of an individual plant. The loss of some above ground stems to crushing or grinding would set the plant back, perhaps preventing flowering the following season, but it would not necessarily lead to the loss of the individual.

Secondly, all Forest Service sensitive plant species were found within 40 feet. of inventoried unauthorized routes proposed as motorized trails, exhibiting a tolerance to disturbance by virtue of their presence in disturbed settings associated with the low level of use. One explanation for their survival on travel surfaces is the fact that over-wintering meristematic tissue arises from the crown of an underground root of which is buried under a protective layer of soil. Plant mortality depends on the amount of meristematic tissues killed (Brown et. al. 2000). The fact that this species' meristematic tissue is generated 3 to 5 inches below ground level affords some protection from direct negative effects.

Lastly the absence of this species beyond 32 feet and up to 100 feet, the zone surveyed, suggests that the low level of use on these routes may provide some benefit to the species through improved seed bed conditions and may provide a benefit when it comes to their poor competitive ability and the removal of disturbance intolerant competing species.

Opposite-leaved lewisia (Lewisia oppositifolia) LEOP

Opposite-leaved lewisia (species code = LEOP) is a rare to locally uncommon herbaceous perennial forb known only from southwestern Oregon and northwestern California. It occurs in barren, gravelly to cobbly soils of serpentine origin in shallow depressions and benches that tend to remain saturated or puddled into spring. The California Native Plant Society rates it as List 2.2 - Rare, threatened, or endangered in California but more common elsewhere. It is a Forest Service Pacific Southwest Region (Region 5) sensitive species. It is not on the Pacific Northwest Region's (Region 6) sensitive species list. There are at least 29 element occurrences in Curry, Jackson and Josephine Counties, Oregon according to the Oregon Natural Heritage Program (ONHP) which stopped tracking this species in 1989 when it was removed from ONHP List 4 (Vrilakas 2005). Because this species is not sensitive in Region 6 surveys are lacking and detailed data is not available for occurrences in Oregon. It has been assigned a global conservation status rank of G4; apparently secure but factors exist to cause some concern. These factors include intrinsic vulnerability and environmental specificity.

Opposite-leaved lewisia is a taprooted perennial that reproduces entirely by seed. Canopy cover where it grows is often minimal to zero, and competition from other vegetation is low and, thus, fuel loads are low.

Plant blooming coincides with seasonal moisture in the spring, and usually occurs from May to early June. In times of drought, plants remain dormant and quickly senesce following a decrease in water availability. By summer, areas with *L. oppositifolia* that were moist or were saturated are dried, and the plant is no longer detectable. The root crown including the caudex (which is a thick, sometimes woody, stem of a perennial that is at or beneath the ground level) of the opposite-leaved lewisia is located about 2 inches deep below the soil surface, a depth which may afford some protection.

Survey results regarding the number of opposite-leaved lewisia found either on or adjacent to the travel surface of inventoried unauthorized routes proposed for designation as motorized trails are addressed in each alternative. All plants found were within 32 feet of the center of inventoried unauthorized routes proposed for addition to the NFTS as motorized trails. Opposite-leaved lewisia initiates new spring growth from enlarged caudices which are short almost vertical stems located at or just below ground level (Hickman 1993). Because of the shallow location of the over wintering buds it is more vulnerable to the grinding effects of tires than species like Howell's jewelflower and *Silene serpentinicola* which bear their over wintering buds at greater depths. Opposite-leaved lewisia is also prone to adverse effects from dewatering. It occurs in shallow depressions and benches that tend to remain saturated or puddled into spring. Actions that change the concave micro-topography can dry out occupied sites and make them no longer habitable.

Serpentine catchfly (Silene serpentinicola)

The serpentine catchfly (species code = SISE10) is a rare herbaceous perennial forb. It is endemic to California and known from Del Norte County where it occurs on serpentines openings. It is also suspected that this species may be found in southwestern Oregon as well, however recent surveys have only found it north of Pine Flat Mountain proximal to the California border. It occurs in dry, gravelly to cobbly soils of serpentine origin on flat cross slopes. The serpentine catchfly is a taprooted, herbaceous perennial with an underground caudex which branches beneath the soil surface. From these branches shoots develop. Reproductive plants flower between mid-June to mid-July and may flower later into August depending on the season. Flowering at a given population varies from year to year based upon monitoring observations. Dormancy has been observed in other species of *Silene* (Lesica 1999). The combination of habitat (open settings, often disturbed, rocky/little herbaceous), development of underground branches that further develop above-ground shoots, the reproductive period during the summer, and possibly periods of dormancy indicate that serpentine catchfly ecology, distribution and persistence in the landscape is likely associated with fire.

Little is known about the biology of this species although it appears to be early successional in nature with a preference for disturbed soils found on or adjacent to roads. Like Howell's jewelflower it is often observed in disturbed niches, which has led to speculation that this is due to the same factors that are noted under Howell's jewelflower such as improved conditions for seed germination, the reduction in competition from more aggressive plant species, passive avoidance, or subterranean that afford some protection from negative effects.

The California Native Plant Society rates it as List 1B.2 - rare, threatened, or endangered in California and elsewhere. It is a Forest Service Pacific Southwest Region (Region 5) sensitive species. It is a recently described species (Nelson and Nelson 2004). Because it is recently described surveys are lacking and detailed information is not available for range wide occurrence data. Data provided here on number of plants is largely a result of surveys performed for the proposed action. The serpentine catchfly has been assigned a global conservation status rank of G2 (Imperiled) with a high risk of extinction due to its very restricted range, very few known occurrences, intrinsic vulnerability, and environmental specificity.

Like Howell's jewelflower, serpentine catchfly produces an underground stem that gives rise to one to several shoots making a count of actual plants impossible without digging plants up. Excavation of one plant of Serpentine catchfly revealed that it produced 5 above ground shoots. Hence an individual plant of Serpentine catchfly may produce 1 to 5 shoots at a minimum. Census data displayed herein records the number of shoots observed and are recorded as plants. No plants were found between 32 and 100 feet from the proposed motorized trails. Survey results regarding the number of serpentine catchfly plants found either on or adjacent to the travel surface of inventoried unauthorized routes proposed for designation as motorized trails are addressed in each alternative.

Waldo gentian (Gentiana setigera)

The Waldo gentian is an herbaceous perennial forb that spreads by creeping rhizomes. It is known primarily from southwestern Oregon and northwestern California with one disjunct occurrence occurring on serpentines in Mendocino County. Most occurrences are relatively small and isolated by unsuitable upland habitat. It is most abundant in portions of fens with low shrub and tree cover, high graminoid cover, and fine-textured soils with moderate moisture content (Frost et. al. 2004). The California Native Plant Society rates it as List 1B.2 - rare, threatened, or endangered in California and elsewhere. It has been assigned a global conservation status rank of G2 (Imperiled) with a high risk of extinction due to its very restricted range, very few known occurrences, intrinsic vulnerability, and environmental specificity. *Gentiana setigera* is more abundant in Oregon than in California where there is greater concern for its viability. There are 49 element occurrences in Curry and Josephine Counties, Oregon and 5 occurrences in Del Norte County, California and one occurrence in Mendocino County, California. The 5 California occurrences in Del Norte County are all located on Six Rivers National Forest on the Smith River National Recreation Area and support approximately 2303 plants. No plants were found on routes proposed for designation.

Western white bog violet (Viola primulifolia ssp. Occidentalis)

The western bog violet is an herbaceous perennial forb that spreads by creeping rhizomes. It is associated with flowing water, steep slopes, and coarse textured soils, under open canopy conditions with high rock and soil cover (Frost et. al. 2004). It is known only from southwestern Oregon and northwestern California. The California Native Plant Society rates it as List 1B.2 - Rare, threatened, or endangered in California and elsewhere. It has been assigned a global conservation status rank of G5T2 (Imperiled) with a high risk of extinction due to its very restricted range, very few known occurrences, intrinsic vulnerability, and environmental specificity. There are 28 element occurrences in Curry and Josephine Counties, Oregon and 9 occurrences in Del Norte. All of the occurrences on the Forest are within the Smith Rivers National Recreation Area.

Like Howell's jewelflower and the serpentine catchfly the western bog violet produces an underground stem that gives rise to one to several shoots making a count of actual plants impossible without digging plants up. For multi-stemmed plants that branch below ground they represent what is visible to the observer. The number of stems produced by an individual plant is not known so the conversion of stems to individual plants cannot be done. What is important to note is that the census data displayed herein records the number of shoots observed that are recorded as the number of individuals plants. No plants were found on routes proposed for designation.

Some of the occurrences of the Mendocino gentian and the western white bog violet in the project area are proposed for designation as essential California darlingtonia wetland areas in the draft conservation strategy for 5 rare serpentine wetland species which includes the Mendocino gentian and the western white bog violet. However, roadside ditches or steep topography form a barrier to cross country travel through these wetlands.

Environmental Consequences

Alternative 1 – No action

Direct and indirect Effects:

The No Action alternative provides a baseline for comparing the other alternatives. There are 3 actions proposed under Alternative 1. An analysis of the direct and indirect effects of each follows.

Under the No Action Alternative, no changes would be made to the NFTS (National Forest Transportation System) and no restoration of hydrologic function would occur on inventoried unauthorized routes. Current management plans would continue to guide project area management. The current MVUM, published in 2009, would continue to provide the latest information on motorized use of NFTS roads and trails. Inventoried unauthorized routes would continue to have no status as NFTS facilities and hydrologic function would not be restored.

1) Not adding new NFTS roads or trails.

Direct Effects

The direct effects occur within 30 feet of inventoried unauthorized routes. Table 49 shows the number of plants and the number of occurrences of each sensitive species within 30 feet of inventoried unauthorized routes not added to the NFTS under alternative 1. There are 4 sensitive botanical species and one watch list species within 30 feet of inventoried unauthorized routes that would not be added to the NFTS. The watch list species is the Waldo buckwheat (ERPE6). The sensitive species are the opposite-leaved lewisia (LEOP), the serpentine catchfly (SISE10), Howell's jewelflower (STHO), and the western white bog violet (VIPRO2). Route 17N49.105 passes through and directly impacts the western white bog violet (occurrence VIPRO2_11) which occurs in serpentine wetland in a Darlingtonia Fen that is identified as a critical Fen in a draft Conservation Strategy for 5 rare serpentine wetland species. Proposed critical fens are managed to provide for the viability of the species. Failure to barricade this route to prevent assess to the fen could result in a loss of viability for the species.

Table 49. Sensitive plants within 30 feet of alternative 1 UARs

Road_Route	Miles	OCC_ID	ERPE6	LEOP	SISE10	STHO	VIPRO2
17N07.2	0.51	LEOP_002		93			
17N49.100	3.88	ERPE6_018	47				
17N49.100	3.88	SISE10_020			1139		
17N49.100	3.88	STHO_014				2	
17N49.100	3.88	STHO_017				2	
17N49.100	3.88	STHO_017				48	
17N49.101	1.17	SISE10_007			300		
17N49.101	1.17	SISE10_009			300		
17N49.102	0.87	SISE10_008			1000		
17N49.103	0.26	SISE10_009			225		
17N49.104	0.86	ERPE6_008	1				
17N49.104	3.82	ERPE6_010	548				
17N49.104	3.82	SISE10_012			200		
17N49.104	3.82	SISE10_016			650		
17N49.104	3.82	SISE10_018			616		

Road_Route	Miles	OCC_ID	ERPE6	LEOP	SISE10	STHO	VIPRO2
17N49.104	3.82	STHO_017				120	
17N49.104	0.86	STHO_017				5	
17N49.105	1.43	SISE10_016			570		
17N49.105	1.43	SISE10_018			294		
17N49.105	1.43	STHO_017				6	
17N49.105	1.43	VIPRO2_011					600
17N49.105A	0.12	SISE10_016			310		
17N49.105A	0.12	STHO_017				1	
17N49.106	0.32	STHO_017				4	
17N49.107	0.64	STHO_017				2	
17N49.108	0.31	STHO_017				2	
17N49.11	1.94	SISE10_014			147		
17N49.11	2.55	SISE10_014			517		
17N49.11	1.94	STHO_017				19	
17N49.11	2.55	STHO_017				16	
17N49.11N	0.23	STHO_002				3	
17N49.12	2.1	ERPE6_018	5				
17N49.12	2.1	SISE10_017			302		
17N49.12	2.1	STHO_010				76	
17N49.13	0.3	SISE10_019			45		
17N49.14	0.54	STHO_017				9	
17N49.15	0.62	STHO_017				1	
17N49.4	0.75	SISE10_006			750		
17N49.7	3.06	ERPE6_005	72				
17N49.7	3.06	ERPE6_009	241				
17N49.7	3.06	SISE10_013			400		
17N49.7	0.29	SISE10_015			800		
17N49.7A	0.82	ERPE6_009	1				
17N49.7A	0.82	SISE10_017			600		
17N49.8	0.39	SISE10_016			58		
17N49.8	0.39	STHO_017				13	
18N51.100	1.45	LEOP_014		27			
305.100	0.57	STHO_024				29	
305.107	1.25	ERPE6_048	67				
305.107	1.25	STHO_047				14	
305.109	2.43	LEOP_011		29			
305.109	2.43	LEOP_012		42			
305.109	2.43	LEOP_013		162			
305.109	2.43	SISE10_027			295		
305.109A	1.02	LEOP_011		44			
305.109A	1.02	STHO_041				155	
305.115	1.74	ERPE6_045	52				

Road_Route	Miles	OCC_ID	ERPE6	LEOP	SISE10	STHO	VIPRO2
305.118	0.8	ERPE6_031	9				
305.118	0.8	ERPE6_037	21				
305.118	0.8	STHO_039				7	
305.121B	1.03	STHO_027				6	
305.125	1.44	STHO_016				1	
305.126	1.56	STHO_009				44	
305.126	1.56	STHO_013				1	
305.128	0.7	ERPE6_030	83				
305.128	0.7	STHO_037				3	
305.128	0.7	STHO_039				4	
305.131	0.09	STHO_033				52	
		Total Plants	1147	397	9518	645	600

Table 50 displays the number of plants, the number of occurrences, and associated percentages of each Watch list and sensitive plant species within 30 feet of unauthorized routes that will not be added to the NFTS.

Table 50. Sensitive and watch list species directly affected by alternative 1

	ERPE6	LEOP	SISE10	STHO	VIPRO2
Number of Plants	1147	397	9518	645	600
Total Number of Plants on Smith River NRA	6339	7681	24285	1466	10498
% of Total Plants on Smith River NRA	18%	5%	39%	44%	6%
Number of Occurrences Affected	10	5	13	14	1
Total Number of Occurrences on Smith River NRA	48	17	29	50	20
% of Total Occurrences on Smith River NRA	21%	29%	45%	28%	5%

Alternative 1 would not designate and add any new inventoried unauthorized routes to the NFTS. Implementation of the route designation process is designed to provide for improved management of motorized recreation on the Smith River National Recreation Area. A potential direct effect of not adding inventoried unauthorized routes to the NFTS is a decline in the potential to manage illegal use. Without this management and in the absence of a monitoring plan direct negative effects to Watch list and sensitive plant species from motorized use would go undetected. Without monitoring increased levels of use will go unnoticed and could conceivably reach a level that would threatened the viability of the species in the long term. Additionally, no inventoried unauthorized routes with sensitive plants growing thereon would be barricaded from motorized use under this alternative increasing the potential for negative direct effects, damage and death, if use should increase. Lastly, no unauthorized routes would receive route delineation, an action in which trails spurring off of routes added to the NFTS are blocked to prevent motorized use foregoing the benefit to Watch List and sensitive plants that occur on the spurs.

Indirect Effects

Indirect effects will occur 30 to 100 feet from the center of inventoried unauthorized routes.

Table 51 shows the number of plants and the number of occurrences of each sensitive species between 30 feet to 100 feet of inventoried unauthorized routes not added to the NFTS under alternative 1. There are 5 sensitive botanical species and one Federally listed endangered species between 30 to 100 feet of inventoried unauthorized routes that would not be added to the NFTS.

Table 51. Sensitive plants 30 feet to 100 feet of alternative 1 UARs

Road_Route	Miles	OCC_ID	ARMA33	GESE2	LEOP	SISE10	STHO	VIPRO2
17N49.104	3.82	SISE10_018				25		
17N49.104	0.86	STHO_003					1	
17N49.104	3.82	STHO_017					2	
17N49.106	0.32	STHO_017					1	
17N49.107	0.64	SISE10_011				281		
17N49.11	2.55	STHO_017					1	
17N49.14	0.54	STHO_017					5	
17N49.7	3.06	GESE2_002		250				
17N49.7	3.06	VIPRO2_005						215
17N49.7	3.06	VIPRO2_007						2125
305.107	1.25	SISE10_029				200		
305.109	2.43	LEOP_012			246			
305.115	1.74	ARMA33_039	17					
			17	250	246	506	10	2340

Table 52 displays the number of plants, the number of occurrences, and associated percentages of each sensitive plant species and one Federally listed endangered species 30 to 100 feet from unauthorized routes that will not be added to the NFTS.

Table 52. Federally listed endangered and sensitive plant species indirectly affected on alternative 1 UARs

	ARMA33	GESE2	LEOP	SISE10	STHO	VIPRO2
Number of Plants	17	250	246	506	10	2340
Total Number of Plants on Smith River NRA	8988	1617	7681	24285	1466	10498
% of Total Plants on Smith River NRA	0.2%	15%	3%	2%	1%	22%
Number of Occurrences Affected	1	1	1	3	5	2
Total Number of Occurrences on Smith River NRA	40	48	17	29	50	20
% of Total Occurrences on Smith River NRA	3%	2%	6%	10%	10%	10%

Negative indirect effects are associated with fugitive dust raised by vehicle traffic which can disrupt photosynthetic processes, thereby suppressing plant growth and vigor, especially immediately adjacent to

heavily used routes. Due to the low use rate of the proposed routes and high annual rainfall, it is unlikely that there are negative impacts from dust. Indirect negative effects are also associated with invasive plant species. Indirect effects can also occur from erosion due to route related channeling of water and sediment deposition which can result from not managing these routes through restoration of hydrologic function and development of a monitoring plan. There is one occurrence of the Federally listed endangered Mcdonald's rockcress within 50 feet of inventoried unauthorized route 305.115, which could be indirectly impacted by water channeled by 305.115 in the absence of monitoring to detect erosion impacts.

2) Direct and indirect effects of not restoring hydrologic function on inventoried UARs.

Restoring hydrologic function concerns insuring that road and route surfaces are not channeling water increasing its erosive force. This is beneficial to plants growing on or adjacent to route surfaces as channeled water can undermine plants and contribute to their demise. The Mendocino gentian and the western white bog violet which occupy serpentine wetland habitats are particularly sensitive to changes in hydrology. Not restoring hydrologic function on inventoried unauthorized routes can have negative direct and indirect effects on the Federally listed Mcdonald's rockcress and on Forest Service sensitive species the Mendocino gentian and the western white bog violet growing which occur in serpentine wetland habitats that are sensitive to changes in hydrology.

3) Direct and indirect effects of maintaining current Motor Vehicle Use Map (MVUM)

The MVUM provides current direction on motorized use on NFTS roads and trails on the Gasquet Ranger District and the Smith River National Recreation Area allows for management of only those motorized trails that have been added to the NFTS but precludes management of existing inventoried routes that are not on the MVUM which could benefit from their management as explained above.

Cumulative Effects

The Smith River National Recreation Area provides an appropriate context for the analysis of cumulative effects for the Smith River NRA Travel Management project. All species carried forward in the analysis except for the serpentine catchfly range from Southwestern Oregon to Northwestern California. Data on analyzed species was received from the Oregon Biodiversity Information Center in August 2013. Several gaps in this data set resulted in it not being compatible with the more complete data from Northwestern California. Oregon no longer keeps records on the Waldo buckwheat and the opposite-leaved lewisia is not a sensitive species in Region 6 (Oregon). Additionally, many occurrences lack population data, data that forms an important part of this analysis. Hence, the geographic extent of this analysis is confined to the Smith River NRA which comprises a majority of the California range of the species carried forward in the analysis.

The temporal scope of the cumulative effects analysis is 20 years.

Cumulative effects are not analyzed in this document for the Federally listed endangered Mcdonald's rockcress as it is not being affected by this project. Cumulative effects herein are associated with the Watch List species the Waldo buckwheat, and the sensitive species the Mendocino gentian, the opposite leaved lewisia, the serpentine catchfly, Howell's jewelflower, and the western white bog violet.

The cumulative effects of management activities such as timber harvesting, road building, mining, and fire suppression has resulted in many upland habitats and riparian areas with altered function and processes. However, the future options of timber harvest, road construction, and mining were largely determined through the passage of the 1990 Smith River NRA Act, as well as through designation much of the timber management zone as Late-successional Reserves under the goals of 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 (USFS/BLM 1994). The entire Smith basin is a Key

Watershed. The NRA Act legislated management direction through eight management zones and Streamside Protection Zones. Streamside protection legislated in the NRA Act meets and, in some instances surpasses, the goals of Riparian Reserves in the Aquatic Conservation Strategy. The trend for upland and riparian habitats on the NRA is towards recovery. Since the 1990 NRA Act, timber harvest on the NRA has been geared towards restoration of late-successional characteristics and habitat development (thinning in younger stands). Fuel treatments were designed to help restore natural fire regimes. In the long term, the Gordon Hill project will benefit fish, wildlife and plant species. For these reasons it is anticipated that future timber harvest, road construction and mining will be substantially limited and not contribute toward cumulative effects.

An extensive cumulative effects project list was prepared for this analysis on September 1, 2013 and appears elsewhere in the EIS. Most occurrences of the Watch List and sensitive plant species analyzed herein are not affected by actions resulting from these projects. The projects associated with trail construction, relocation and maintenance, land acquisition, bridge replacement and seismic retrofit, storm damage and cable mesh drape on highway 101 have no effect on plants analyzed and hence there are no cumulative effects.

Projects that are designed to reduce competition by removing invasive non-native plant species serve to benefit rare species analyzed. The North Fork Smith Special Interest Area Road Access project provides protection to occurrences of the Waldo buckwheat, and the sensitive species the Mendocino gentian, the opposite leaved lewisia, the serpentine catchfly, and Howell's jewelflower which occur on High Plateau. Projects that include shaded fuel breaks, roadside sanitation, community protection and understory burns that are designed to reduce fuel accumulation also potentially benefit species affected by this project. Vegetative succession and the resultant increased cover have been identified as possible concerns (Carothers 2007) for *L. oppositifolia* and *S. serpentinicola* in that increasing cover would change habitat suitability for the species; habitat characterized by low canopy and low shrub cover. The significance of concern over vegetation succession in ultramafic settings due to fire suppression is not straightforward. Suppression may not be as influential in ultramafic settings as it has been in forests or shrublands. In the summer and fall of 2002, the Biscuit Wildfire burned areas of the North Fork Smith River watershed on Six Rivers and in the Illinois Valley on the Siskiyou National Forest. There are no quantitative data for populations corresponding to areas of high intensity fire prior to the fire. Monitoring in 2005 indicated that known sites of *L. oppositifolia* and *S. serpentinicola* within the fire perimeter were extant after the wildfire. Additional actions that benefit rare species affected by the proposed action include

Present and future projects that may contribute cumulative effects to *L. oppositifolia* include Coon Mountain Meadow Restoration Project, Gordon Hill Vegetation Management Project. However, monitoring of burning within the project area over the past 5 years has not shown any negative effects to lewisia populations there. The opposite leaved-lewisia is afforded some protection from fire due to its early seed set and the fact that it occurs in area with sparse vegetation. For this reason it is not anticipated that the Gordon Hill Vegetation Management Project will contribute cumulative effects to the species.

For reasons noted above, no present or future actions are likely to result in cumulative effects that lead to Federal listing of the Waldo buckwheat, the Mendocino gentian, the opposite leaved lewisia, the serpentine catchfly, Howell's jewelflower, or the western white bog violet.

Alternative 3

Direct and indirect effects:

Alternative 3 proposes 7 actions to inventoried unauthorized routes and National Forest Transportation System roads. An analysis of direct and indirect effects of these proposed actions follows.

1) Direct and indirect effects of the addition of 24 inventoried unauthorized routes as roads (ML 1, 2, and 3), totaling 15 miles, to the current NFTS.

There are no known sites of Watch list, Forest Service sensitive plant species or Federally listed endangered Mcdonald's rockcress within 100 feet of the routes that are proposed to be added to the NFTS as ML 1, 2, or 3 roads under Alternative 3. Therefore there are no direct or indirect effects associated with this action.

2) Direct and indirect effects of the addition of 45 inventoried UARs as motorized trails to the NFTS, totaling 44 miles.

There are no occurrences of the Federally listed endangered Mcdonald's rockcress within 100 feet of inventoried unauthorized routes proposed for addition to the NFTS, hence there are no direct or indirect effects to the species.

Direct Effects

Direct effects occur within 30 of inventoried unauthorized routes proposed for addition to the NFTS. Table 53 displays the number of plants and the occurrences of each of the 3 sensitive species and the one Watch List species within 30 feet of inventoried unauthorized routes proposed for addition to the NFTS. These species are the Waldo buckwheat (ERPE6), the opposite-leaved lewisia (LEOP), the serpentine catchfly (SISE10), Howell's jewelflower (STHO).

Table 53. Watch list and sensitive plants within 30 feet of alternative 3 UARs

Route	Miles	Occ_ID	ERPE6	LEOP	SISE10	STHO
17N49.101	1.17	SISE10_007			300	
17N49.101	1.17	SISE10_009			300	
17N49.102	0.87	SISE10_008			1000	
17N49.104	3.82	ERPE6_010	613			
17N49.104	3.82	SISE10_012			200	
17N49.104	3.82	SISE10_016			650	
17N49.104	3.82	SISE10_018			616	
17N49.104	3.82	STHO_017				120
17N49.107	0.64	STHO_017				2
17N49.108	0.31	STHO_017				2
17N49.11	4.49	SISE10_014			664	
17N49.11	4.49	STHO_017				35
17N49.11N	0.23	STHO_002				3
17N49.13	0.30	SISE10_019			45	
17N49.14	0.54	STHO_017				9
17N49.15	0.62	STHO_017				1
17N49.4	2.04	SISE10_006			750	
17N49.7	3.06	ERPE6_005	72			
17N49.7	3.06	ERPE6_009	241			
17N49.7	3.06	SISE10_013			2072	
17N49.7A	0.82	ERPE6_009	1			
17N49.7A	0.82	SISE10_017			600	
17N49.8	0.39	SISE10_016			58	

Route	Miles	Occ_ID	ERPE6	LEOP	SISE10	STHO
17N49.8	0.39	STHO_017				13
18N51.100	1.45	LEOP_014		27		
305.109	2.43	LEOP_011		29		
305.109	2.43	LEOP_012		42		
305.109	2.43	LEOP_013		162		
305.109	2.43	SISE10_027			295	
305.118	0.80	STHO_039				8
305.121B	1.03	SISE10_022			420	
305.121B	1.03	STHO_027				6
305.125	1.44	STHO_016				1
		Totals	**936**	**260**	**7970**	**200**

Table 54 displays the number of plants and the number of occurrences of each watch list and sensitive plant species within 30 feet of unauthorized routes proposed to be added to the NFTS as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on Smith River NRA.

Table 54. Sensitive and watch list plants directly affected on alternative 3 UARs

Number of Plants	936	260	7970	200
Total Number of Plants on SRNRA	6339	7681	24285	1466
% of Total Plants on SRNRA	15%	3%	33%	14%
Number of Occurrences Affected	2	2	9	5
Total Number of Occurrences on SRNRA	4%	12%	31%	10%
% of Total Occurrences on SRNRA	48	17	29	50

Negative direct effects to sensitive vascular plants within 30 feet of routes proposed for addition to the NFTS under Alternative 3 result from reductions in photosynthetic capacity, poor reproduction, mortality, increases in bare ground, diminished litter cover, and a reduction in the overall cover and frequency of plant species. These effects are of particular concern with rare plant species which are typically represented by a limited number of populations and/or individuals due to their potential to affect the long term viability of rare plant populations by increasing mortality and decreasing the vigor and productivity of populations.

It is important to point out that the proposed action concerns the designation of existing inventoried unauthorized routes that have experienced motorized recreation use and the negative effects to plants noted above have occurred and are ongoing. As a result of the use these routes have experienced the plant cover is low and bare ground cover is high. Plant species that are not tolerant of vehicular use that may have been present on routes prior to the construction are now present in lower numbers or no longer present at all. Sensitive plants that are present in relatively high numbers have a tolerance for the low level of use that has been occurring most likely due to passive avoidance, subterranean meristem tissue, and multi-stem growth, and a reduction in competition from plant species that are less tolerant of the current level of use.

Inventoried unauthorized routes proposed for addition as motorized trails to the NFTS will receive route delineation, an action in which trails spurring off routes added to the NFTS are blocked to prevent motorized use the direct effect of which is to benefit Watch List and sensitive plants that occur on the spurs.

Indirect Effects

Indirect effects occur 30 to 100 feet from the center of inventoried unauthorized routes. Table 55 shows the number of plants and the occurrences of each sensitive species between 30 feet to 100 feet of inventoried unauthorized routes added to the NFTS under alternative 3. There are 5 sensitive botanical species between 30 to 100 feet of inventoried unauthorized routes that would be added to the NFTS. There were no sensitive plants beyond 70 feet from the inventoried routes. One occurrence of the Mendocino gentian (GESE2_001) and one occurrence of the western white bog violet (VIPRO2_007) share a serpentine wetland which is 70 feet from inventoried route 17N49.7. VIPRO2_005 is 40 feet from 17N49.7. The two serpentine wetlands which contain these 3 occurrences have been designated as critical Darlingtonia fens in a draft Conservation Strategy for 5 rare serpentine wetland species. Steep topography serves as a barrier to prevent motorized vehicle from accessing these fragile serpentine wetland habitats.

Table 55. Sensitive plants within 30 to 100 feet of alternative 3 UARs

Route	Miles	Occ_ID	GESE2	LEOP	SISE10	STHO	VIPRO2
17N49.104	3.82	STHO_017				2	
17N49.11	4.49	STHO_017				1	
17N49.14	0.54	STHO_017				5	
17N49.104	3.82	SISE10_018			25		
305.109	2.43	LEOP_012		246			
17N49.107	0.64	SISE10_011			281		
17N49.7	3.06	GESE2_001	250				
17N49.7	3.06	VIPRO2_005					215
17N49.7	3.06	VIPRO2_007					2125
		Totals	250	246	306	8	2340

Table 56 displays the number of plants and the number of occurrences of each sensitive species 30 to 100 feet from inventoried unauthorized routes proposed to be added to the NFTS under alternative 3 as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on the Smith River NRA.

Table 56. Sensitive plants indirectly affected on alternative 3 UARs

	GESE2	LEOP	SISE10	STHO	VIPRO2
Number of Plants	250	246	306	8	2340
Total Number of Plants on Smith River NRA	1617	7681	24285	1466	10498
% of Total Plants on Smith River NRA	15%	3%	1%	1%	22%
Number of Occurrences Affected	1	1	2	1	2
Total Number of Occurrences on Smith River NRA	48	17	29	50	20
% of Total Occurrences on Smith River NRA	2%	6%	7%	2%	10%

Negative indirect effects are associated with fugitive dust raised by vehicle traffic which can disrupt photosynthetic processes, thereby suppressing plant growth and vigor, especially immediately adjacent to heavily used routes. Due to the low use rate of the proposed routes and high annual rainfall, negative impacts from dust are very low. Indirect negative effects are also associated with invasive plant species. However no invasive plant species were noted adjacent to routes proposed for addition to the NFTS, nor did erosion appear to be affecting the sensitive species listed in Table 55 and Table 56.

3) The addition of seasonal gate closures on 2 roads and 5 motorized trails, totaling 11 miles.

There are no direct or indirect effects from installing 2 seasonal gate closures on 2 existing roads as the engineered surfaces of these roads is not considered suitable habitat for Federally listed endangered, watch list plant species, or sensitive plant species nor have they been found as a result of surveys nor do these routes access sites occupied by these species. Placing a seasonal closure on the following inventoried unauthorized routes will have a positive direct effect on watch list and sensitive plants and occurrences, see Table 57, which grow on and adjacent to routes displayed by preventing motorized use when the substrate is wet and the plants are more vulnerable. There are no negative direct or indirect effects associated with this action.

Table 57. Watch list and sensitive plants on UARS to be seasonally gated under alternative 3

Road_Route	Miles	OCC_ID	ERPE6	SISE10	STHO
17N49.101	1.17	SISE10_007		300	
17N49.101	1.17	SISE10_009		300	
17N49.11	2.55	SISE10_014		517	
17N49.11	1.94	SISE10_014		147	
17N49.11	2.55	STHO_017			16
17N49.11	1.94	STHO_017			19
17N49.4	0.75	SISE10_006		750	
17N49.7	3.06	ERPE6_005	72		
17N49.7	3.06	ERPE6_009	241		
17N49.7	3.06	SISE10_013		400	
17N49.7	0.29	SISE10_015		800	
305.118	0.8	ERPE6_031	9		
305.118	0.8	ERPE6_037	21		
305.118	0.8	STHO_039			7
			343	3214	42

4) The mixed-use of 1 road (17N49), totaling 4 miles.

17N49 is a NFTS road. These roads are not considered suitable habitat for rare plant species found in the project area, due to their altered engineered surfaces, nor are rare species known to occur on these surfaces in the project area. Therefore, there are no direct or indirect effects from the mixed-use of FS road 17N49.

5) The decommissioning of 69 closed roads (ML 1), totaling 35 miles, and decommissioning of 43 ML 2 and 3 NFTS roads, totaling 20 miles.

These roads are NFTS roads and are not considered suitable habitat for rare plant species found in the project area, due to their altered engineered surfaces, nor are rare species known to occur on these surfaces in the project area. Therefore, there are no direct or indirect effects from the decommissioning of roads included in this proposed action.

6) The restoration of hydrologic function to 162 inventoried UARs totaling 79 miles.

Restoring hydrologic function concerns insuring that road and route surfaces are not channeling water increasing its erosive force. This is beneficial to plants growing on or adjacent to route surfaces as channeled water can undermine plants and contribute to injury or loss. The Mendocino gentian and the western white bog violet which occupy serpentine wetland habitats are particularly sensitive to change in hydrology. Restoring hydrologic function on inventoried unauthorized route 305.115 can have beneficial direct and indirect effects on the Federally listed Mcdonald's rockcress, on watch list species and on Forest Service sensitive species growing within 100 feet of routes. A botanist will review the final restoration plan to insure that Federally listed endangered, watch list and sensitive plant species are not effected by routes proposed for restoration of hydrologic function.

7) Barricading inventoried unauthorized routes.

Barricading routes provides both direct and indirect effects occurring within 100 feet of inventoried unauthorized routes proposed to be barricaded. Table 58 displays, by route, the number of plants and occurrences of one Federally listed endangered species, one watch list species and 3 sensitive species within 100 feet of inventoried unauthorized routes proposed to be barricaded under Alternative 3. These species are Mcdonald's rockcress (ARMA33), the Waldo buckwheat (ERPE6), the opposite-leaved lewisia (LEOP), the serpentine catchfly (SISE10), Howell's jewelflower (STHO), and the western white bog violet (VIPRO2).

Table 58. Endangered and sensitive plants within 100 feet of UARS proposed for barricading alternative 3

Route	Miles	Occ_ID	ARMA33	ERPE6	LEOP	SISE10	STHO
17N07.2	0.51	LEOP_002			93		
17N49.100	3.88	ERPE6_018		47			
17N49.100	3.88	SISE10_020				1139	
17N49.100	3.88	STHO_014					2
17N49.100	3.88	STHO_017					50
17N49.103	0.26	SISE10_009				225	
17N49.104	0.86	ERPE6_008		1			
17N49.104	0.86	STHO_003					1
17N49.104	0.86	STHO_017					4
17N49.105	1.43	SISE10_016				570	
17N49.105	1.43	SISE10_018				294	
17N49.105	1.43	STHO_017					6
17N49.105A	0.12	SISE10_016				310	
17N49.105A	0.12	STHO_017					1
17N49.106	0.32	STHO_017					4
17N49.12	2.10	SISE10_017				302	

Route	Miles	Occ_ID	ARMA33	ERPE6	LEOP	SISE10	STHO
17N49.12	2.10	STHO_010					76
17N49.7	0.29	SISE10_015				800	
305.100	0.57	STHO_024					29
305.109A	1.02	LEOP_011			44		
305.109A	1.02	STHO_041					155
305.115	1.74	ARMA33_039	17				
305.115	1.74	ERPE6_045		52			
305.118	0.76	ERPE6_037		21			
305.126	1.56	LEOP_018			16		
305.126	1.56	STHO_009					44
305.126	1.56	STHO_013					1
305.128	0.69	ERPE6_030		83			
305.128	0.69	SISE10_023				171	
305.128	0.69	STHO_037					3
305.128	0.69	STHO_039					4
305.131	0.09	STHO_033					52
	Total Number of Plants		**17**	**210**	**153**	**3811**	**432**
Total Number of Occurrences			**1**	**5**	**2**	**7**	**11**

Direct and Indirect Effects

Although barricading raises the possibility of long term negative indirect effects due to the encroachment of non-rare disturbance intolerant species that are kept at bay by the low level of use, these hypothetical negative indirect effects are largely offset by the very real potential benefit that would be provided the species in Table 58 by barricading them from motorized use. The greatest benefit of this project to the species analyzed derives from this action.

Cumulative Effects Alternative 3

Effects from past, present and future actions are the same for all alternatives. See the Cumulative Effects section under Alternative 1 for a discussion of these effects.

Alternative 4

Direct and indirect effects:

Alternative 4 proposes 8 actions to inventoried unauthorized routes and National Forest Transportation System roads. An analysis of direct and indirect effects of these proposed actions follows.

1) Direct and indirect effects of the addition of 22 inventoried unauthorized routes as roads (ML 1, 2, and 3), totaling 15 miles, to the current NFTS.

There are no known sites of watch list, Forest Service sensitive plant species or Federally listed endangered Mcdonald's rockcress within 100 feet of the routes that are proposed to be added to the NFTS as ML 1, 2, or 3 roads under Alternative 4. Therefore there are no direct or indirect effects associated with this action.

2) Direct and indirect effects of the addition of 91 inventoried UARs as motorized trails to the NFTS, totaling 60 miles.

There are no occurrences of the Federally listed endangered Mcdonald's rockcress within 100 feet of inventoried unauthorized routes proposed for addition to the NFTS, hence there are no direct or indirect effects to the species.

Direct Effects

Direct effects occur within 30 of inventoried unauthorized routes proposed for addition to the NFTS. Table 59 displays the number of plants and the occurrences of each of the 3 sensitive species and the one Watch List species within 30 feet of inventoried unauthorized routes proposed for addition to the NFTS. These species are the Waldo buckwheat (ERPE6), the opposite-leaved lewisia (LEOP), the serpentine catchfly (SISE10), Howell's jewelflower (STHO).

Table 59. Watch list and sensitive plants within 30 feet of alternative 4 UARs

Road_Route	Miles	OCC_ID	ERPE6	LEOP	SISE10	STHO
17N49.100	3.88	ERPE6_018	47			
17N49.100	3.88	SISE10_020			1139	
17N49.100	3.88	STHO_014				2
17N49.100	3.88	STHO_017				50
17N49.101	1.17	SISE10_007			300	
17N49.101	1.17	SISE10_009			300	
17N49.102	0.87	SISE10_008			1000	
17N49.104	0.86	ERPE6_008	1			
17N49.104	3.82	ERPE6_010	548			
17N49.104	3.82	SISE10_012			200	
17N49.104	3.82	SISE10_016			650	
17N49.104	3.82	SISE10_018			616	
17N49.104	0.86	STHO_017				4
17N49.104	3.82	STHO_017				120
17N49.107	0.64	STHO_017				2
17N49.108	0.31	STHO_017				2
17N49.11	1.94	SISE10_014			147	
17N49.11	2.55	SISE10_014			517	
17N49.11	1.94	STHO_017				19
17N49.11	2.55	STHO_017				16
17N49.11N	0.23	STHO_002				3
17N49.12	2.1	SISE10_017			302	
17N49.12	2.1	STHO_010				76
17N49.13	0.3	SISE10_019			45	
17N49.14	0.54	STHO_017				9
17N49.15	0.62	STHO_017				1
17N49.4	0.75	SISE10_006			750	
17N49.7	3.06	ERPE6_005	72			
17N49.7	3.06	ERPE6_009	240			

Road_Route	Miles	OCC_ID	ERPE6	LEOP	SISE10	STHO
17N49.7	3.06	SISE10_013			400	
17N49.7	0.29	SISE10_015			800	
17N49.7A	0.82	ERPE6_009	1			
17N49.7A	0.82	SISE10_017			600	
17N49.8	0.39	SISE10_016			58	
17N49.8	0.39	STHO_017				13
18N51.100	1.45	LEOP_014		27		
305.109	2.43	LEOP_011		29		
305.109	2.43	LEOP_012		42		
305.109	2.43	LEOP_013		162		
305.109	2.43	SISE10_027			295	
305.118	0.8	ERPE6_037	30			
305.118	0.8	STHO_039				7
305.121B	1.03	STHO_027				6
305.125	1.44	STHO_016				1
305.126	1.56	STHO_009				44
305.126	1.56	STHO_013				1
			945	260	8119	376

Table 60 displays the number of plants and the number of occurrences of each Watch list and sensitive plant species within 30 feet of unauthorized routes proposed to be added to the NFTS as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on Smith River NRA.

Table 60. Number of plants and occurrences directly affected under alternative 4

	ERPE6	LEOP	SISE10	STHO
Number of Plants	945	260	8119	376
Total Number of Plants on Smith River NRA	15%	3%	33%	26%
% of Total Plants on Smith River NRA	6339	7681	24285	1466
Number of Occurrences Affected	4	2	7	6
Total Number of Occurrences on Smith River NRA	8%	12%	24%	12%
% of Total Occurrences on Smith River NRA	48	17	29	50

Direct effects are the same as those shown under Alternative 3. The effects differ between alternatives in terms of magnitude based on the number of species and occurrences that are directly affected.

Indirect Effects

Table 61 displays the number of plants and the number of occurrences of each sensitive species 30 to 100 feet from inventoried unauthorized routes proposed to be added to the NFTS under alternative 4 as well as

the percentage those numbers represent in term of the total number of individuals and the total number of occurrences of that species on the Smith River NRA.

Table 61. Watch list and sensitive plants indirectly affected on alternative 4 UARs

Road_Route	Miles	OCC_ID	GESE2	LEOP	SISE10	STHO	VIPRO2
17N49.104	3.82	SISE10_018			25		
17N49.104	0.86	STHO_003				1	
17N49.104	3.82	STHO_017				2	
17N49.107	0.64	SISE10_011			281		
17N49.11	2.55	STHO_017				1	
17N49.14	0.54	STHO_017				6	
17N49.7	3.06	GESE2_002	250				
17N49.7	3.06	VIPRO2_005					215
17N49.7	3.06	VIPRO2_007					2125
305.109	2.43	LEOP_012		246			
		Totals	**250**	**246**	**306**	**10**	**2340**

Table 62 displays the number of plants and the number of occurrences of each Watch List and sensitive plant species within 30 to 100 feet of inventoried unauthorized routes proposed to be added to the NFTS under Alternative 4 as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on the Smith River NRA.

Table 62. Sensitive plants indirectly affected on alternative 4 UARs

	GESE2	LEOP	SISE10	STHO	VIPRO2
Number of Plants	250	246	306	10	2340
Total Number of Plants on Smith River NRA	1617	7681	24285	1466	10498
% of Total Plants on Smith River NRA	15%	3%	1%	1%	22%
Number of Occurrences Affected	1	1	2	2	2
Total Number of Occurrences on Smith River NRA	8	17	29	50	20
% of Total Occurrences on Smith River NRA	13%	6%	7%	4%	10%

Indirect effects are the same as those shown under Alternative 3. The effects differ between alternatives in terms of magnitude based on the number of species and occurrences that are directly affected.

3) The addition of seasonal gate closures on 11 roads and 6 motorized trails.

There are no direct or indirect effects from installing gate closures on 11 existing roads as the engineered surfaces of these roads is not considered suitable habitat for Federally listed endangered, watch list plant species, or sensitive plant species nor have they been found as a result of surveys nor do these routes access sites occupied by these species. Placing a seasonal closure on the following inventoried unauthorized routes will have a positive direct effect on watch list and sensitive plants and occurrences, see Table 63, which grow on and adjacent to routes displayed by preventing motorized use when the

substrate is wet and the plants are more vulnerable. There are no negative direct or indirect effects associated with this action.

Table 63. Watch list and sensitive plants on UARs to be seasonally gated under alternative 4

Road_Route	Miles	OCC_ID	ERPE6	SISE10	STHO
17N49.101	1.17	SISE10_007		300	
17N49.101	1.17	SISE10_009		300	
17N49.11	2.55	SISE10_014		517	
17N49.11	1.94	SISE10_014		147	
17N49.11	2.55	STHO_017			16
17N49.11	1.94	STHO_017			19
17N49.12	2.1	ERPE6_018	5		
17N49.12	2.1	SISE10_017		302	
17N49.12	2.1	STHO_010			76
17N49.4	0.75	SISE10_006		750	
17N49.7	3.06	ERPE6_005	72		
17N49.7	3.06	ERPE6_009	241		
17N49.7	3.06	SISE10_013		400	
17N49.7	0.29	SISE10_015		800	
305.118	0.8	ERPE6_031	9		
305.118	0.8	ERPE6_037	21		
305.118	0.8	STHO_039			7
305.125	1.44	STHO_016			1
		Total	**348**	**3516**	**119**

4) The mixed-use of 1 road (17N49), totaling 4 miles.

17N49 is a NFTS road. These roads are not considered suitable habitat for rare plant species found in the project area, due to their altered engineered surfaces, nor are rare species known to occur on these surfaces in the project area. Therefore, there are no direct or indirect effects from the mixed-use of FS road 17N49.

5) The decommissioning of 76 closed roads (ML 1), and decommissioning of 43 ML 2 and 3 NFTS roads.

These roads are NFTS roads and are not considered suitable habitat for rare plant species found in the project area, due to their altered engineered surfaces, nor are rare species known to occur on these surfaces in the project area. Therefore, there are no direct or indirect effects from the decommissioning of roads included in this proposed action.

6) The restoration of hydrologic function to 192 inventoried UARs.

Restoring hydrologic function concerns insuring that road and route surfaces are not channeling water increasing its erosive force. This is beneficial to plants growing on or adjacent to route surfaces as channeled water can undermine plants and contribute to injury or loss. The Mendocino gentian and the western white bog violet which occupy serpentine wetland habitats are particularly sensitive to change in hydrology. Restoring hydrologic function on inventoried unauthorized route 305.115 can have beneficial direct and indirect effects on the Federally listed Mcdonald’s rockcress, on watch list species and on

Forest Service sensitive species growing within 100 feet of routes. A botanist will review the final restoration plan to insure that Federally listed endangered, watch list and sensitive plant species are not effected by routes proposed for restoration of hydrologic function.

7) Barricading inventoried unauthorized routes.

Barricading routes provides both direct and indirect effects occurring within 100 feet of inventoried unauthorized routes proposed to be barricaded. Table 64 displays, by route, the number of plants and occurrences of one Federally List Endangered species, one Watch list species and 5 sensitive species within 100 feet of inventoried unauthorized routes proposed to be barricaded under Alternative 4. These species are Mcdonald's rockcress (ARMA33), the Waldo buckwheat (ERPE6), the opposite-leaved lewisia (LEOP), the Mendocino gentian, the opposite-leaved lewisia, the serpentine catchfly (SISE10), Howell's jewelflower (STHO), and the western white bog violet (VIPRO2).

Table 64. Watch list and sensitive plants within 100 feet of UARs proposed for barricading alternative 4

Road_Route	Miles	OCC_ID	ARMA33	ERPE6	LEOP	SISE10	STHO	VIPRO2
17N07.2	0.51	LEOP_002			93			
17N49.103	0.26	SISE10_009				225		
17N49.105	1.43	SISE10_016				570		
17N49.105	1.43	SISE10_018				294		
17N49.105	1.43	STHO_017					6	
17N49.105	1.43	VIPRO2_011						600
17N49.105A	0.12	SISE10_016				310		
17N49.105A	0.12	STHO_017					1	
17N49.106	0.32	STHO_017					5	
17N49.7	0.29	SISE10_015				800		
305.100	0.57	STHO_024					29	
305.109A	1.02	LEOP_011			44			
305.109A	1.02	STHO_041					155	
305.115	1.74	ARMA33_039	17					
305.128	0.7	ERPE6_030		83				
305.128	0.7	STHO_037					3	
305.128	0.7	STHO_039					7	
Total Number of Plants			**17**	**83**	**137**	**1664**	**205**	**600**
Total Number of Occurrences			**1**	**1**	**2**	**3**	**5**	**1**

Direct and Indirect Effects

Although barricading raises the possibility of long term negative indirect effects due to the encroachment of non-rare disturbance intolerant species that are kept at bay by the low level of use, these hypothetical negative indirect effects are largely offset by the very real potential benefit that would be provided the species in Table 64 by barricading them from motorized use. The greatest benefit of this project to the species analyzed derives from this action.

8) The addition of 5 parking sites.

Four of the 5 parking sites on 17N49 proposed under Alternative 4 are on previously disturbed ground. The most northerly site where 17N49.100 intersects 17N49 would occur on undisturbed ground that contains a population of the serpentine catchfly which would be directly affected, and extirpated by the construction of this parking site proposed under Alternative 4.

Cumulative Effects Alternative 4

Effects from past, present and future actions are the same for all alternatives. See the Cumulative Effects section under Alternative 1 for a discussion of these effects.

Alternative 5

Direct and indirect effects:

Alternative 5 proposes to: 1) Add 16 inventoried unauthorized routes as roads to the NFTS 2) add 16 inventoried unauthorized routes as motorized trails to the NFTS, 3) install 3 seasonal gate closures on 3 roads and one motorized trail, 4) decommission 73 closed roads and 34 open roads that are currently on the NFTS, 5) restore hydrologic function to 411 inventoried unauthorized routes not added to the NFTS, 6) add one parking area along 17N49.

1) Direct and indirect effects of adding 16 inventoried unauthorized routes as roads to the NFTS.

None of the inventoried unauthorized routes proposed for addition as roads to the NFTS have Federally List Endangered, Watch List or sensitive plants growing within 100 feet. Therefore there are no direct or indirect effects associated with this action.

2) Direct and indirect effects of adding 16 inventoried unauthorized routes to the NFTS.

There are no occurrences of the Federally listed endangered Mcdonald's rockcress within 100 feet of inventoried unauthorized routes proposed for addition to the NFTS, hence there are no direct or indirect effects the species.

Table 65 displays, by route, the number of plants and occurrences of 2 sensitive plant species that occur within 30 feet of inventoried unauthorized routes proposed for addition to the NFTS under Alternative 5. For the serpentine catchfly (SISE10) there are 1645 plants (7 percent of the population on Smith River NRA) and 4 occurrences (8 percent of the number of occurrences of SISE10 on Smith River NRA). For Howell's jewelflower (STHO) there are 4 plants (0.3 percent of the population on Smith River NRA) and 1 occurrence (2 percent of the number of occurrences of STHO on Smith River NRA).

Table 65. Sensitive plants within 30 feet of UARs proposed for addition under alternative 5

Road_Route	Miles	OCC_ID	SISE10	STHO
17N49.101	1.17	SISE10_007	300	
17N49.101	1.17	SISE10_009	300	
17N49.102	0.87	SISE10_008	1000	
17N49.107	0.64	STHO_017		2
17N49.108	0.31	STHO_017		2
17N49.13	0.3	SISE10_019	45	
		Totals	**1645**	**4**

Direct Effects

Direct effects are the same as those shown under Alternative 3. The effects differ between alternatives in terms of magnitude based on the number of species and occurrences that are directly affected.

Indirect Effects

There are no Federally listed endangered, watch list or sensitive plant species 30 to 100 feet from routes proposed for addition to the NFTS under Alternative 5.

2) Direct and indirect effects of not adding motorized trails in IRAs, not adding UARs with high resource risk, not adding UARs to protect botanical resources, and not adding routes to increase protection for POC would preclude the negative direct and indirect effects noted previously by reducing motorized access to areas with watch list and sensitive plants.

Table 66 displays inventoried unauthorized routes that would be effected by and benefit from these actions. Within 100 feet of these routes there is one Federally listed endangered plant species McDonald's rockcress (ARMA33), one watch list species the Waldo buckwheat (ERPE6) and 5 sensitive plant species the Mendocino gentian (GESE2), the opposite-leaved lewisia (LEOP), the serpentine catchfly (SISE10), Howell's jewelflower (STHO), and the western white bog violet (VIPRO2).

Table 66. Federally listed endangered, watch list and sensitive plants within 100 feet of alternative 5 UARs

Road_Route	Miles	OCC_ID	ARMA33	ERPE6	GESE2	LEOP	SISE10	STHO	VIPRO2
17N07.2	0.51	LEOP_002				93			
17N49.100	3.88	ERPE6_018		47					
17N49.100	3.88	SISE10_020					1139		
17N49.100	3.88	STHO_014						2	
17N49.100	3.88	STHO_017						50	
17N49.103	0.26	SISE10_009					225		
17N49.104	0.86	ERPE6_008		1					
17N49.104	3.82	ERPE6_010		548					
17N49.104	3.82	SISE10_012					200		
17N49.104	3.82	SISE10_016					650		
17N49.104	3.82	SISE10_018					616		
17N49.104	0.86	STHO_003						1	
17N49.104	3.82	STHO_017						120	
17N49.104	0.86	STHO_017						5	
17N49.105	1.43	SISE10_016					570		
17N49.105	1.43	SISE10_018					294		
17N49.105	1.43	STHO_017						6	
17N49.105	1.43	VIPRO2_011							600
17N49.105A	0.12	SISE10_016					310		
17N49.105A	0.12	STHO_017						1	
17N49.11	1.94	SISE10_014					147		
17N49.11	2.55	SISE10_014							
17N49.11	2.55	SISE10_014					517		
17N49.11	1.94	STHO_017						19	

Road_Route	Miles	OCC_ID	ARMA33	ERPE6	GESE2	LEOP	SISE10	STHO	VIPRO2
17N49.11	2.55	STHO_017						16	
17N49.11N	0.23	STHO_002						19	
17N49.12	2.1	ERPE6_018		5					
17N49.12	2.1	SISE10_017					302		
17N49.12	2.1	STHO_010						1	
17N49.14	0.54	STHO_017						1	
17N49.15	0.62	STHO_017						1	
17N49.4	0.75	SISE10_006					750		
17N49.7	3.06	ERPE6_005		72					
17N49.7	3.06	ERPE6_009		1					
17N49.7	3.06	SISE10_013					400		
17N49.7	0.29	SISE10_015					800		
17N49.7	3.06	GESE2_002			250				
17N49.7	3.06	VIPRO2_005							215
17N49.7	3.06	VIPRO2_007							2125
17N49.7A	0.82	ERPE6_009		1					
17N49.7A	0.82	SISE10_017					600		
17N49.8	0.39	SISE10_016					58		
17N49.8	0.39	STHO_017						12	
18N51.100	1.45	LEOP_014				27			
305.100	0.57	STHO_024						28	
305.109	2.43	LEOP_011				10			
305.109	2.43	LEOP_012				42			
305.109	2.43	LEOP_013				162			
305.109	2.43	SISE10_027					16		
305.109A	1.02	LEOP_011				44			
305.109A	1.02	STHO_041						155	
305.115	1.74	ERPE6_045		52					
305.115	1.74	ARMA33_039	17						
305.118	0.8	ERPE6_031		9					
305.118	0.8	ERPE6_037		21					
305.118	0.8	STHO_039						7	
305.121B	1.03	STHO_027						1	
305.125	1.44	STHO_016						1	
305.126	1.56	STHO_009						44	
305.126	1.56	STHO_013						1	
305.128	0.7	ERPE6_030		83					
305.128	0.7	STHO_037						3	
305.128	0.7	STHO_039						4	
305.131	0.09	STHO_033						52	
Total Number of Plants			**17**	**840**	**250**	**378**	**7594**	**549**	**2940**
Total Number of Occurrences			**1**	**9**	**1**	**5**	**11**	**14**	**3**

Table 67 displays the number of plants and the number of occurrences of each watch list or sensitive species within 100 feet of unauthorized routes not added to the NFTS as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on Smith River NRA.

Table 67. Number of plants and occurrences affected under alternative 5

	ARMA33	ERPE6	GESE2	LEOP	SISE10	STHO	VIPRO2
Number of Plants	17	840	250	378	7594	549	2940
Total Number of Plants on Smith River NRA	8988	6339	1617	7681	24285	1466	10498
% of Total Plants on Smith River NRA	0.2%	13%	15%	5%	31%	37%	28%
Number of Occurrences Affected	1	9	1	5	11	14	3
Total Number of Occurrences Smith River NRA	40	48	8	17	29	50	20
% of Total Occurrences on Smith River NRA	3%	19%	13%	29%	38%	28%	15%

Direct and Indirect Effects

Not adding these routes raises the possibility of long term negative indirect effects due to the encroachment of non-rare disturbance intolerant species that are kept at bay by the low level of use. This is more than offset by the beneficial effect of removing them from the list of routes that would receive the negative effects of motorized.

3) Installation of 3 seasonal gate closures on 3 roads and one motorized trail.

There are no direct or indirect effects from installing 3 seasonal gate closures on 3 existing roads as the engineered surfaces of these roads is not considered suitable habitat for Federally listed endangered, watch list plant species, or sensitive plant species nor have they been found as a result of surveys. Placing a seasonal closure on 17N49.101 will have a positive direct effect on 2 occurrence of the serpentine catchfly which grow on and adjacent to this inventoried unauthorized route by preventing motorized use when the substrate is wet and the plants are more vulnerable. There are no negative direct or indirect effects associated with this action.

4) There are no direct or indirect effects from decommissioning 73 closed roads and 34 open roads that are currently on the NFTS as the engineered surfaces of these roads is not considered suitable habitat for Federally listed endangered, watch list plant species, or sensitive plant species nor have they been found as a result of surveys.

5) Restoring hydrologic function concerns insuring that road and route surfaces are not channeling water increasing its erosive force.

This is beneficial to plants growing on or adjacent to route surfaces as channeled water can undermine plants and contribute to injury or loss. The Mendocino gentian and the western white bog violet which occupy serpentine wetland habitats are particularly sensitive to change in hydrology. Restoring hydrologic function on inventoried unauthorized route 305.115 can have beneficial direct and indirect effects on the Federally listed Mcdonald’s rockcress, on watch list species and on Forest Service sensitive species growing within 100 feet of routes. A botanist will review the final restoration plan to insure that Federally listed endangered, watch list and sensitive plant species are not affected by routes proposed for restoration of hydrologic function.

6) There are no direct or indirect effects from adding one parking area along 17N49.

The location was previously disturbed and no Federally listed endangered, watch list plant species, or sensitive plant species are present.

7) Barricading inventoried unauthorized routes not added to the NFTS.

Routes to be barricaded are shown in Table 66. Although barricading raises the possibility of long term negative indirect effects due to the encroachment of non-rare disturbance intolerant species that are kept at bay by the low level of use, these hypothetical negative indirect effects are largely offset by the very real potential benefit that would be provided the species in Table 66 by barricading them from motorized use. The greatest benefit of this project to the species analyzed derives from this action.

Cumulative Effects for Alternative 5

Effects from past, present and future actions are the same for all alternatives. See the Cumulative Effects section under Alternative 1 for a discussion of these effects.

Alternative 6

Direct and indirect effects:

Alternative 6 proposes to 1) add 19 unauthorized routes as roads to the current NFTS, 2) add 75 inventoried unauthorized routes as motorized trails to the NFTS, 3) Install seasonal gate closures on 10 roads and 6 motorized trails, 4) add mixed-use to one road (17N49), 5) decommission 76 closed roads and 36 currently open roads, 6) restore hydrologic function to 210 inventoried unauthorized routes, 7) add 4 parking sites along 17N49, and 8) barricade inventoried unauthorized routes not add to the NFTS.

1) Adding 19 unauthorized routes as roads to the current NFTS.

There are no known sites of Watch list, Forest Service sensitive plant species or Federally listed endangered Mcdonald's rockcress within 100 feet of the routes that are proposed to be added to the NFTS as ML 1, 2, or 3 roads under Alternative 6. Therefore there are no direct or indirect effects associated with this action.

2) Adding 75 inventoried unauthorized routes as motorized trails to the NFTS.

There are no occurrences of the Federally listed endangered Mcdonald's rockcress within 100 feet of inventoried unauthorized routes proposed for addition to the NFTS under Alternative 6. Therefore there are no direct or indirect effects associated with this action.

Direct Effects

Direct effects occur within 30 feet of inventoried unauthorized routes proposed for addition to the NFTS. Table 68 displays, by route, the number of plants and the occurrences of each of the 3 sensitive plant species and one Watch List plants species within 30 feet of inventoried unauthorized routes proposed for addition to the NFTS under Alternative 6. These species are the Waldo buckwheat (ERPE6), the opposite-leaved lewisia (LEOP), the serpentine catchfly (SISE10), Howell's jewelflower (STHO). There are a total of 7,134 sensitive plants and 957 Watch List plants within 30 feet of the routes proposed for addition to the NFTS as motorized trails.

Table 68. Watch list and sensitive plants within 30 feet of alternative 6 UARs

Road_Route	Miles	OCC_ID	ERPE6	LEOP	SISE10	STHO
17N49.101	1.17	SISE10_007			300	
17N49.101	1.17	SISE10_009			300	
17N49.102	0.87	SISE10_008			1000	
17N49.104	3.82	ERPE6_010	613			
17N49.104	3.82	SISE10_012			200	
17N49.104	3.82	SISE10_016			650	
17N49.104	3.82	SISE10_018			616	
17N49.104	3.82	STHO_017				120
17N49.107	0.64	STHO_017				2
17N49.108	0.31	STHO_017				2
17N49.11	2.55	SISE10_014			517	
17N49.11	1.94	SISE10_014			147	
17N49.11	2.55	STHO_017				16
17N49.11	1.94	STHO_017				19
17N49.13	0.3	SISE10_019			45	
17N49.14	0.54	STHO_017				9
17N49.15	0.62	STHO_017				1
17N49.4	0.75	SISE10_006			750	
17N49.7	3.06	ERPE6_005	72			
17N49.7	3.06	ERPE6_009	241			
17N49.7	3.06	SISE10_013			400	
17N49.7	0.29	SISE10_015			800	
17N49.7A	0.82	ERPE6_009	1			
17N49.7A	0.82	SISE10_017			600	
17N49.8	0.39	SISE10_016			58	
17N49.8	0.39	STHO_017				13
18N51.100	1.45	LEOP_014		27		
305.109	2.43	LEOP_011		29		
305.109	2.43	LEOP_012		42		
305.109	2.43	LEOP_013		162		
305.109	2.43	SISE10_027			295	
305.118	0.8	ERPE6_031	9			
305.118	0.8	ERPE6_037	21			
305.118	0.8	STHO_039				7
305.121B	1.03	STHO_027				6
305.125	1.44	STHO_016				1
		Totals	**957**	**260**	**6678**	**196**

Table 69 displays direct effects in terms of the number of plants and the number of occurrences of each watch list or sensitive species within 30 feet of unauthorized routes not added to the NFTS as well as the

percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on Smith River NRA.

Table 69. Sensitive and watch list plants directly affected under alternative 6

	ERPE6	LEOP	SISE10	STHO
Number of Plants	957	260	6678	196
Total Number of Plants on Smith River NRA	6339	7681	24285	1466
% of Total Plants on Smith River NRA	15%	3%	27%	13%
Number of Occurrences Affected	5	4	13	3
Total Number of Occurrences on Smith River NRA	48	17	29	50
% of Total Occurrences on Smith River NRA	10%	24%	45%	6%

Direct effects are the same as those shown under Alternative 3. The effects differ between alternatives in terms of magnitude based on the number of species and occurrences that are directly affected.

Indirect Effects

Indirect effects occur 30 to 100 feet from the center of inventoried unauthorized routes. Table 70 displays the number of plants and the number of occurrences of each watch list or sensitive species between 30 to 100 feet of unauthorized routes not added to the NFTS as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on Smith River NRA.

Table 70. Sensitive plants indirectly affected under alternative 6

Road_Route	Miles	OCC_ID	GESE2	LEOP	SISE10	STHO	VIPRO2
17N49.104	3.82	SISE10_018			25		
17N49.104	3.82	STHO_017				2	
17N49.107	0.64	SISE10_011			281		
17N49.11	2.55	STHO_017				1	
17N49.14	0.54	STHO_017				5	
17N49.7	3.06	GESE2_002	250				
17N49.7	3.06	VIPRO2_005					215
17N49.7	3.06	VIPRO2_007					2125
305.109	2.43	LEOP_012		246			
		Total	250	246	306	8	2340

Table 71 displays indirect effects in terms of the number of plants and the number of occurrences of each watch list or sensitive species between 30 to 70 feet of unauthorized routes not added to the NFTS as well as the percentage those numbers represent in terms of the total number of individuals and the total number of occurrences of that species on SRNRA.

Table 71. Sensitive plants indirectly affected under alternative 6

	GESE2	LEOP	SISE10	STHO	VIPRO2
Number of Plants	250	246	306	8	2340
Total Number of Plants on Smith River NRA	1617	7681	24285	1466	10498
% of Total Plants on Smith River NRA	15%	3%	1%	1%	22%
Number of Occurrences Affected	1	1	2	1	2
Total Number of Occurrences on Smith River NRA	8	17	29	50	20
% of Total Occurrences on Smith River NRA	13%	6%	7%	2%	10%

3) Installation of seasonal gate closures on 10 roads and 6 motorized trail.

There are no direct or indirect effects from installing 3 seasonal gate closures on 6 existing roads as the engineered surfaces of these roads is not considered suitable habitat for Federally listed endangered, watch list plant species, or sensitive plant species nor have they been found as a result of surveys nor do these routes access sites occupied by these species. Placing a seasonal closure on the following inventoried unauthorized routes will have a positive direct effect on watch list and sensitive plants and occurrences, see Table 72, which grow on and adjacent to routes displayed by preventing motorized use when the substrate is wet and the plants are more vulnerable. There are no negative direct or indirect effects associated with this action.

Table 72. Watch list and sensitive plants on UARs to be seasonally gated under alternative 6

Road_Route	Miles	OCC_ID	ERPE6	SISE10	STHO
17N49.101	1.17	SISE10_007		300	
17N49.101	1.17	SISE10_009		300	
17N49.11	2.55	SISE10_014		517	
17N49.11	1.94	SISE10_014		147	
17N49.11	2.55	STHO_017			16
17N49.11	1.94	STHO_017			19
17N49.4	0.75	SISE10_006		750	
17N49.7	3.06	ERPE6_005	72		
17N49.7	3.06	ERPE6_009	241		
17N49.7	3.06	SISE10_013		400	
17N49.7	0.29	SISE10_015		800	
305.118	0.8	ERPE6_031	9		
305.118	0.8	ERPE6_037	21		
305.118	0.8	STHO_039			7
305.125	1.44	STHO_016			1
		Total	**343**	**3214**	**43**

4) There are no direct or indirect effects from designating mixed-use on NFTS road 17N49.

5) There are no direct or indirect effects from decommissioning 73 closed roads and 34 open roads that are currently on the NFTS.

The engineered surfaces of these roads is not considered suitable habitat for Federally listed endangered, watch list plant species, or sensitive plant species nor have they been found as a result of surveys.

6) Restoring hydrologic function concerns insuring that road and route surfaces are not channeling water increasing its erosive force.

This is beneficial to plants growing on or adjacent to route surfaces as channeled water can undermine plants and contribute to injury or loss. The Mendocino gentian and the western white bog violet which occupy serpentine wetland habitats are particularly sensitive to change in hydrology. Restoring hydrologic function on inventoried unauthorized route 305.115 can have beneficial direct and indirect effects on the Federally listed Mcdonald's rockcress, on watch list species and on Forest Service sensitive species growing within 100 feet of routes. A botanist will review the final restoration plan to insure that Federally listed endangered, watch list and sensitive plant species are not affected by routes proposed for restoration of hydrologic function.

7) There are no direct or indirect effects from adding 4 parking areas along 17N49.

The location was previously disturbed and no Federally listed endangered, watch list plant species, or sensitive plant species are present.

8) Barricading inventoried unauthorized routes not add to the NFTS.

Routes to be barricaded are shown in Table 73. Barricading these routes would provide additional protection from the effects of motorized use. As has been noted previously, the low level of use currently observed appears to be providing a beneficial effect by reducing competition from species with a low tolerance for motorized use. However, the benefits of excluding motorized use out weight the potential benefits motorized use might provide by through reduced competition.

Table 73. Watch list and sensitive plants barricaded under alternative 6

Road_Route	Miles	OCC_ID	ARMA33	ERPE6	LEOP	SISE10	STHO	VIPRO2
17N07.2	0.51	LEOP_002			93			
17N49.100	3.88	ERPE6_018		47				
17N49.100	3.88	SISE10_020				1139		
17N49.100	3.88	STHO_014					2	
17N49.100	3.88	STHO_017					50	
17N49.103	0.26	SISE10_009				225		
17N49.104	0.86	ERPE6_008		1				
17N49.104	0.86	STHO_003					2	
17N49.104	0.86	STHO_017					4	
17N49.105	1.43	SISE10_016				570		
17N49.105	1.43	SISE10_018				294		
17N49.105	1.43	STHO_017					6	
17N49.105	1.43	VIPRO2_011						600
17N49.105A	0.12	SISE10_016				310		
17N49.105A	0.12	STHO_017					1	
17N49.11N	0.23	STHO_002					3	

Road_Route	Miles	OCC_ID	ARMA33	ERPE6	LEOP	SISE10	STHO	VIPRO2
17N49.12	2.1	ERPE6_018		5				
17N49.12	2.1	SISE10_017				302		
17N49.12	2.1	STHO_010					76	
17N49.7	0.29	SISE10_015				800		
305.100	0.57	STHO_024						
305.100	0.57	STHO_024					29	
305.107	1.25	ERPE6_048		67				
305.107	1.25	SISE10_029				200		
305.107	1.25	STHO_047					14	
305.109A	1.02	LEOP_011			44			
305.109A	1.02	STHO_041					155	
305.115	1.74	ARMA33_039	17					
305.115	1.74	ERPE6_045		52				
305.126	1.56	STHO_009					44	
305.126	1.56	STHO_013					1	
305.128	0.7	ERPE6_030		83				
305.128	0.7	STHO_037					3	
305.128	0.7	STHO_039					4	
305.131	0.09	STHO_033					52	
Total Number of Plants			**17**	**255**	**137**	**3840**	**446**	**600**
Total Number of Occurrences			**1**	**5**	**2**	**6**	**13**	**1**

Cumulative Effects for Alternative 6

Effects from past, present and future actions are the same for all alternatives. See the Cumulative Effects section under Alternative 1 for a discussion of these effects.

Summary of Effects Analysis across All Alternatives

Table 74. Number of endangered, watch list, sensitive plants

Species	Number of Plants Protected by Barricades			
	Alt 3	**Alt 4**	**Alt 5**	**Alt 6**
ARMA33	17	17	17	17
ERPE6	210	83	840	255
GESE2	0	0	250	0
LEOP	153	137	378	137
SISE10	4019	1664	7594	3040
STHO	432	205	549	446
VIPRO2	0	600	2940	600
Total	**4831**	**2706**	**12568**	**4495**

Table 75. Number of occurrences of endangered, watch list and sensitive species

Species	Number of Occurrences Protected by Barricades			
	Alt 3	Alt 4	Alt 5	Alt 6
ARMA33	1	1	1	1
ERPE6	5	1	9	5
GESE2	0	0	1	0
LEOP	2	2	5	2
SISE10	7	3	11	6
STHO	11	5	14	13
VIPRO2	0	1	3	1
Total	**26**	**13**	**44**	**28**

Table 76. Comparison of effects to botanical resources

Indicators – Botanical Resources		Rankings of Alternatives for Each Indicator[a]			
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Number of plants of Federally listed endangered, watch list and sensitive plants protected from direct and indicted effects of motorized used by barricading.	0	4831	2706	12568	4495
Number of Federally listed endangered, watch list and sensitive plant occurrences protected from direct and indicted effects of motorized used by barricading.	0	26	13	44	28
Score for botanical resources	**1**	**3**	**2**	**5**	**4**

a - A score of 5 indicates the alternative has the least impact for botanical resources related to the indicator; A score of 1 indicates the alternative has the most impact for botanical resources related to the indicator. The highest number of plants or occurrences protected by barricading was given the highest score.

Port-Orford-Cedar

Management activities on National Forest System (NFS) lands must be planned and implemented to protect forest watersheds, ecosystems and natural resources. Port-Orford-cedar (*Cupressus lawsoniana*; POC) is an important tree species found on the Forest. The use of roads, trails, and other areas on national forests for public operation of motor vehicles has the potential to affect Port-Orford-cedar with the introduction and spread of *Phytophthora lateralis*, a root disease that infects and kills Port-Orford-cedar. Management decisions that affect motor vehicle travel in areas where Port-Orford-cedar exists must consider potential effects to these plant communities.

Port-Orford-cedar is an ecologically, economically, and socially important tree species. Its natural range is limited to northwestern California and southwestern Oregon, but within that area, it grows over a broad environmental range and has some of the most diverse plant types within the region (Jimerson and Creasy 1991). On the Forest, from north to south, the species occurs on Smith River National Recreation Area, the Orleans Ranger District, and the Lower Trinity Ranger District. Approximately 28,760 acres of mapped Port-Orford-cedar on federal lands within Region 5 occur on the Forest (USDA 2012), and of this there are approximately 20,340 acres on the Smith River Natural Recreation Area (Smith River NRA), which represent approximately 70 percent of the Port-Orford-cedar on the Forest. Most of the Port-Orford-cedar that occurs on the Forest grows on the Smith River NRA.

Phytophthora lateralis has spread throughout much of Port-Orford-cedars' native range. The disease spreads by the movement of spores in water (down slope), in mud from infected sites, or by root-to-root contact (Roth et al. 1987). The primary way the disease spreads is through vehicle use or driving from infested sites into un-infested areas, often during road construction or maintenance, mining, logging and traffic flow on forest roads. Spread of *Phytophthora lateralis* occurs during wet soil conditions, primarily in the late fall through early spring. Currently approximately 3000 acres of Port-Orford-cedar are infested with *Phytophthora lateralis* on the Smith River NRA.

Analysis Framework: Statute, Regulation, Forest Plan and Other Direction

Directions relevant to the proposed action as it affects Port-Orford-cedar include:

2001 Decision Notice (DN) for the North Fork Smith River Special Interest Area Road Access.

Closed vehicle access to the High Plateau area in order to protect Port-Orford-cedar.

2013 Supplemental Information Report for the 2000 DN for the North Fork Smith River Special Interest Area Road Access.

Reaffirmed 2001 DN based on unchanged circumstances.

2005 Decision Notice for the Six Rivers National Forest Plan Amendment for Port-Orford-Cedar Management During Fire Suppression.

Though not considered a sensitive plant, per se, Port-Orford-cedar is a species of concern, and current policy for sensitive plants as stated in the Forest Service Manual includes the following elements:

Maintain viable populations of all native and desired non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands (FSM 2670.22).

Avoid or minimize impacts to species whose viability has been identified as a concern (FSM 2670.32).

If impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole (FSM 2670.32)

While not regulatory, the following documents give guidance to the management of Port-Orford-cedar.

2004, Port-Orford-Cedar ROD and Forest Plan Amendment for Management of Port-Orford-cedar in Southwest Oregon, Siskiyou National Forest.

To ensure consistency between Region 5 and Region 6, the risk analysis methodology protocol was used for assessing and assigning Port-Orford-cedar risk ratings to routes (chapters 3 and4).

2007, Managing for Healthy Port-Orford-Cedar in the Pacific Southwest Region.

A summary of the status of Port-Orford-cedar root disease in the Region and the integrated strategies that should be considered to improve Port-Orford-cedar survival in California's forests. It provides updated best management practices that forest managers may consider incorporating into project level planning and/or Forest Plan amendments and revisions.

2007 Port-Orford-Cedar Program Status Report.

This was prepared as part of the Region 6 Action Plan in response to the 2006 Washington Office (WO) Review of Region 6's Forest Health Protection program. At the request of the WO, the status report included Port-Orford-cedar management in Region 5. One recommendation of the status report was to

manage Port-Orford-cedar under a single management strategy on all Forest Service administered lands. The recommendation was that direction from the Port-Orford-cedar ROD and Forest Plan Amendment for Management of Port-Orford-cedar in Southwest Oregon, Siskiyou National Forest should be adopted by all other forests with Port-Orford-cedar at the time their Forest Plans are revised (or earlier if convenient).

1995 Six Rivers Land and Resource Management Plan (Forest Plan):

- Trees with Special Management Considerations (pages II-7 and III-16)
- Standards and Guidelines (pgs. IV-51 and IV-53)
- Management Area 11 – Special Regeneration (pg. IV-54)
- Forest-Wide Direction – Pest Management (pg. IV-129, pg. IV-130, pg. V-20)
- Appendix H (pg. H-9) and Appendix K (pgs. K-4 – K-7)

Effects Analysis Methodology

A previous landscape level range-wide risk assessment for Port-Orford-cedar plant associations was done for watersheds containing Port-Orford-cedar on the Gasquet Ranger District (Jimerson and Jones, 2002). This risk analysis rated individual off-highway vehicles (OHV) routes and the potential for each route to infect Port-Orford-cedar stands. The 2002 analysis rated the risks (low, moderate and high) of Port-Orford-cedar plant communities' susceptibility from the introduction of Port-Orford-cedar root disease at a watershed scale. Risk was based on Port-Orford-cedar's relative distance to the nearest road, its landscape position, plant association and if a gate restricted access into the drainage.

In 2009 the Shasta-Trinity National Forest and Klamath National Forest, within Region 5 adopted the Port-Orford-cedar risk assessment that was developed for the Siskiyou National Forest in Region 6 in order to have consistency between administrative units. The Six Rivers National Forest decided to use this protocol to be consistent between Region 6 and other Forests within Region 5. The protocols for this risk assessment were incorporated in the January 2004 Record of Decision (ROD) for the "Final Supplemental Environmental Impact Statement for Management of Port-Orford-cedar in Southwest Oregon" (FSEIS; USDA-FS and USDI-BLM, 2004). The Six Rivers National Forest used this risk assessment protocol for the current project. The benefit of this risk assessment is that it can be used at a landscape level and used in Geographic Information System (GIS) models. This risk model differs from the original risk assessment because it assigns Port-Orford-cedar root disease risk to individual stands instead of at the watershed level. Additional detail was included to visually verify all GIS Port-Orford-cedar polygons in order to capture possible routes that may have been missed with the model. Once high-risk routes had been identified based on the GIS models then field work was done to verify the risk. The three factors most affecting risk used in the model are the nearby presence of the disease, the distance of roads to mapped Port-Orford-cedar and the nearby presence of water. Similar to the 2002 risk assessment, the plant community characteristics were taken into account as a contributing factor. *Phytophthora lateralis* easily infects Port-Orford-cedar along stream courses and rapidly infects trees downstream of the infestation site once it gets established in the stream network. Because of this, introduction of the disease in an upper watershed stream location has a much greater impact to Port-Orford-cedar than at introduction sites located at lower parts of the watershed. Also, watershed boundaries often coincide with geologic boundaries, and geology often affects the plant communities associated with Port-Orford-cedar. This is especially true in ultramafic based soils where Port-Orford-cedar often only grows immediately adjacent to water. In order to minimize the cascading effect of *Phytophthora lateralis* as it works its way downstream and determine currently un-infested stands of Port-Orford-cedar in the upper watersheds, this analysis was done at the smaller seventh order watershed scale.

Assumptions Specific to Port-Orford-Cedar

The primary method of introducing *Phytophthora lateralis* into an un-infested watershed is through *Phytophthora lateralis* infested mud on undercarriage, wheels or mud flaps of vehicles that fall near the stand of Port-Orford-cedar. The following assumptions are specific to Port-Orford-cedar and Port-Orford-cedar root disease.

1. If infested mud is present, the risk that Port-Orford-cedar will be infected depends on several factors listed on page 131 in A Range-Wide Assessment of Port-Orford-Cedar (*Chamaecyparis lawsoniana*) on Federal Lands – (USDI BLM, USDA Forest Service, 2003).
2. Of the factors referenced above, the following were used to evaluate and determine risk ratings for routes within a watershed containing Port-Orford-cedar [4].
    a. Distance to Port-Orford-cedar
    b. Proximity to stream or water source
    c. Infestation status
3. High risk was given to routes with the following conditions[5].
    a. Routes crossing streams with Port-Orford-cedar less than 100 feet downstream of crossing.
    b. Routes passing upslope of Port-Orford-cedar stands, not crossing streams and occurring less than 50 feet from nearest tree.
    c. Routes passing less than 50 feet of currently infected Port-Orford-cedar stand.
4. Once the root disease was established in a Port-Orford-cedar stand, the disease would either work its way downstream infecting adjacent Port-Orford-cedar stands immediately next to the watercourse or infect nearby stands from root-to-root contact.

Table 77. Spatial data used for the analysis and a brief description of each data set

Spatial Data	
Layer Name	**Description**
NRA_POC_2010	2010 POC (post Biscuit Fire)
NRA_POC_1999	1999 POC (pre-Biscuit Fire)
NRA_HUC7	7th field watershed
NRA_HUC6	6th field watershed
NRA_Stream_arc_83	Streams (all order classes)
Alternative_1_UAR_9252013	Alternative 1 routes
Alternative_3_9252013	Alternative 3 routes
Alternative_4_9252013	Alternative 4 routes
Alternative_5_9252013	Alternative 5 routes
Alternative_6_9252013	Alternative 6 routes

[4] Though not directly related to rating a route's risk, POC plant associations (Jimerson and Daniel, 1994) were considered as a risk factor in the effects analysis. Gates or seasonal closures were not considered in rating a route's risk but were used as mitigating risks in the effects analysis. Watershed catchment area is also correlated with increased risk (Jules et al. 2002). This was not used in the risk model, but it was used to evaluate increased potential effects to stands of POC downstream.

[5] These figures were used in the GIS model. In addition, to be conservative, a route by route visual review using recent National Agriculture Imagery Program (NAIP) imagery and POC layer was done using the ArcMap distance tool to capture routes outside this range, those within 200' of a water source.

Data Sources

Spatial data sources used for this analysis are listed in Table 77.

Port-Orford-Cedar Resource Indicators

- Number of high-risk routes accessing uninfected Port-Orford-cedar stands.
- Acres of Port-Orford-cedar at increased risk in 7th field watersheds.

Port-Orford-Cedar Methodology by Action:

Direct and indirect effects

Methodology: All the unauthorized routes for all the alternatives within watersheds that contained mapped Port-Orford-cedar stands in the project area were analyzed. Each route was analyzed in ArcGIS (ESRI 2006) Geographic Information System (GIS) to determine the proximity of the routes to mapped Port-Orford-cedar stands. Additionally, each route was checked visually for proximity to Port-Orford-cedar.

There are seventy seven 7th field watersheds containing Port-Orford-cedar on the Smith River National Recreation Area, of which 69 are within the analysis area (Figure 2). The analysis area contains approximately 13,535 acres of Port-Orford-cedar, of which approximately 3000 acres are currently infested. Many factors influence the probability of *Phytophthora lateralis* transmission that result in Port-Orford-cedar infection (USDA, USDI 2004). Relative probabilities between 1 (very low) and 10 (very high) have been determined for each factor (Table 78; USDA, USDI 2004). Using these risk probabilities allows for a comparative quantitative analysis for the factors most influencing the spread of *Phytophthora lateralis*. The most common vectors for *Phytophthora lateralis* spread are motorized vehicles. Off-highway vehicles have a higher risk probability (8) than do passenger vehicles (7). Routes crossing streams or wet surface conditions, with Port-Orford-cedar growing nearby downslope, both have high probabilities of risk of infection. Distance to the nearest Port-Orford-cedar is also a significant risk factor. The smaller the distance a road is to the nearest Port-Orford-cedar stand, the greater the risk of *Phytophthora lateralis* infection will be (Jules et al. 2002; USDA, USDI 2004). A high-risk of *Phytophthora lateralis* infection appeared to significantly diminish for POC as little as 10 feet from the road (from 8 to 4) (USDA, USDI 2004). This analysis followed USDA, USDI (2004) protocol, which assigned risk probabilities greater than 3 (>5 percent risk) as high-risk. The following criteria within the model for designating a route as high-risk of introducing *Phytophthora lateralis* into a Port-Orford-cedar stand were used: a route crossing a stream with POC downstream within 100’ (4) or a route where the nearest downslope or flat surface Port-Orford-cedar is < 50’ (4). In addition, routes within 200’ of POC in stream courses (visually inspected and hand measured in a GIS using color NAIP imagery) were included in the analysis. This was done because there is limited data that demonstrates that at what distance does risk drops to the threshold of “low risk”. It should be noted that these risk probabilities are for a single event. Low risk probability events can become riskier if repeated, especially if repeated often over a short time period.

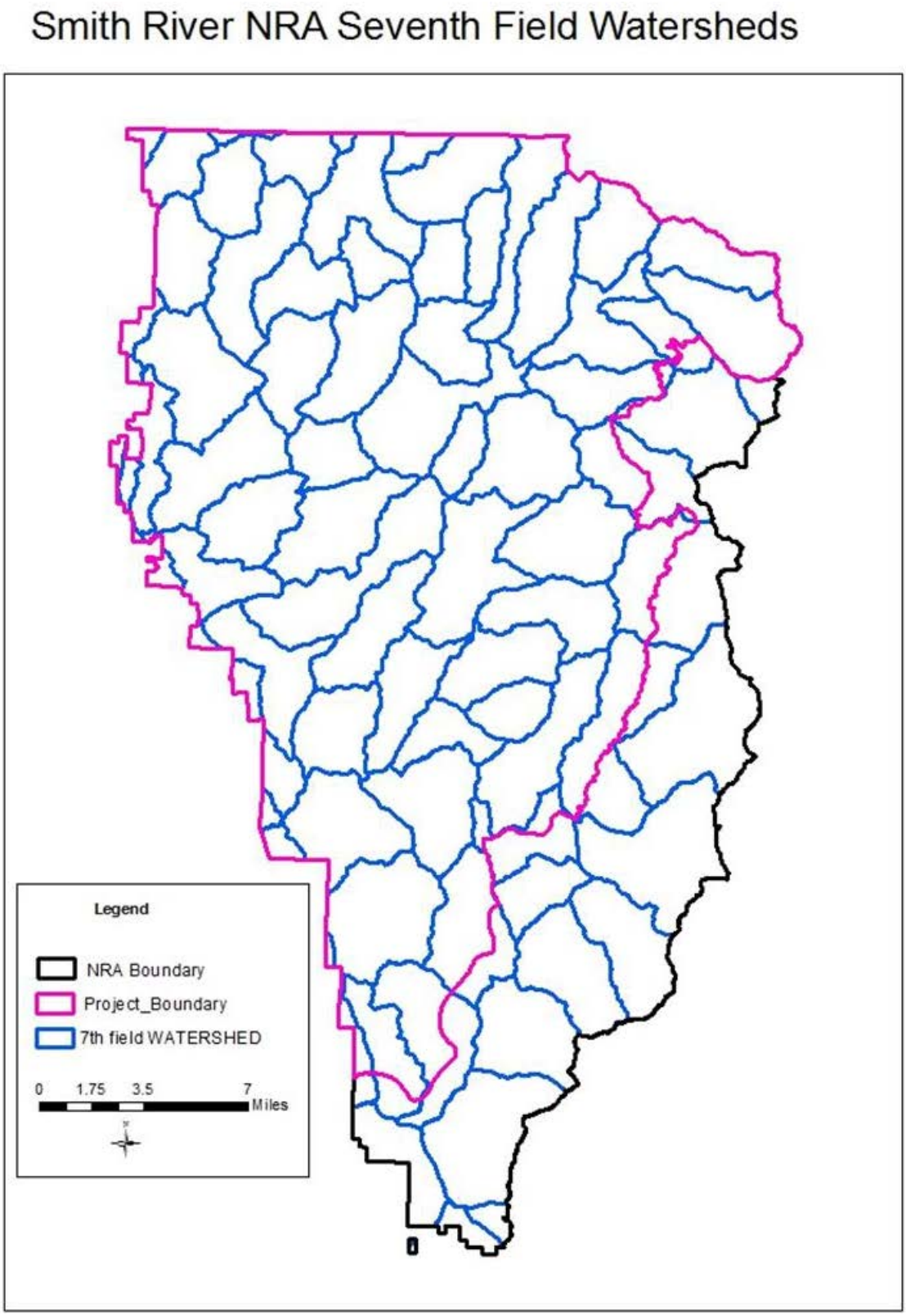

Figure 2. Smith River NRA seventh field watersheds

Table 78. Risk probabilities for factors associated with *Phytophthora lateralis* spread

Relative Risk Probabilities for a Single Event	
1 = 0 to 2 percent	6 = 10.1 to 20 percent
2 = 2.1 to 4 percent	7 = 20.1 to 30 percent
3 = 4.1 to 6 percent	8 = 30.1 to 40 percent
4 = 6.1 to 8 percent	9 = 40.1 to 50 percent
5 = 8.1 to 10 percent	10 = 50.1 to 100 percent

Additional risk factors include Port-Orford-cedar stand density, presence of root disease in watershed and catchment area (Jules et al. 2002).

Direct and indirect effects to addition of new facilities (roads and motorized trails) to the National Forest Transportation System (NFTS).

Unauthorized routes classified as low risk of introducing *Phytophthora lateralis* into Port-Orford-cedar stands would have similar short term and long term effects, whether added to the NFTS or not. These routes would have a very low probability of infecting Port-Orford-cedar stands so they were not further analyzed. Generally speaking, adding UARs to the NFTS would allow greater control in regulating vehicle traffic, which helps reduce risks of *Phytophthora lateralis* infestation into Port-Orford-cedar stands. The effects of adding routes to the NFTS would vary greatly depending on the individual route and the watershed. Unauthorized routes were analyzed by alternative to determine the existing percentage of a watershed currently infested and the potential percentage increase based on Port-Orford-cedar put at risk (Table 79).

Table 79. Percentage 7th field watershed currently infested and potential percentage increase (based on acres put at risk) by high-risk UAR and alternative

Seventh Field Watershed	UAR	Alt 3		Alt 4		Alt 5		Alt 6	
Lower Goose Creek	14N15.1	0%	45%	0%	45%	na	na	na	na
	15N01A.4	na	na	0%	50%	na	na	na	na
Middle Goose Creek	14N15.1	0%	38%	0%	38%	na	na	na	na
Upper Goose Creek	14N15.1	0%	61%	0%	61%	na	na	na	na
Hardscrabble Creek	17N49.7	27%	50%	27%	50%	na	na	27%	50%
	17N49.12	na	na	27%	31%	na	na	na	na
	17N49.11	27%	29%	27%	29%	na	na	27%	29%
	305.125	27%	29%	27%	29%	na	na	27%	29%
	17N49.11P	27%	29%	na	na	na	na	na	na
Upper Tribs Upper Middle Fork Smith River	18N02.3	na	na	11%	23%	na	na	11%	23%
Blackhawk - Yellowjacket Creeks	15N01.102	18%	25%	18%	25%	18%	25%	na	na
	15N36N.1	na	na	18%	20%	18%	20%	na	na
	15N36N.1B	na	na	18%	18.3%	na	na	na	na
Lower Diamond Creek	315.114	na	na	40%	21%	na	na	na	na
Canthook - Rattlesnake Creeks	15N02.5	na	na	na	na	na	na	21%	25%
Still Creek	305.109	0%	6%	0%	6%	na	na	na	na
West Fork Patrick Creek	315.3	na	na	19%	24%	na	na	na	na
North Fork Diamond Creek	18N09.100	na	na	77%	79%	na	na	77%	79%

Low Risk Routes: As mentioned, routes classified as low risk to introducing *Phytophthora lateralis* would have similar short term and long term effects. *Phytophthora lateralis* infestation would be unlikely to occur for these routes and are not analyzed.

High-risk Routes: All four action alternatives had a combined of 117 UARs that were classified as high-risk. This includes routes that access currently infected Port-Orford-cedar stands and those that access uninfected stands. The high-risk rating of routes that currently access infected Port-Orford-cedar stands was used to determine cumulative effects of the risk of spread from the infested site into non-infected areas. Direct and indirect effects were done on routes accessing currently non-infested stands since these routes pose the greatest risk. This is especially true of routes that access watersheds that are currently not infested. Routes that only pass through currently infested stands have minimal direct and indirect effects on these stands since the disease is already established. These routes were analyzed in the cumulative effects section because they may contribute to additional effects (primarily by spreading the disease into uninfected stands) depending on the Action Alternative. There were 17 high-risk routes identified that are proposed to be added to at least one of the action alternatives that access uninfected stands. The short term effect, if the disease did manage to get into the stand would be small. Infected smaller trees would show signs of the disease soon after infection, while larger trees could take several years to show signs of *Phytophthora lateralis* infection. Long term effects would depend on the local conditions at the site of infection. Left untreated, the infestation could work its way into a stream course, rapidly work its way down stream, and kill almost all Port-Orford-cedar within the riparian zone within 5 years. Between 50 and 1000 acres of Port-Orford-cedar could be affected, depending on the Alternative. Within riparian zones this could alter ecosystem dynamics along the stream course and immediately upslope of the riparian zone. Snag recruitment could increase dramatically, creating a larger pulse of course woody debris into the stream channel as these snags decayed and fell. In-channel bank instability could increase from the loss of stabilizing root mass from living trees, resulting in higher soil erosion rates. Water temperature could rise due to increased solar insolation. Port-Orford-cedar root disease allowed to spread could greatly increase the chances of infecting other streams within the watershed and introducing *Phytophthora lateralis* into nearby watersheds.

Indicator(s): All indicators were used.

Short-term timeframe: 1 year.

Long-term timeframe: > 5 years.

Spatial boundary: Smith River NRA

Methodology: Unauthorized routes proposed to be added to the NFTS in all the proposed action alternatives and located within watersheds containing Port-Orford-cedar were analyzed. A GIS analysis was done for these routes assigning risk categories based on the assumptions listed above. The assumption was made that the low risk category indicated a very low probability of introducing *Phytophthora lateralis* into Port-Orford-cedar stands, and no further analysis was made on these routes. High-risk routes were further analyzed in a GIS to determine the potential acres that would infest Port-Orford-cedar, based on the assumptions above. Direct and indirect effects assumed quick transmission of the disease once infection was introduced into a non-infested stream course. The total acres potentially infested were calculated assuming a small time frame of about five years (a comparison of Port-Orford-cedar with year 1985 and year 1990 air photos, representing the same locations, showed significant Port-Orford-cedar die-back during this period).

Direct and indirect effects to changes to NFTS, including upgrading, downgrading, decommissioning, designation of mixed-use, and designation of season of use on the existing NFTS.

The effects of upgrading or downgrading existing routes would vary depending on surface composition, stream crossing conditions near Port-Orford-cedar stands and increased accessibility. Vehicle use in general has the potential to introduce *Phytophthora lateralis* infection, regardless of the vehicle class designation. However, in general, off-highway vehicles have an increased risk of introducing *Phytophthora lateralis* into Port-Orford-cedar ecosystems (USDA/USDI 2004). Designating routes as mixed-use (permitting passenger vehicles and OHVs access) would slightly elevate the risks, primarily because OHVs have increased risk than passenger vehicles (USDA/USDI 2004). However, all routes proposed for mixed-use in the action alternatives are along a short section of 17N49, which is a well-traveled route and currently infested. All routes classified as low risk of introducing *Phytophthora lateralis* into Port-Orford-cedar stands would have similar short term and long term effects, whether added to the NFTS or not. These routes would have a very low probability of infecting Port-Orford-cedar stands. Downgrading the maintenance level of existing routes to ML-1 or decommissioning them would have a similar effect in the long term, since these routes would be barricaded or closed to traffic, effectively greatly reducing the risk of infestation. In the short term, the efficacy of any chosen method for restricting vehicle access may vary. Gates or barricades are successful if they are not breached. Allowing vegetation to grow back on the road through non-maintenance would be effective at a future time when travel is not possible, but this could take years depending on the road surface, surrounding vegetation, available water and geology. Physically removing the road would be the best method. Changing from motorized use to nonmotorized use would greatly reduce the risk of *Phytophthora lateralis* infection into Port-Orford-cedar stands. Foot and horse traffic would have the potential to introduce the disease, but the chances of doing so would be small. Upgrading vehicle class is associated with road improvements, which in general terms would reduce probability of infection, but it would be a small reduction. It would probably not reduce the high risk rating of the route. The current use of seasonal Port-Orford-cedar gate closures, defined by the season- of-use on system roads excludes vehicle use near Port-Orford-cedar stands during the wet months of the year. This applies to system roads and many UARs. Seasonal gate closure success is dependent on the correct timing of the closure and the ability to restrict access beyond the gate. The gate location can increase the efficacy of restricting illegal vehicle access. The preferred locations for the placement of gates are in areas that severely restrict a vehicles ability to drive around them. This is usually on steeper slopes along narrow sections of the road that have steep road cuts, which make it difficult for vehicles to drive around. Placement of large boulders around gates can facilitate this. Relying on dense shrubs to block traffic is generally not very effective. Failure to limit vehicle use during the wet season on roads and routes near Port-Orford-cedar stands would have a potentially great impact. Short term effects of doing so would be minimal, similar to those described in previous action and non-action scenarios. The long term effect would be the increased likelihood that *Phytophthora lateralis* is introduced into a Port-Orford-cedar stand. There would be a higher probability of transporting infested mud from infected areas during unrestricted wet weather use. Wet weather use of roads that access Port-Orford-cedar stands would be the single greatest risk of introducing *Phytophthora lateralis* into Port-Orford-cedar stands. It is assumed that a vehicle driving in *Phytophthora lateralis* infested mud will pick up and accrue mud beneath the undercarriage and/or mud flaps of the vehicle. *Phytophthora lateralis* spores remain viable in infested moist mud for up to 6 months (Ostrofsky et al. 1977).

Indicator(s): All indicators were used.

Short-term timeframe: 1 year.

Long-term timeframe: > 5 years.

Spatial boundary: Smith River NRA

Methodology and Assumptions: It is assumed that changes to the existing NFTS will not have additional impacts to Port-Orford-cedar where the maintenance level has been downgraded to an maintenance level (ML) of 1 or if the route is decommissioned. Only routes upgraded from an ML-1 may have an effect on Port-Orford-cedar.

Cumulative Effects

All the action items listed above regarding addition of UARs, changes to maintenance levels and seasonal closures were considered in cumulative effects. In addition, those actions on high-risk routes that had no change in the maintenance level and those routes decommissioned from the NFTS were considered. Similar to direct and indirect effects, existing high-risk system roads included in all the alternatives were analyzed by alternative to determine the existing percentage of a watershed currently infested and the potential percentage increase based on Port-Orford-cedar put at risk (Table 80).

Table 80. Percentage 7th field watershed currently infested and potential percentage increase (based on acres put at risk) by high-risk system road and alternative

Seventh Field Watershed	UAR	Alt 3		Alt 4		Alt 5		Alt 6	
Lower Goose Creek	15N13	0%	45%	0%	45%	0%	45%	0%	45%
Middle Goose Creek	15N13	0%	42%	0%	42%	0%	42%	0%	42%
Upper Goose Creek	15N13	0%	15%	0%	15%	0%	15%	0%	15%
Upper Jones Creek	16N02L	na	na	9%	40%	na	na	9%	40%
Buck Creek	14N38	0%	19%	na	na	na	na	na	na
Quartz Creek	16N18A	0%	38%	0%	38%	na	na	0%	38%
Lower Rock Creek	16N23	28%	57%	28%	57%	na	na	28%	57%
Upper Hurdy Creek	17N04L	na	na	11%	23%	na	na	na	na
	16N32	11%	17%	11%	17%	na	na	11%	17%
	16N33	na	na	8%	19%	na	na	8%	19%
Lower Siskiyou Fork Smith River	17N32	na	na	53%	92%	na	na	53%	92%
Little Jones Creek	17N36	0%	49%	0%	49%	0%	49%	0%	49%
Upper Tribs Upper Middle Fork Smith River	18N02	na	na	11%	23%	11%	23%	11%	23%
Monkey Creek	18N17	39%	65%	39%	65%	na	na	39%	65%
	18N17C	39%	41%	39%	41%	na	na	39%	41%
	18N17D	na	na	39%	43%	na	na	na	na
	18N17E	na	na	39%	65%	na	na	na	na
	18N17F	na	na	39%	49%	na	na	na	na
Blackhawk - Yellowjacket Creeks	15N38	na	na	18%	19%	na	na	18%	19%
Boulder - Deer Creeks	16N16	55%	59%	55%	59%	na	na	55%	59%
Coon Creek - South Fork Smith River	16N19	38%	42%	38%	42%	na	na	38%	42%
Lower Patrick Creek	18N16	na	na	15%	28%	15%	28%	15%	28%
Canthook - Rattlesnake Creeks	15N02	21%	25%	21%	25%	na	na	21%	25%
Middle Turwer Creek	14N01D	0%	38%	0%	38%	na	na	0%	38%
Upper Jones Creek	16N03K	9%	9.4%	9%	9.4%	na	na	9%	9.4%
Knopti Creek	18N11	41%	43%	41%	43%	41%	43%	41%	43%
Lower Craigs Creek	17N40	na	na	63%	67%	na	na	63%	67%
Middle Hurdy Gurdy Creek	16N03D	na	na	26%	27%	na	na	na	na

Indicator(s): All indicators were used.

Short-term time frame: not applicable; cumulative effects analysis will be done only for the long-term time frame.

Long-term timeframe: 20 years.

Spatial boundary: Region 5 Port-Orford-cedar range.

Methodology and Assumptions: The following factors were used to ascertain cumulative effects: (1) UARs designated as high-risk (2) Port-Orford-cedar plant associations within potentially affected watersheds (3) current high-risk system roads accessing both infested and non-infested stands of Port-Orford-cedar and (4) the infection status of current Region 5 Port-Orford-cedar stands.

Cumulative effects would be based on the risk of *Phytophthora lateralis* being introduced into a Port-Orford-cedar stand. If there is no introduction of Port-Orford-cedar root disease then there would be no cumulative effects. The current management strategy requires season-of-use restrictions, in other words, seasonal Port-Orford-cedar wet weather closures of system roads that access watersheds of concern. Long term cumulative effects related to use of NFTS roads and trails would be predicated on the effectiveness of this strategy, and effective seasonal Port-Orford-cedar gate closures accessing these routes would greatly reduce risks of *Phytophthora lateralis* infection, reducing the risk of long term effects. If the disease got into Port-Orford-cedar stands, and its spread could not be stopped, then cumulative effects would depend on the existing conditions of the Port-Orford-cedar stands and their streamside location within the watershed. Introducing Port-Orford-cedar root disease into uninfected watersheds could have major ecological impacts. At the watershed scale, introduction of *Phytophthora lateralis* could result in a major loss of habitat containing large components of Port-Orford-cedar. Loss of Port-Orford-cedar along riparian zones may result in a slight increase to water temperature locally. This would be especially true in ultramafic areas where Port-Orford-cedar is the major riparian tree species. Loss of these trees in the serpentine riparian zone might dramatically change ecosystem dynamics because there are few tree species that would provide similar ecological functions. Several threatened and endangered listed plant species are associated with serpentine related Port-Orford-cedar stands. Loss of Port-Orford-cedar in these areas might reduce available habitat for these species.

This could affect potential habitat for some aquatic species locally. As Port-Orford-cedar die off snag recruitment would increase dramatically. This could create a larger pulse of course woody debris into the stream channel as these snags decayed and fell over time; however, Port-Orford-cedar are highly resistant to rot, and this process would take many years. Increased erosion due to Port-Orford-cedar root loss along stream sides could create in-channel bank instability and wind-throw, both resulting from the loss of stabilizing root mass from living trees, which would also result in higher soil erosion rates. Early seral species, such as willows, grasses and alders, which decay more readily, would replace longer lived, decay resistant Port-Orford-cedar. This would decrease the available coarse woody debris recruitment into streams and rivers over time, an important component to fish habitat.

Current NFTS routes have the potential to affect Port-Orford-cedar stands in a similar way as those proposed for adding (primarily the potential to spread the disease to currently uninfected stands and un-infested watersheds).These routes are currently being mitigated with seasonal closures (season-of-use designations). Those NFTS action roads proposed to be maintained or upgraded would have similar affects to Port-Orford-cedar as non-action system roads, notwithstanding Port-Orford-cedar mitigation measures. Mitigation measures are designed to reduce the risk of spread of *Phytophthora lateralis* to uninfected stands. County roads within the Smith River NRA are beyond the administration of the Forest Service. Many of these roads access NFTS roads that are within areas of heavy *Phytophthora lateralis*

infestation. Seasonal restrictions on these roads would provide no protective measures in the short term. They might prevent reinfection in the long term, but that would depend greatly on local conditions, especially in areas with heavy infestation. Installation of seasonal gates in these areas might reduce infested mud from being moved beyond the infection site, but nearby infested county access road negate the benefits. Reducing the risk of vehicles becoming vectors for these roads was mitigated by improving the road surface conditions and drainage patterns, which reduces infected mud from accumulating on roads.

All high-risk UARs that are not added to the system will inherently continue to have risk unless motor vehicle traffic is restricted on them. Even though there would be a ban on cross-country travel on routes not added to the system, continued illegal use of these routes would put uninfected stands of Port-Orford-cedar at risk that are in proximity to these routes.

Cumulative effects involving other known projects in the foreseeable future should be negligible since all Forest-wide projects that have the potential to affect Port-Orford-cedar have mitigations inherently built into them to minimize the spread of *Phytophthora lateralis* into these stands.

Climate change is unknown how it may affect the spread of *Phytophthora lateralis*. Cumulative effects based on climate change are speculative. The greatest effect would be increased rainfall or rainfall occurring during the time of year when seasonal gates would be generally open. Timely closure of gates is critical in maintaining adequate mitigation in areas where these restrictions are in place.

Affected Environment

Jimerson, McGee and Jones (1999) mapped 41,059 acres of Port-Orford-cedar based on potential natural vegetation on federal lands in Region 5 comprising 35 separate plant associations. A more recent mapping effort updated Port-Orford-cedar polygons on Forest Service lands. It used 5-acre minimum mapping units, existing vegetation and excluded Port-Orford-cedar burned over during the Biscuit Fire. This resulted in 28,759 acres on the Six Rivers National Forest, and of these 20,344 acres are on the Smith River NRA.

There are about 4,400 acres of Port-Orford-cedar infected with *Phytophthora lateralis* root disease in Region 5, roughly ten percent of the California range, and of this, the Smith River NRA has just over 3,000 infected acres or 68 percent of the total infected acres. Another 9 percent of the infected Port-Orford-cedar area lies within the Redwood National and State Parks, which is adjacent to the Smith River NRA.

This Travel Management site specific Port-Orford-cedar risk assessment identifies routes at risk of spreading the disease. Since vehicle traffic is the primary vector for Port-Orford-cedar root disease, this analysis will provide management direction to help decrease the chance of introducing *Phytophthora lateralis* into uninfected stands of Port-Orford-cedar and help reduce the overall spread of the disease.

Environmental Consequences

See the effects methodology section above regarding how this analysis was conducted.

Alternative 1 – No Action

This alternative would not add routes to the NFTS. There would be no changes to the existing NFTS, including upgrading, downgrading, decommissioning, designation of mixed-use, and there would be no new changes to current season of use restrictions.

Indicators: All indicators were used.

- **Routes added to the existing NFTS**: No routes would be added to NFTS.
- **Changes to NFTS**: There would be no changes to the NFTS.
- **Seasonal Closure**: Existing season-of-use designations (i.e., seasonal closures) would remain in effect, and no new seasonal closures would be implemented.

Direct and Indirect Effects to addition of new facilities (roads, motorized trails) to the National Forest Transportation System (NFTS).

No UARs would be added to the NFTS so there would be no direct or indirect effects.

Direct and Indirect Effects to changes to the NFTS including Upgrading, Downgrading, Decommissioning, Designating Mixed-Use, and Designating Season of Use on the Existing NFTS.

No changes to the current NFTS are proposed so there would be no direct or indirect effects.

Season of use would remain unchanged. Direct and indirect effects would be predicated on the efficacy of existing season of use restrictions on the current NFTS. Timely and effective gate closures would maintain a low risk of spreading *Phytophthora lateralis* into uninfected areas. Many system roads that have access to Port-Orford-cedar have been operating under a seasonal Port-Orford-cedar wet weather closure, which is designed to minimize the spread of *Phytophthora lateralis*. The greatest risk to Port-Orford-cedar is in areas where wet weather use is not restricted. Other risks with this alternative would be a failure to close gates prior to wet weather conditions or illegal vehicle access around gates after closure is implemented.

Cumulative Effects

An analysis of the existing NFTS roads in the project area determined that there are approximately 263 miles (124 road segments) that are currently rated as High-risk. The following are the ML ratings for these roads. ML- 1 roads total 37.55 miles (23 segments). ML-2 roads total 106.00 miles (63 segments). ML-3 and higher total 120.37 miles (38 segments).

High-risk ML-1 roads are currently closed to the public, which should reduce the risk rating to low; however some closures are implemented using permanent gates, and the efficacy of these gates depends on the ability to successfully restrict traffic. Evidence exists that shows successful attempts at circumventing these gates, which therefore increases the risks of introducing *Phytophthora lateralis* into Port-Orford-cedar stands and watersheds that are currently uninfected. The current management strategy for ML-2 and greater system roads accessing watersheds of concern requires seasonal Port-Orford-cedar wet weather closures. Long term cumulative effects related to use of authorized roads and motorized trails would be predicated on the effectiveness of this strategy, and effective seasonal Port-Orford-cedar gate closures for these routes would greatly reduce risks of *Phytophthora lateralis* infection. The potential effects of this alternative to Port-Orford-cedar would depend on the risk of increased *Phytophthora lateralis* spread into the watersheds. Illegal use of high-risk UARs not added to the system would continue to put uninfected stands of Port-Orford-cedar at risk.

Alternative 3 – Modified Proposed Action

This alternative proposes adding 25 high-risk UARs (including motorized vehicle trails) to the NFTS, changes to NFTS on 22 high-risk existing roads, including decommissioning, and season-of-use restriction on 6 additional routes. It also proposes to maintain one high-risk ML-1 road and 25 high-risk ML-2 roads. Actions analyzed in this alternative are summarized below.

Direct and Indirect Effects

Indicators: All indicators were used.

- **Routes added to the existing NFTS:** Approximately 29 miles of high-risk routes would be added to the NFTS.
- **Changes to NFTS:** Approximately 17 miles of existing NFTS routes would have changed motor use designation (2.15 miles downgraded, 11.22 miles decommissioned and 3.8 miles mixed-use).
- **Seasonal closure:** 10.5 miles of additional routes will have seasonal closure.

Direct and indirect effects to addition of new facilities (roads, motorized trails) to the National Forest Transportation System (NFTS).

Twenty-five high-risk routes (28.79 miles) would be added under this alternative. One high-risk route (3.84 miles) would be added as ML-1, ten (6.86 miles) would be added as ML-2, three (0.39 miles) as ML-3, and eleven (17.70 miles) as motorized trails. All high-risk UARs that would be added as ML-1 are considered as low risk, and no further analysis was done on these routes. Those routes that would be added and would access currently uninfected Port-Orford-cedar stands were more thoroughly analyzed in the cumulative effects section. Their high-risk rating reflects an increased risk of motor vehicles to transmitting infested mud into non-infested stands. Direct and indirect effects will focus on those routes that access currently un-infested Port-Orford-cedar stands.

Direct effects to adding high-risk UARs to the NFTS are improved motorized access to approximately 640 acres of uninfected Port-Orford-cedar. This would increase the risk of infection to the stands accessed by these routes.

Route 14N15.1 has the greatest potential impact, directly accessing 280 acres of Port-Orford-cedar within the riparian corridor of Upper, Middle and Lower Goose Creeks downstream and, indirectly affecting an additional 240 acres adjacent to streamside positions within these three watersheds. Currently these watersheds are uninfected. Infection within the Upper, Middle and Lower Goose Creek watersheds would potentially result in 61 percent, 38 percent and 45 percent of the watersheds, respectively, becoming infected, resulting in an overall infection of 40 percent of the Sixth Order Goose Creek watershed, which is currently uninfected.

Route 17N49.7 within the Hardscrabble Creek watershed accesses about 60 acres of uninfected Port-Orford-cedar. Introduction of the disease within these stands would increase the infected Port-Orford-cedar within this watershed from 27 percent to 51 percent. Additionally, most of the Port-Orford-cedar plant communities associated with this route are associated with serpentine derived soils. Port-Orford-cedar growing in serpentine soils often is found in streamside positions or immediately upslope of streams. One plant community in particular, Port-Orford-cedar/western white pine/*Ledum glandulosum*/*Darlingtonia californica*, grows in boggy, wet conditions, and it is often associated with rare and sensitive plant species. There are about 600 acres of this plant community growing on the Smith River NRA, of which 17 percent is currently infested with *Phytophthora lateralis*. This route crosses several creeks with this plant community present, approximately 12 acres. Additionally, 17N49.11, 17N49.11P, and 305.125 access other Port-Orford-cedar stands within this watershed. Collectively they have the potential of infecting an additional 3 percent in the Hardscrabble Creek watershed.

Route 15N01.102, within the Blackhawk – Yellowjacket watershed accesses Port-Orford-cedar stands, which if became infected, would increase infestation within this watershed from 18 percent to 25 percent. Within the Still Creek watershed, UAR 305.109 accesses a small stand of Port-Orford-cedar, only 3 acres, but this watershed is currently uninfected.

This alternative puts approximately 3 percent of Port-Orford-cedar on the district at a higher risk of infection due to access from UARs; however a greater effect would be the potential introduction of *Phytophthora lateralis* into the Goose Creek watershed, which contains 6 percent of Port-Orford-cedar on the district and is currently un-infested.

Direct and indirect effects to changes to the NFTS including upgrading, downgrading, decommissioning, designating mixed-use, and designating season of use on the existing NFTS.

Twenty high-risk routes (17.17 miles) are included in changes to the NFTS. Three (2.15 miles) are proposed to by downgraded to ML-1, one ML-3 (3.8 miles) designated as mixed-use, and 16 roads (11.22 miles) decommissioned. Six high-risk routes (10.51 miles) are proposed to have season-of-use restrictions with POC gate closures.

All routes downgraded to ML-1 would result in a low risk rating and are not further analyzed. The one route changed to mixed-use is currently ML-2. A mixed-use designation would not change the risk rating of this route. This route segment on 17N49 currently crosses one Port-Orford-cedar stand that is already infested. A change to this vehicle class, by designating mixed-use, would allow legal off-highway vehicles access across this infected segment that would increase the chances of picking up infected mud on the undercarriage at this location during wet weather conditions. Any discussion of spread of the disease beyond this location would be speculative.

Seasonal gate closures, to reinforce season-of-use restrictions, would reduce the risk of introducing *Phytophthora lateralis* beyond the gate location. Gate closures are only as good as the timing of enforcement and the ability to prevent vehicle traffic from circumventing the gate. A gate's location is very important in minimizing a breach in the closure. It should be located in an area where vehicles cannot easily drive around the gate, preferably on a steeper slope.

Cumulative Effects

There were 121 high-risk routes (154.58 miles), both UAR and existing system roads. Of these, 59 access Port-Orford-cedar stands that are currently infested, and 62 access Port-Orford-cedar stands that are currently not infested. High-risk UARs that are proposed to be restored were treated in this analysis as low risk routes, which include UARs accessing infested and non-infested Port-Orford-cedar stands. Existing high-risk roads that would be proposed for decommissioning were treated likewise, along with the one high-risk ML-1 routes that would be maintained on the NFTS. There would be 25 current high-risk ML-2 roads (68.23 miles) that would be maintained in this condition but with improvements. Improvements typically involve brushing the road edges and increasing drainage from the road surface. Brushing would have little effect in either increasing or reducing risk. Improving road drainage prevents water from pooling, which could concentrate *Phytophthora lateralis* spores so this may reduce the risk of infecting nearby stands.

There are 14 high-risk system roads that have the greatest potential effect to Port-Orford-cedar, and they are discussed here.

The following six seventh field watersheds are currently not infested: Upper Goose, Middle Goose and Lower Goose Creeks, Middle Turwer Creek, Buck Creek and Quartz Creek. System road 15N13 has the greatest potential impact to the sixth field Goose Creek watershed. Within this larger watershed, it accesses the Upper Goose Creek watershed, which is currently un-infested. Introduction of *Phytophthora lateralis* along this road into the watershed would put 15 percent of the Upper Goose, 42 percent of the Middle Goose and 45 percent of the Lower Goose Creek watersheds at increased risk.

Similarly,14N01D, accesses the Middle Turwer Creek watershed, 14N38 accesses the Buck Creek watershed, and 16N18A accesses the Quartz Creek watershed, all currently un-infested watersheds. Introduction of the disease within these watersheds would put 37 percent, 19 percent and 37 percent of the respective watersheds at risk. System road 17N36 accesses Little Jones Creek, which currently has only 1 acre know to be infected. Introduction of *Phytophthora lateralis* here would put 49 percent of the Port-Orford-cedar within the watershed at risk.

16N23 accesses Port-Orford-cedar within the Lower Rock Creek, which is currently 28 percent infected, but introduction of *Phytophthora lateralis* along this road would put an additional 29 percent of the Port-Orford-cedar within the watershed at risk. Similarly, road 18N17 accesses the Monkey Creek watershed, which is currently 39 percent infected. This route has the potential to infect an additional 26 percent Port-Orford-cedar within this watershed. Routes 18N17C, 16N16, 16N19, 15N02, 16N03K and 18N11 access less than 5 percent of Port-Orford-cedar within their respective watersheds and collectively access around 55 additional acres of Port-Orford-cedar.

Alternative 4

This alternative proposes adding 56 high-risk UARs (including motorized vehicle trails) to the NFTS, and changing vehicle class to 23 existing high-risk roads, including decommissioning, seasonally restricted use of 20 high-risk routes. It also proposes to maintain 3 ML-1 high-risk roads, 44 ML-2 high-risk roads, and 2 ML-3 high-risk roads. Actions analyzed in this alternative are summarized below.

Direct and Indirect Effects

Indicators: All indicators were used.

- **Routes added to the existing NFTS**: Approximately 34 miles of high-risk routes would be added to the NFTS.
- **Changes to NFTS:** Approximately 19 miles of existing NFTS motorized routes would be changed to a new motorized designation (3.01 miles downgraded, 4.62 miles upgraded, 10.68 miles decommissioned and 0.44 miles mixed-use).
- **Seasonal closure**: Seasonal restrictions would prohibit motorized use of NFTS routes (43 miles) during periods of wet weather in the project area.

Direct and indirect effects to addition of new facilities (roads, trails,) to the National Forest Transportation System (NFTS).

Fifty-six high-risk routes (33.55 miles) would be added under this alternative. One (1.00 mile) would be added as ML-1, twelve (10.98 miles) would be added as ML-2, three (0.51 miles) as ML-3 and forty (21.06 miles) as motorized trails. Similar to alternative 3, only those high-risk UARs that access currently non-infested stands were analyzed for direct and indirect effects.

Direct effects of adding high-risk UARs to the NFTS are improved motorized access to approximately 995 acres of uninfected Port-Orford-cedar. This would increase the risk of infection to the stands accessed by these routes.

Two high-risk UARs, 14N15.1 and 17N49.7 that were discussed in Alternative 3 would have the same effects in this alternative.

Route 15N01A.4 directly accesses 130 acres within the riparian corridor of Lower Goose Creek and, indirectly an additional 55 acres adjacent to the streamside positions. Currently this watershed is currently uninfected. When combined with 14N15.1, the Lower Goose Creek would potentially result in 50 percent

of this watershed becoming infected and an overall infection of 14 percent for the Six Order Goose Creek watershed.

Another watershed that is currently uninfected is Still Creek. The high-risk route 305.109 accesses a small amount of Port-Orford-cedar, roughly 5 percent of the Port-Orford-cedar in this watershed. Its location is near the top of the ridge so it has the potential of infesting all Port-Orford-cedar downstream of this location.

UAR 18N02.3 is a small spur on the Upper Tributaries of the Middle Fork Smith watershed. This watershed is currently only 4 percent infected, but this route's location is near the headwaters and would potentially infect an additional 12 percent. One plant community potentially affected would be the POC/*Abies magnifica – Quercus sadleriana/Vaccinium membranaseum* plant association. Only 117 acres of this type grow on the district, and this route accesses 35 acres or 35 percent of that plant association. Currently there is a known infection site near Sanger Lake, less than ½ mile away.

Routes 17N49.11 and 17N49.12 are within the Hardscrabble Creek watershed. These two routes access about 6 percent of the Port-Orford-cedar in this watershed, but collectively, along with 17N49.7 and 305.125, which were discussed in alternative 3, would access an additional 31 percent of Port-Orford-cedar stands within the Hardscrabble Creek watershed and put at a higher risk of becoming infested.

Route 15N01.102, within the Blackhawk – Yellowjacket watershed, was discussed in alternative 3. Routes 15N36N.1 and 15N36N.1B are also within this watershed. These two routes access collectively about another 2 percent of Port-Orford-cedar within this watershed. Combined with 15N01.102, an additional 8 percent of the watershed would be at an increased risk of becoming infected.

The Lower Diamond Creek watershed is currently 4 percent infected. Access to Port-Orford-cedar via route 315.114 would increase the risk an additional 17 percent. UAR 18N09.100 that accesses the North Fork Diamond Creek watershed, which is currently highly infested, would increase risk from 77 percent to 79 percent. The West Fork Patrick Creek watershed is currently 19 percent infected, and the high-risk UAR, 315.3 would increase access and risk of infecting another 5 percent of the Port-Orford-cedar within this watershed.

This alternative puts approximately 5 percent of Port-Orford-cedar on the district at a higher risk of infection due to access from UARs. Similar to Alternative 3 the greater effect would be the potential introduction of *Phytophthora lateralis* into the Goose Creek watershed.

Direct and indirect effects to changes to NFTS and seasonal closures.

Twenty-three high-risk routes (18.75 miles) are proposed to change the maintenance level. Five (3.01 miles) are proposed to by downgraded to ML-1, two (4.62 miles) upgraded to ML-2, one (0.44 miles) changed to mixed-use, and 15 (10.68 miles) decommissioned. Twenty high-risk routes (42.59 miles) are proposed to be restricted seasonally with Port-Orford-cedar gate closures.

Similar to alternative 3, high-risk routes downgraded to ML-1and decommissioned would result in a low risk rating and are not further analyzed, and mixed-use designation would not change the risk rating of a route. Upgrading a high-risk route from ML-2 to ML-3 would reduce the risk of the route, but it would probably be a very small reduction. Also as stated in alternative 3, seasonal gate closures would reduce the risk of introducing *Phytophthora lateralis* beyond the gate location. Gate closures are only as good as the timing of enforcement and the ability to prevent vehicle traffic from circumventing the gate.

Cumulative Effects

There were 174 high-risk routes (183.55 miles), both UAR and existing roads for this alternative. Similar to alternative 3, high-risk UARs that are proposed to be restored, high-risk ML-1 system roads, along with those proposed to be decommissioned were treated as low risk routes. There would be 45 current high-risk ML-2 routes (93.94 miles) that would be maintained in this condition but with improvements. Improvements typically involve brushing the road edges and increasing drainage from the road surface. Brushing would have little effect in either increasing or reducing risk. Improving road drainage prevents water from pooling, which could concentrate *Phytophthora lateralis* spores so this may reduce the risk of infecting nearby stands.

Cumulative effects would be similar as to Alternative 3. Many high-risk UAR and most high-risk system roads proposed for Alternative 3 are also included in alternative 4. In addition to the high-risk UARs described above in the direct/indirect effects section under this alternative, the inclusion of additional system road would have different cumulative impacts under this alternative.

Two additional systems roads would have access to the Upper Hurdy Creek watershed, which would increase the risk of *Phytophthora lateralis* infestation an additional 19 percent for the watershed.

Access through 17N32, within the Lower Siskiyou Fork Smith River, which is currently 53 percent infested, would increase the risk to 92 percent.

Risk to the Monkey Creek watershed would increase by 42 percent with system roads 18N17D, 18N17E and 18N17F (along with 18N17 and 18N17C, which have already been mentioned).

There would be increased risk to the Lower Patrick Creek watershed, from 15 percent to 28 percent with road 18N16.

A minor risk of increase *Phytophthora lateralis* infestation (5 percent or less) would occur with system roads 17N40 (Craigs Creek watershed) and 16N03D (Middle Hurdy Gurdy Creek watershed). Similarly, system road 15N38 would slightly increase the risk to the Blackhawk – Yellowjacket watershed.

A small segment of 18N02, which accesses 18N02.3, would have the potential to infest the same area that 18N02.3 accesses due to their close proximity to each other. Cumulatively, the amount of area potentially infested would not increase, but the probability of infestation may increase because of increased traffic on 18N02.

As stated before, the biggest cumulative impact would be increased risk to watersheds currently not infested. The following roads that are listed in alternative 3 also access watersheds that are currently not infestation: 15N13 (Upper, Middle and Lower Goose Creek), 16N18A (Quartz Creek), 14N01D (Middle Turwer Creek) and 17N36 (Little Jones Creek, along with the route proposed to be added, 305.109 (Still Creek).

Alternative 5

This alternative proposes adding 10 high-risk UARs (including motorized vehicle trails) to the NFTS, changing maintenance level of 58 high-risk existing roads including decommissioning, designation of season-of-use. It also proposes to maintain 3 ML-1 high-risk roads, 8 ML-2 high-risk roads and 3 ML-3 high-risk roads. Actions analyzed in this alternative are summarized below.

Direct and Indirect Effects

Indicators: All indicators were used.

- **Routes Added to the Existing NFTS**: Approximately 8 miles of high-risk routes would be added to the NFTS.
- **Changes to the existing NFTS**: Approximately 85 miles of existing high-risk NFTS motorized routes would be changed to a new motorized designation (70.89 miles downgraded, 3.84 miles upgraded and 10.68 miles decommissioned).
- **Seasonal closure**: Seasonal restrictions would prohibit motorized use of NFTS routes (7.52 miles) during periods of wet weather in the project area.

Direct and indirect effects to addition of new facilities (roads, trails,) to the NFTS.

Ten high-risk routes (7.64 miles) would be added under this alternative. One (3.84 miles) would be added as ML-1, three (1.82 miles) would be added as ML-2, three (0.51 miles) as ML-3 and three (1.47 miles) as motorized trails. Similar to alternative 3, only those high-risk UARs that access currently non-infested stands were analyzed. This resulted in 2 UARs that would have direct/indirect effects if added to the NFTS and that would access approximately 45 acres of uninfected Port-Orford-cedar.

Direct effects to adding high-risk UARs to the NFTS are improved motorized vehicle access to approximately 45 acres of uninfected Port-Orford-cedar. This would increase the risk of infection to the stands accessed by these routes.

These two high-risk UARs, 15N01.102 and 15N36N.1, have already discussed in Alternative 3 and 4, and they would have the same effects in this alternative.

This alternative puts approximately 0.2 percent of Port-Orford-cedar on the district at a higher risk of infection due to access from UARs.

Direct and indirect effects to changes to NFTS and seasonal closures.

Fifty-eight high-risk routes (81.57 miles) are proposed to change the maintenance level. Forty-three (70.89 miles) are proposed to by downgraded to ML-1 and 15 (10.68 miles) decommissioned. These actions would result in reduced risk to Port-Orford-cedar, similar to low risk routes so no other analysis was done. Four high-risk routes (7.52 miles) are proposed to be restricted seasonally with Port-Orford-cedar gate closures.

Cumulative Effects

This alternative has the least potential cumulative effects due to *Phytophthora lateralis* infestation from system roads and UARs. All high-risk system roads and UARs contributing to cumulative effects under this alternative have been discussed in previous alternatives. System road 15N13, previously discussed, would have the greatest single cumulative effect in the Goose Creek watersheds. 17N32 in the Little Jones Creek watershed and 18N02 have been discussed, but they have the potential for large impacts within their respective watersheds. Route 18N02 was previously described in cumulative effects under alternative 3.

There were 178 routes (183.55 miles), both UAR and existing roads identified as high-risk. Similar to alternative 3, high-risk UARs that are proposed to be restored, ML-1 system roads, along with those proposed to be decommissioned were treated in this analysis as Low Risk routes. This resulted in 45 current high-risk ML-2 routes for 93.94 miles that would be maintained in this condition but with improvements. Of the UAR proposed for adding, 17N49.7 has the potential to have a relatively large impact to POC plant communities based on plant community composition. This route was discussed in alternative 3 and would have similar cumulative effects. System roads 15N13 and 17N36 would have the greatest impact to watersheds because of current non-infestation. Roads 18N02, 18N16 and 18N11 would

have the potential to introduce moderate to low additional infection to their watershed. All these roads have been discussed in previous alternatives.

The greater effect of this alternative would be the potential introduction of *Phytophthora lateralis* into the Goose Creek watershed via access with System road 15N13.

Alternative 6

This alternative proposes adding 50 high-risk UARs (including motorized vehicle trails) to the NFTS, changing maintenance level to 23 high-risk existing roads including decommissioning, and designating season-of-use. It also proposes to maintain 9 ML-1 high-risk roads, 41 ML-2 high-risk roads and 2 ML-3 high-risk roads. Actions analyzed in this alternative are summarized below.

Direct and Indirect Effects

Indicators: All indicators were used.

- **Routes Added to the Existing NFTS**: Approximately 25 miles of high-risk motorized routes would be added to the NFTS.
- **Changes to the existing NFTS**: Approximately 15 miles of existing high-risk NFTS motorized routes would be changed to a new motorized designation (3.99 miles downgraded, 3.84 miles upgraded and 10.68 miles decommissioned).
- **Seasonal Closure**: Seasonal restrictions would prohibit motorized use of NFTS routes (52 miles) during periods of wet weather in the project area.

Direct and Indirect Effects to addition of new facilities (roads, trails,) to the National Forest Transportation System (NFTS).

Fifty high-risk routes (24.63 miles) would be added under this alternative. Four (6.62 miles) would be added as ML-1, nine (3.07 miles) would be added as ML-2, three (0.51 miles) as ML-3 and thirty-six (16.21 miles) as motorized trails.

Direct effects to adding high-risk UARs to the NFTS are improved access to approximately 130 acres of uninfected Port-Orford-cedar.

The three high-risk UARs 17N49.7, 17N49.11 and 305.125 have been discussed in alternative 3 under direct and indirect effects. Two high-risk UARs, 18N02.3 and 18N09.100 would be added as motorized trails. These two routes were discussed in Alternative 4 in greater detail. UAR 15N02.5, which accesses the Coon Creek – South Fork Smith watershed would increase the risk to un-infested Port-Orford-cedar from 21 percent to 25 percent.

This alternative puts approximately 0.6 percent of Port-Orford-cedar on the district at a higher risk of infection due to access from UARs. Similar to all alternatives, System road 15N13 has the greater risk by accessing the non-infested Goose Creek watershed.

Direct and Indirect Effects to changes to NFTS and seasonal closures.

Twenty-three high-risk routes (15.11 miles) are proposed to change maintenance level. Seven (3.99 miles) are proposed to by downgraded to ML-1 and one (0.44 miles) changed to mixed-use and 15 (10.68 miles) decommissioned. Eighteen high-risk routes (51.64 miles) are proposed to be restricted seasonally with POC gate closures.

Similar to alternative 3, high-risk routes downgraded to ML-1and decommissioned would result in a low risk rating and are not further analyzed, and mixed-use designation would not change the risk rating of a

route. Also as stated in alternative 3, seasonal gate closures would reduce the risk of introducing *Phytophthora lateralis* beyond the gate location. Gate closures are only as good as the timing of enforcement and the ability to prevent vehicle traffic from circumventing the gate.

Cumulative Effects

There were 179 routes (182.02 miles), both UAR and existing roads identified as high-risk. Similar to alternative 3, UARs that are proposed to be restored, ML-1 system roads, along with those proposed to be decommissioned were treated in this analysis and treated as low risk routes. High-risk existing roads that are proposed for decommissioning, along with those proposed to downgrade to ML-1 were treated likewise. This resulted in 41 current ML-2 high-risk roads for 94.32 miles and two (3.72 miles) of ML-3 high-risk roads that would be maintained in this condition but with improvements. Of the high-risk UAR proposed for adding, two (14N15.1 and 17N49.7) have the potential to have a relatively large impact to Port-Orford-cedar plant communities based on plant community composition or the potential to infect currently un-infested watershed. These routes were discussed in alternative 3 and would have similar cumulative effects.

Current high-risk NFTS routes that have the greatest potential to affect Port-Orford-cedar stands in a similar way to those proposed for adding (primarily the potential to spread the disease in currently uninfected watersheds) have been discussed in previous alternatives. These are 14N01D, 15N13, 16N18A and 17N36. Other System roads that would pose an increased risk described in previous alternatives are 15N02, 15N38, 16N03K, 16N16, 16N19, 16N32, 16N33, 17N32, 17N40, 18N02, 18N11, 18N16, 18N17, and 18N17C, and the cumulative effects have been discussed in previous alternatives.

Summary of Effects Analysis across All Alternatives

Table 81. Summary of effects analysis across all alternatives, Port-Orford-cedar root disease

Indicator	Rankings of Alternatives for each indicator[a]				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Number of un-infested 7th field watersheds accessed by high-risk UARs.	1	3	2	5	4
Acres of POC at increased risk in 7th field watersheds	1	3	2	5	4

a - A score of 5 indicates least risk to POC. A score of 1 indicates most risk to POC.

Compliance with the Forest Plan and Other Direction

All resource data is current and spatial accuracy is within Federal Geographic Data Committee standards. Analysis and conclusions are based on current scientific literature and referenced throughout this document.

Standards and Guidelines listed within the Forest Plan related to Port-Orford-cedar management apply. Specifically, this report meets the standards for completing a risk analysis for watersheds containing Port-Orford-cedar and for projects proposed in areas where the disease is not present. Additionally, this document uses an updated systematic risk model adopted by Region 6 and currently used on Region 5 Forests to evaluate the risks to Port-Orford-cedar through potential changes in the transportation plan and identifies high-risk areas where pro-active disease prevention measures can be implemented if necessary. All alternatives fully meet standards and guidelines related to minimizing the risk of Port-Orford-cedar root disease spread.

Noxious Weeds

Motorized vehicles contribute to the introduction and spread of noxious weed species by creating suitable environmental conditions for establishment (Trombulak and Frissell 2000). Additionally, the Chief of the Forest Service has determined that invasive species are one of four significant threats to forests and rangelands. The presence of these invaders affects many other resources, such as soil, wildlife habitat, and sensitive plants, so it is important to analyze and understand the effects of the project on noxious weed populations.

Analysis Framework

Statute, Regulation, Forest Plan, and Direction pertinent to the management and prevention of noxious weeds under the proposed action includes:

The Forest Service National Strategic Framework for Invasive Species Management (USDA 2013) (framework) was developed in 2004 and updated in 2013 to guide the implementation of Executive Order 13112 and Forest Service Policy (FSM 2900) (Appendix A). The framework provides strategic direction for all Forest Service programs and outlines four key elements necessary to effectively respond to the threat of invasive species on ecosystems. The four elements of the "Invasive Species Systems Approach" (ISSA) are a) prevention, b) detection, c) control and management, and d) restoration and rehabilitation.

Prevention and early detection and rapid response are the most strategic and thus effective elements in the framework to reduce the risk of invasive species introduction and spread. Prevention requires integrated planning and implementation across all Forest activities. Early detection requires personnel trained in invasive species threats, identification and effective treatment techniques, as well as the infrastructure to coordinate reporting and documentation of occurrences.

The framework identifies the following actions for prevention (P):

- Identify, forecast, and prioritize invasive species threats (P1).
- Identify high-risk pathways of movement and introduction (P2).
- Identify vulnerable ecosystems (P3).
- Improve cooperative efforts (P4).
- Recommend, program, and implement appropriate actions to prevent introductions and establishment (P5).

Since 2001, Six Rivers National Forest has had in place a standardized method assessing the risk of introducing or spreading invasive plant species and noxious weeds related to proposed actions (USFS Six Rivers 2001). The Six Rivers National Forest Invasive Plant Species Risk Assessment uses a standard methodology to analyze the risk of introducing or spreading invasive plant species, emphasizing those invasive species considered a priority on the Forest by virtue of a particular species' distribution, abundance and geographic location. Risk is evaluated in the assessment based five factors: 1) presence of known invasive plant species in the project area, 2) habitat vulnerability, 3) non-project-dependent vectors such as existing roads or trails, adjacent private property, 4) habitat alteration expected as a result of project implementation, and 5) increased vectors as a result of project implementation. These factors are directly related to the prevention items P1-P3 above.

Six Rivers Land and Resource Management Plan (Forest Plan)

The Forest Plan contains the following standards and guidelines for mitigating the introduction and spread of weeds:

- Invasive exotic species shall be prioritized and selected for management action based on their disruptive nature, distribution and the feasibility of successful control.
- Practices that prevent the introduction or spread of invasive exotic plant species shall be incorporated into planning and analysis for all management activities that have the potential to introduce or spread these species.
- Off-site materials (i.e. mulch, imported soil, construction materials) shall be screened for the presence of invasive exotic plant materials. Materials known to be free of invasive exotics, such as rice straw mulch, should be used wherever practicable.
- Site treated to eradicate invasive exotic plant species shall receive follow-up monitoring.

Effects Analysis Methodology

Noxious weed species considered in this analysis are those that occur on Six Rivers National Forest on the Smith River National Recreation Area with the Travel Management Project boundary. They are listed in Table 82 below. The species being considered are invasive non-native plants that possess one or more of the characteristics of an invasive weed and are undesirable on national forest lands.

Based on Executive Order 13112, issued in 1999, a species is considered invasive if it: a) is nonnative to the ecosystem under consideration, and b) its introduction causes or is likely to cause economic or environmental harm or harm to human health. This analysis addresses invasive plant species from the California state agriculture department lists of noxious weeds (CDFA, NDA), and the California Invasive Plant Council list of invasive plants (CalIPC).

All of the weed species identified on the Forest are of concern with regard to their potential to spread and threaten native ecosystems; however, the Forest has prioritized weed species and infestations for treatment based on the aggressiveness of the weed species, whether or not the infestations are isolated satellite populations, the feasibility of control, and the degree of regional concern and cooperative efforts on Forest. Species that are rated ‘A’ or ‘B’ by CDFA, or CalIPC species[6] with a rating of “High”, or species for which the Humboldt-Del Norte Weed Management Area have rated as high priority are rated as high priority species for the purposes of this analysis. The potential spread of these species would constitute a moderate or high risk with regard to the requirements of FSM 2081.03.

Treatment of high priority species adjacent to inventoried unauthorized routes added to the NFTS is required, and is included in the route-specific description of alternatives in this EIS. Control of all known

[6] California Food and Drug Administration Weed Ratings

•High - These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

•Moderate - These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

•Limited - These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

infestations of lower priority species is not currently feasible, and they are likely to persist throughout the life of this project.

Assumptions specific to the noxious weed analysis:

1. Actions proposed herein are ground disturbing activities requiring a weed risk assessment. This analysis constitutes the risk assessment.

2. For action alternatives vehicle use on unauthorized routes proposed for addition to the NFTS will remain at current levels of light (less than 25 vehicle trips per week) or low (25 to 100 trips per week).

3. When completing this risk assessment, the following categories were assigned to individual routes to compare the effects of noxious weed spread or introduction from this project: high, medium, or low. These categories were assigned based on the following factors:

    a. The risk of spread or introduction was considered high if the species is rated as having a high potential to establish and spread (see Table 82. Invasive species known to occur on the Smith River National Recreation Area).

    b. The risk of spread or introduction was classified as medium if the weed species is not listed as highly invasive (this includes species with lower ratings on CalIPC and state lists, or species that are already fairly well distributed).

    c. The risk of introduction or spread from this project was considered low if existing inventories demonstrated that weed populations are not present along the route, or infestations are present, but the route is not proposed for designation.

4. In general, attempting to quantify effects associated with potential future use is speculative at best as it is impossible to predict the level of use that will occur.

5. Key to keeping noxious weeds at bay on Six Rivers National Forest is management of the vectors that introduce weeds to our Forest and continue their spread as well as management of satellite or leading edge occurrences.

6. Without mitigations and aggressive management existing weed infestations will likely spread and the rate of spread will increase in direct proportion to increases in vehicular activity.

7. Infestations located along system roads or inventoried unauthorized routes where vehicles drive will be spread along the roads and routes.

8. Motor vehicles will bring weed seeds and propagative parts into the project area from other areas where they have traveled.

9. System roads that are closed (maintenance level changed from 2 to 1) or removed (decommissioned) from the NFTS will receive little management necessitating the need to treat existing weed sites prior to closure or removal.

10. There are potential beneficial effects from blocking and discontinuing use on system roads that have weed infestations but weed treatment is necessary prior to closure to avoid future spread on closed roads that will receive little management.

11. Because vehicles are more likely to transport weed propagules under wet road conditions, the risk of introduction and spread of weeds will be reduced on roads and routes where seasonal closures are installed.

12. Direct effects occur within 30 feet of routes where vehicles could travel in the absence of natural barriers such as vegetation or steep topography.

13. Indirect effects, which occur from 30 to 100 feet from routes, are more likely to be greater under those alternatives that propose a higher mileage of routes open for motorized use and indirect effects are less for those alternatives that proposed a higher mileage of routes for closure.

Table 82. Invasive species known to occur on the Smith River National Recreation Area

Scientific Name	Common Name	CDFA Rating	Cal IPC Rating	Weed Management Area Priority Rating	Potential to Establish and Spread
Carduus acanthoides	Plumeless thistle	A	Limited	Not Rated	Low
Carduus pycnocephalus	Italian thistle	C	Moderate	Not Rated	Low
Centaura melitensis	tocalote	C	Moderate	Moderate	Low
Centaurea debeauxii	meadow knapweed	A	Moderate	High	High
Centaurea diffusa	diffuse knapweed	A	Moderate	High	High
Centaurea maculosa	spotted knapweed	A	High	High	High
Centaurea solstitialis	yellow starthistle	C	High	High	High
Chondrilla juncea	skeleton weed	A	Moderate	Not Rated	High
Cirsium arvense	Canada thistle	B	Moderate	Moderate	High
Cortaderia jubata	jubatagrass	B	High	High	High
Cortaderia selloara	pampasgrass	None	High	Not Rated	High
Cytisus scoparius	Scotch broom	C	High	High	High
Digitalis purpurea	foxglove	None	Limited	Not Rated	Moderate
Euphorbia esula	leafy spurge	A	Moderate	Alert	Moderate
Euphorbia oblongata	oblong spurge	B	Limited	Low	Moderate
Genista monspessulana	French broom	C	High	High	High
Hedera helix	English Ivy	None	High	High	High
Hypericum perforatum	klamathweed	C	Moderate	Moderate	Moderate
Isatis tinctoria	dyer's woad	B	Moderate	Not Rated	Low
Lepidium latifolium	perennial peppergrass	B	High	Not Rated	Low
Linaria dalmatica ssp. Dalmatica	Dalmatian toadflax	A	Moderate	Not Rated	Moderate
Onopordum acanthium	Scotch thistle	A	High	Not Rated	Moderate
Robinia pseudoacacia	black locust	None	Limited	Not Rated	Low
Senecio jacobaea	tansy ragwort	B	Limited	High	High
Silybum marianum	mild thistle	None	Limited	Not Rated	Moderate
Spartium junceum	Spanish broom	C	High	High	High
Taeniatherum caput-medusae	medusahead	C	High	High	High

Impacts relevant to noxious weeds include:

1. Noxious weeds are a serious environmental concern. They threaten natural diversity, habitat for fish, wildlife and native plants, soil stability, and ecosystem processes.

2. The degradation of natural settings by noxious weeds negatively impacts recreational users.

3. Noxious weeds can change fire regimes changing both the intensity of fires and the return interval.

Data Sources

The following data sources, along with referenced scientific sources, were relied upon to complete this analysis and represents a consideration of the best available science.

1. Route inventories collected in Step 1 of Travel Management and associated tabular data sets.

2. Existing noxious weed location data stored in Six Rivers National Forest MicroSoft Access database and in the National Resource Information System (NRIS) database.

3. GIS layers of road inventories, serpentine and wetland habitats, botanical areas, Research Natural Areas, National Agricultural Imagery Program (NAIP) satellite imagery.

4. Professional knowledge of noxious weed invasiveness and spatial distribution on the Forest to determine which species and locations should be considered high priority for treatment.

Noxious Weed Methodology by Action:

Noxious Weeds Indicators

Each action proposed will be evaluated in terms of its potential to lower the risk of introducing and spreading weeds.

Short-term timeframe: 1 year.

Long-term timeframe: 20 years.

Spatial boundary: Smith River NRA Travel Management project boundary within 100 feet of routes included in the action alternatives.

Methodology: GIS analysis of inventoried unauthorized routes proposed for addition to the NFTS as roads.

Rationale: The indicator addresses the potential to reduce the spread of weeds from known sites by motorized vehicles. The distance where the effects of vehicle travel related to the introduction and spread of weeds may occur is estimated to be approximately 100 feet from existing routes.

1. Direct and indirect effects of the addition of inventoried unauthorized routes (UARs) as roads to the National Forest Transportation System (NFTS).

Indicator(s): 1) Number of weed sites treated, lowering the risk of introduction and spread, on inventoried UARs proposed for addition to the NFTS as roads. 2) Direct and Indirect effects are less where the number of miles of roads added is less.

2. Direct and indirect effects of adding inventoried unauthorized routes (UARs) as motorized trails to the NFTS.

Indicator(s): 1) Number of weed sites treated, lowering the risk of introduction and spread, on UARs proposed for addition to the NFTS as motorized trails. 2) Direct and Indirect effects are less where the number of miles of UARS added as roads is less.

3. Direct and indirect effects of adding seasonal gate closures on NFTS roads and on motorized trails proposed for addition to the NFTS.

Indicator(s): Direct and indirect effects are less where the number of miles of road and motorized trail with proposed seasonal gate closures is greatest.

4. Direct and indirect effects of adding mixed-use to 17N49.

Indicator(s): Number of weed sites treated, lowering the risk of introduction and spread, where mixed-use is proposed on 17N49.

5. Direct and Indirect effects of decommissioning NFTS roads.

Indicator(s): 1) Number of weed sites treated, lowering the risk of introduction and spread, on NFTS roads proposed for decommissioning. 2) Direct and indirect effects are less where the number of miles of NFTS roads closed through decommissioning is greatest.

6. Direct and indirect effects of the restoration of hydrologic function on inventoried unauthorized routes.

Indicator(s): Alternatives which close the most miles of UARs are more likely to reduce the introduction and spread of weeds onto these routes.

7. Direct and indirect effects of changes to the Maintenance Level (ML) of NFTS roads.

Indicator(s): 1) The number of weed sites treated, lowering the risk of introduction and spread, on NFTS roads proposed for change in Maintenance Level. 2) The miles of road closed removing vehicles as vectors.

8. Direct and indirect effects of those NFTS roads which are listed in the action alternatives whose maintenance level is not proposed to be changed.

Indicator(s): Number of weed sites treated, lowering the risk of introduction and spread.

Cumulative Effects

Indicator(s): Risk of noxious weed spread.

Short-term timeframe: not applicable; cumulative effects analysis will be done only for the long-term time frame.

Long-term timeframe: 20 years

Spatial boundary: Smith River National Recreation Area.

Methodology: Review of current and future projects to determine if they increase the risk of introduction and spread of those weed species affected by the proposed actions.

Affected Environment

Current knowledge of weed species on the Smith River National Recreation Area (Smith River NRA) is based upon weed inventory and mapping that has occurred since 1999. Serpentine areas on the Smith

River NRA have a lower incidence of weed infestation than non-serpentine areas. The Idaho fescue grasslands that are associated with serpentine derived soils in many places have low infestations or lack infestation altogether and are some of the most pristine grasslands on Six Rivers National Forest. Most of the weed infestations on the Smith River NRA are distributed along relatively well-traveled roads, along turn-outs, near developments, and other disturbed areas. The level of weed infestations associated with roads tends to be directly proportional to the level of use and weeds are most abundant along state highway 199, and alone county roads like French Hill road, Wimer road, South Fork road, and the Gasquet Toll road. In general, weed infestations tend to be heaviest where Forest Service roads intersect the state highway and county roads and weeds tend to be encountered less frequently the farther one moves from the more used state and county roads. The infestations associated with these well-traveled routes tend to be too large to control via hand removal and are given a low priority. Infestations located away from these disturbance corridors represent the leading edge of weed advance where efforts to stop the spread of weeds is most practical and where treatment is the highest priority.

Table 83. Weed sites affected by the proposed actions

Route	Miles	Species	Date Last Treated	Plants Treated	ML	Alt3	Alt4	Alt5	Alt6
13N37	2.00	Scotch broom	7/10/2012	1	2	1	1	1	1
15N38	2.90	Scotch broom	1/27/2012	69	2	2	2	1	2
15N63	0.30	Scotch broom	9/15/2010	20	2	2	2	2	2
16N03K	1.50	Scotch broom	8/23/2011	67	2	2	2	1	2
16N19	8.28	Scotch broom	7/24/2013	63	2	2	2	1	2
16N38	2.90	Scotch broom	5/23/2010	327	2	2	2	1	2
16N41	1.43	Scotch broom	5/27/2010	10	2	2	2	2	2
17N04S	1.80	Scotch broom	6/5/2006	50	1	DECO	DECO	DECO	DECO
17N05C	0.97	Scotch broom	6/15/2012	986	1	DECO	DECO	DECO	DECO
17N13A	0.38	Scotch broom	9/19/2012	280	2	1	1	1	1
17N15A	0.13	Scotch broom	7/27/2012	282	2	DECO	DECO	DECO	DECO
17N16	0.65	meadow knapweed	7/19/2012	6	2	1	2	1	1
17N22J	0.12	Scotch broom	4/21/2011	5	2	2	2	2	2
17N26	0.25	tansy ragwort	7/24/2013	13	2	2	2	1	2
17N31	1.60	Scotch broom	1/4/2012	82	2	1	2	1	1
17N36	2.50	Scotch broom	9/11/2012	1	2	2	2	2	2
17N41H	0.90	Scotch broom	11/19/2008	463	2	2	2	1	2
17N48	1.66	Scotch broom	4/25/2012	85	2	2	2	1	2
17N49	3.52	French broom	8/23/2011	1	3	MIX	3	3	3
17N49	0.44	Scotch broom	6/10/2010	1	3	3	MIX	3	MIX
18N07.2	0.13	Scotch broom	4/8/2013	5745	UAR	2	2	2	2
18N08.2	0.03	Scotch broom	12/7/2011	14	UAR	2	2	2	2
18N16E	0.38	Scotch broom	3/8/2013	671	1	DECO	DECO	DECO	DECO
18N17	8.10	Scotch broom	8/8/2012	10	2	2	2	1	2
18N19C	0.17	Scotch broom	11/17/2011	30	1	DECO	DECO	DECO	DECO
18N20	1.00	Scotch broom	8/7/2012	10	2	DECO	DECO	DECO	DECO
18N20		Scotch broom	8/7/2012	1	2	DECO	DECO	DECO	DECO
18N20		tansy ragwort	8/7/2012	160	2	DECO	DECO	DECO	DECO
18N56	0.88	Scotch broom	8/8/2012	7	2	2	2	1	2
199.104	0.11	Scotch broom	3/17/2013	132	UAR	3	3	3	3
427.103	0.32	Scotch broom	12/16/2011	71	UAR	2	2	2	2
427.106	0.13	Scotch broom	4/28/2011	476	UAR	TRAIL	TRAIL	TRAIL	TRAIL

Table 83 displays the number of high priority weed sites, by species that are affected by the proposed actions. Sites listed are distinct units.

Environmental Consequences

Several studies (Rooney 2003, Lippe and Kowarik 2006)) have found that motorized vehicles did pick up and disperse weeds and that the probability of colonization increased with increasing traffic. They noted that many species have seed characteristics that predispose them for vehicular dispersal. Rooney recommended removing exotic species from a trail every year to reduce both the spread of weeds along the trail and to reduce the inter-trail colonization rate.

Impacts to native plants and changes in habitat can lead to the eventual replacement of native plant species with non-native species more adapted to frequent disturbances and altered soil conditions, such as invasive non-native species (weeds). Many invasive species have life forms that are adapted to persist in disturbed habitats such as roadsides and areas with frequent vehicle use. Compaction by vehicles also contributes to roadside invasions of exotic plant species by reducing native plant vigor and creating areas of competition-free space that are open to invasion (Trombulak and Frissell 2000). Trombulak and Frissell (2000) report the spread of exotics by vehicles through habitat alteration and creation or maintenance of movement corridors. Vehicle use may also result in a reduction in the vigor of native species, which can lead to an increased competitive advantage for exotics. Once established, many invasive plants tend to form monocultures which exclude native plant species.

In heavily infested areas, weeds directly compete with native plants and can cause their local displacement. In addition, weeds can have a number of indirect effects. Potential impacts include alteration of disturbance regimes (including wildfire), loss of biodiversity, changes in the food base for wildlife species, soil erosion and loss of soil carbon storage, changes in soil moisture patterns, decreases in range or forest productivity, and altered recreational or aesthetic values. Weeds may also hybridize with native species altering native plant genetics. When native plants are replaced by weeds, the entire ecosystem can be impacted, including microbial flora and fauna and insect pollinators, all of which contribute to normal ecosystem function.

Effects from invasive species will continue to occur under all alternatives. Alternatives with fewer routes open for public motorized vehicle use, especially those that exclude routes that are currently weed infested, provide a reduced risk for vectoring of seeds by motorized vehicles, a reduction in habitats susceptible to weed invasion, and a reduced opportunity for the spread of weeds to uninfested areas of the forest.

Alternative 1 – No action

Direct and indirect Effects

1. Direct and indirect effects of not adding inventoried unauthorized routes (UARs) as roads to NFTS.

Continued weed spread and the introduction is likely in those areas adjacent to or near existing UARs that are not added to the NFTS as roads. These routes will not be managed. They will continue to receive unauthorized use.

Indicator(s): 1) Number of weed sites treated, lowering the risk of introduction and spread, on inventoried UARs proposed for addition to the NFTS as roads = 0. 2) Direct and Indirect effects are less where the number of miles of roads added is less. Number of miles added = 0

There is no mitigation recommended under the No Action alternative, so the only weed control that would occur would be completed under other program objectives, and not according to any timeline associated with travel management. As a result, over the long term, existing weed infestations in the analysis area are more likely to continue to spread via motorized vehicle use, and new weeds are more likely to be introduced to the area under this alternative, as compared to any of the action alternatives. In the short term, the effects of this alternative are similar to the condition described in the Affected Environment section of this document.

2. Direct and indirect effects of adding UARs as motorized trails to the NFTS.

Direct and indirect effects are the same as those noted under item 1. Because of the absence of active management continued weed spread and introduction is likely adjacent to or near existing UARs that are not added to the NFTS as motorized trails.

Indicator(s): 1) Miles of UARs added as roads with active management of weed infestations = 0 miles. 2) Direct and Indirect effects are less where the number of miles of UARS added as motorized trails is less. Number of miles added = 0

3. Direct and indirect effects of adding seasonal gate closures on NFTS roads and on motorized trails proposed for addition to the NFTS.

Because vehicles are more likely to pick up and transport weed propagules under wet road conditions, the risk of introduction and spread of weeds will be reduced on roads and routes where seasonal closures are installed.

Indicator(s): Miles of seasonal gate closures added on NFTS roads and motorized trails = 0 miles.

4. Direct and indirect effects of adding mixed-use to 17N49.

Mixed-use is not being proposed under Alternative 1 therefore there are no direct or indirect effects.

5. Direct and indirect effects of decommissioning NFTS roads.

No NFTS roads will be decommissioned under this alternative hence there are no direct or indirect effects.

Indicator(s): 1) Miles of decommissioned roads where weeds are absent = 0 miles.

2) Direct and indirect effects are less where the number of miles of NFTS roads closed through decommissioning is greatest. Miles of road closed = 0.

6. Direct and indirect effects of the restoration of hydrologic function on UARs.

No restoration of hydrologic function on UARs is proposed under this alternative, hence no UARs are proposed to be barricaded.

Indicator(s): Alternatives which close the most miles of UARs are more likely to reduce the introduction and spread of weeds onto these routes. Miles closed = 0.

7. Direct and indirect effects of changes to the Maintenance Level (ML) of NFTS roads.

No changes in the ML for NFTS roads are proposed under this alternative.

Indicator(s): 1) The number of weed sites treated, lowering the risk of introduction and spread, on NFTS roads proposed for change in Maintenance Level = 0.

2) The miles of road closed removing vehicles as vectors = 0.

8. Direct and indirect effects of those NFTS roads proposed for storm proofing.

Indicator(s): Number of weed sites treated, lowering the risk of introduction and spread = 0.

Mitigations Common to All Action Alternatives

1. System roads that are proposed to have heavy equipment work such as routine road maintenance, decommissioning, barricading, or culvert replacement that have weed infestations should have weeds removed prior to commencing work. Additionally equipment used in implementation should be cleaned prior to entering the Forest and, if weed infestations are found to be present equipment should be cleaned upon leaving infested roads to avoid dispersing the weed seed bank to other areas of the Forest.

2. Any imported mulch or other erosion control material should come from a certified weed free source. Use of mulch from chipped or masticated native material is preferable to imported materials that may be weed contaminated.

3. Ensure rock, boulders, sand or other material to be used for projects originates from a weed-free source. Sources for these materials shall be inspected by staff trained in invasive plant identification or documented by contractor that material is weed-free. Do not use borrow material from weed-infested stockpiles.

Cumulative Effects

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a 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. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this project did not identify any public interest or need for detailed information on individual past actions. Finally, the Council on Environmental Quality 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.”

The cumulative effects analysis in this EIS is also consistent with Forest Service National Environmental Policy Act (NEPA) Regulations (36 CFR 220.4(f)) (July 24, 2008), which state, in part:

> CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions. Once the agency has identified those present effects of past actions that warrant consideration, the agency assesses the extent that the effects of the proposal for agency action or its alternatives will add to, modify, or mitigate those effects. The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonable foreseeable future actions) on the affected environment.

> With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations, however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decisionmaking. (40 CFR 1508.7)

For these reasons, the analysis of past actions in this section is based on current and reasonably foreseeable future environmental conditions. The current and reasonably foreseeable future projects on Forest lands in the analysis area, and the nature and extent of their potential effects on introducing and spreading noxious weeds include:

- **Timber activities and fuel treatments** – effects are variable based on treatment; prescribed burning – partial removal of vegetation in the short term; mowing – partial removal of canopy, change in vegetation community structure, low growing plants left intact; thinning – change in vegetation community structure; some crushing of vegetation associated with access and project implementation.
- **Wildland fire** – wildland fire effects are similar to those described for prescribed burning, though in general wildland fires burn more intensely, potentially resulting in a more likely increase in weed abundance.
- **Fire suppression** – fire suppression effects, due primarily to fuel break, safety zone and staging area construction, are similar to timber activity and fuel treatment effects although the effects are potentially greater due the emergency nature of these events that preclude planning to treat infestation prior to action.
- **Livestock grazing** – direct trampling of plants; changes in vegetation community dynamics, e.g. more grazing-resistant species gaining dominance; impacts to soil resource; changes in hydrologic processes, movement of propagules internally and externally.
- **Road and trail development or improvement, and urbanization** – removal of vegetation; soil disturbance, erosion; impacts to hydrologic function, weeds predisposal for vehicular dispersal, creation of movement corridors.
- **Utility, irrigation, and highway easements -** removal of vegetation, and soil disturbance in immediate vicinity of pipelines, ditches, highways; changes in vegetation condition within the easement due to utility line/highway/ditch maintenance; changes in hydrologic processes.

These activities are considered in the cumulative effects analysis because they may contribute to the introduction and spread of noxious weeds. The Forest will continue to work toward the Agency goal of restoring forest and grasslands by reducing impacts from invasive species. Current and future ground disturbing actions proposed by the Forest Service will have a risk analysis completed for ground disturbing actions that will contain recommendations designed to mitigate the risk of introducing or spreading weeds from known sites. However, because the inventory of known sites on Forest is not complete and because many known sites continue to persist in spite of repeated treatment, weeds will continue to spread and be introduced to uninfested areas on Forest. The rate at which the Forest is able to reduce the impacts from invasive species in the future is directly proportional to how effective management actions are in reducing the introduction and spread.

It is unknown what actions on private lands will contribute to cumulative effects. Actions on private lands where property owners are not actively managing weed infestations have a high risk of introducing and

spreading weeds, especially if they occur on roads. Where NFTS roads pass through private land, high priority weed sites on private property within the Forest Service right-of-way are treated by the Forest Service to prevent their introduction and spread. Because the amount of private lands within the analysis area is relatively small and known high priority weed sites within the Forest Service right-of-way are receiving treatment, it is possible that over time there will be a reduction in risk of introduction and spread on private lands and from private lands onto Six Rivers National Forest.

Direct and Indirect Effects Common to All Action Alternatives

Table 83 displays weed sites affected by proposed actions under each action alternative.

1. Direct and indirect effects of the addition of UARs as roads to the National Forest Transportation System (NFTS).

As displayed in Table 84, 0.72 miles of UARs proposed for addition to the NFTS as roads contain high priority weed infestations in action alternatives 3, 4, 5 and 6. Introduction and spread of these infestations will continue as a direct effect of adding these routes in the absence of mitigations.

Table 84. Infested UARs proposed for addition to the NFTS as roads

Route #	Miles	Species	Date Treated	Plants Treated
18N07.2	0.13	Scotch broom	4/8/2013	5745
18N08.2	0.03	Scotch broom	12/7/2011	14
199.104	0.11	Scotch broom	3/17/2013	132
427.103	0.32	Scotch broom	12/16/2011	71

It is recommended that the weed sites in Table 84 be hand pulled prior to adding the routes to the NFTS as roads. Following initial treatment the routes should be maintained in a weed free condition. The 4 weed sites listed have been treated multiple times and the infestations are now manageable provided follow up treatment occurs. The 5745 weeds on 18N07.2 are mainly seedlings.

Indicator(s): 1) Under Alternative 3, 4, 5 and 6 implementation of the preceding mitigations will lower the risk of introduction and spread to low for the 4 weed infestations shown in Table 84.

2) Direct and Indirect effects are less where the number of miles of road added is less. Action alternatives are ranked in this regard as follows;

Alternative 3 – 7.56 miles of UARs added to the NFTS as roads.

Alternative 4 – 12.27 miles of UARs added to the NFTS as roads.

Alternative 5 – 3.57 miles of UARs added to the NFTS as roads.

Alternative 6 – 4.35 miles of UARs added to the NFTS as roads.

2. Direct and indirect effects of adding inventoried unauthorized routes as motorized trails to the NFTS.

As shown in Table 85, 0.13 miles of UAR proposed for addition to the NFTS as motorized trail contains a weed infestation in action alternatives 3, 4, 5 and 6. Introduction and spread of this infestation will continue in the absence of mitigations.

Table 85. Infested UARS proposed for addition to the NFTS as motorized trails

Route #	Miles	Species	Date Last Treated	Plants Treated
427.106	0.13	Scotch broom	4/28/2011	476

It is recommended that the weed sites in Table 85 be hand pulled prior to adding the route to the NFTS. Following initial treatment the route should be maintained in a weed free condition. The weed site listed has been treated multiple times and the infestation is now manageable provided follow up treatment occurs.

Indicator(s): 1) Under Alternative 3, 4, 5 and 6 implementation of the preceding mitigations will lower the risk of introduction and spread to low for the weed infestation shown in Table 85.

2) Direct and Indirect effects are less where the number of miles of UARs added as roads is less. Action alternatives are ranked in this regard as follows;

Alternative 3 – 43.98 miles of UARs added to the NFTS as motorized trail.

Alternative 4 – 60.23 miles of UARs added to the NFTS as motorized trail.

Alternative 5 – 10.97 miles of UARs added to the NFTS as motorized trail.

Alternative 6 – 42.64 miles of UARs added to the NFTS as motorized trail.

3. Direct and indirect effects of adding seasonal gate closures on NFTS roads and on motorized trails proposed for addition to the NFTS.

Because vehicles are more likely to transport weed propagules under wet road conditions, the risk of introduction and spread of weeds will be reduced on roads and routes where seasonal closures are installed. None of the roads or UARs for which gates are proposed have existing weed infestations but the possibility exists that weeds could be transported from infested to uninfested routes. Seasonal gates would reduce the possibility of transporting weeds onto uninfested routes when gates are closed.

Indicator(s): action alternatives with the most miles of seasonal closures are more likely to have a lower risk of introduction and spread of weeds.

Alternative 3 seasonal gate closures are proposed on 11.22 miles.

Alternative 4 seasonal gate closures are proposed on 36.95 miles.

Alternative 5 seasonal gate closures are proposed on 3.38 miles.

Alternative 6 seasonal gate closures are proposed on 33.64 miles.

4. Direct and indirect effects of adding mixed-use to 17N49.

Mixed-use is proposed for sections of 17N49 under alternatives 3, 4 and 6. The potential to introduction and spread weeds is higher on segments of roads with mixed-use that have weed infestations. These segments of 17N49 should be maintained in a weed free state in order to lower the risk of introduction and spread of noxious weeds.

Alternative 3 proposes mixed-use on 3.52 miles of 17N49 for which 9 sites of scotch broom have been observed in the past. As a result of multiple treatments over several years, 8 of these sites appear to be extirpated but require subsequent inventory to verify their status as weed free. A ninth scotch broom site on 17N49 south of the intersection with 17N49.11 had one plant in 2010.

Alternative 4 and 6 propose mixed-use on 0.44 miles of 17N49 for which there is one known weed site which had one plant in 2010 south of the intersection with 17N49.11.

Indicator(s): action alternatives with the lowest number of miles proposed for mixed-use have a lower potential for weed introduction and spread.

Alternative 3 – 3.52 miles.

Alternative 4 – 0.44 miles.

Alternative 5 – 0.00 miles.

Alternative 6 – 0.44 miles.

5. Direct and indirect effects of decommissioning NFTS roads.

As displayed in Table 86, 4.45 miles of NFTS roads proposed for decommissioning contain high priority weed infestations in action alternatives 3, 4, 5 and 6. Introduction and spread of these infestations will continue in the absence of mitigations.

Table 86. Roads proposed for decommissioning with weed infestations

Road	Miles	Species	Date Last Treated	Plants Treated
17N04S	1.80	Scotch broom	6/5/2006	50
17N05C	0.97	Scotch broom	6/15/2012	986
17N15A	0.13	Scotch broom	7/27/2012	282
18N16E	0.38	Scotch broom	3/8/2013	671
18N19C	0.17	Scotch broom	11/17/2011	30
18N20	1.00	Scotch broom	8/7/2012	11
18N20		tansy ragwort	8/7/2012	160
Total	**4.45**			

Once decommissioned the roads in Table 86 will no longer receive treatment. It is likely that one treatment will not eradicate the weeds listed. It is recommended that the weed sites in Table 86 be hand pulled prior to decommissioning. Where practicable, weed fabric shall be installed to impede subsequent germination of the weed seed bank. Vehicles should be cleaned to remove weed propagules prior to leaving site. Because of their knowledge of the weed sites listed, a botanist should be consulted when developing an implementation plan for decommissioning. The weed sites listed have been treated multiple times and are a high priority for treatment.

A beneficial effect of closing these routes is that in the absence of motorized vehicle use, the risk of introducing and spreading weeds will be lower (See item 9 below which compares the action alternatives with respect to the beneficial effect of decommission which results in closing routes to motorized use)

Indicator(s): 1) Under Alternative 3, 4, 5 and 6 implementation of the preceding mitigations will lower the risk of introduction and spread to low for the 7 weed infestation shown in Table 86.

2) Direct and indirect effects are less where the number of miles of NFTS roads closed through decommissioning is greatest.

Alternative 3 - 55.27 miles of road decommissioned.

Alternative 4 – 54.43 miles of road decommissioned.

Alternative 5 – 53.29 miles of road decommissioned.

Alternative 6 – 53.98 miles of road decommissioned.

6. Direct and indirect effects of the restoration of hydrologic function on inventoried unauthorized routes.

There are no weed infestations associated with inventoried unauthorized routes proposed for restoration of hydrologic function and barricading. However, closing these routes to motorized use will reduce the risk of introduction and spread of weeds onto these routes.

Indicator(s): Alternatives which close the most miles of UARs are more likely to reduce the introduction and spread of weeds onto these routes compared to other action alternatives.

Alternative 3 – 79.43 miles of UAR barricaded.

Alternative 4 – 78.85 miles of UAR barricaded.

Alternative 5 – 132.97 miles of UAR barricaded.

Alternative 6 – 100.52 miles of UAR barricaded.

7. Direct and indirect effects of changes to the Maintenance Level (ML) of NFTS roads.

There is one NFTS road, see Table 87, proposed for upgrading from ML 1 to ML 2 that has a known weed infestations. Introduction and spread of these infestations will continue in the absence of mitigations.

Table 87. Roads proposed for upgrading from ML 1 to ML 2 with weed infestations

Route	Miles	Species	Date Last Treated	Plants Treated	Exist	Alt3	Alt4	Alt5	Alt6
15N63	0.30	Scotch broom	9/15/2010	20	2	2	2	2	2

It is recommended that the weed site in Table 87 be hand pulled prior to upgrading to ML 2. The weed site listed has been treated multiple times and is a high priority for treatment. Since this is the only road proposed for upgrading with weeds known to be present and the recommended treatment mitigation is the same across alternative, there is no difference in the reduction of introduction and spread between action alternatives associated with upgrading NFTS roads.

There are no weed sites on ML 3 roads proposed for downgrading to ML 1 but closing the road will have beneficial effects by removing vehicles as a vector in introducing and spreading weeds.

Table 88 displays those NFTS roads that have weed infestations proposed for downgrading from ML 2 to ML 1 under some of the action alternatives. Introduction and spread of these existing infestations will continue in the absence of mitigations.

Once closed the roads in Table 88 will not receive treatment until such time as they are reopened. It is likely that one treatment will not eradicate the weeds listed. It is recommended that the weed sites in Table 88 be hand pulled prior to commencing any work leading up to closure. All sites noted should have weed fabric installed to impede subsequent germination of the weed seed bank. Vehicles should be cleaned to remove weed propagules prior to leaving site. Introduction and spread of these infestations will continue in the absence of mitigations. Because of their knowledge of the weed sites listed, a botanist should be consulted when developing an implementation plan for closure. The weed sites listed has been treated multiple times and are a high priority for treatment. The meadow knapweed site is of the highest priority.

Table 88. Roads with weed infestations proposed for downgrading to ML 1 (closed)

Route	Miles	Species	Date Last Treated	Plants Treated	Exist	Alt3	Alt4	Alt5	Alt6
13N37	2.00	Scotch broom	7/10/2012	1	2	1	1	1	1
15N38	2.90	Scotch broom	1/27/2012	69	2	2	2	1	2
16N03K	1.50	Scotch broom	8/23/2011	67	2	2	2	1	2
16N19	8.28	Scotch broom	7/24/2013	63	2	2	2	1	2
16N38	2.90	Scotch broom	5/23/2010	327	2	2	2	1	2
17N16	0.65	meadow knapweed	7/19/2012	6	2	1	2	1	1
17N26	0.25	tansy ragwort	7/24/2013	13	2	2	2	1	2
17N31	1.60	Scotch broom	1/4/2012	82	2	1	2	1	1
17N41H	0.90	Scotch broom	11/19/2008	463	2	2	2	1	2
17N48	1.66	Scotch broom	4/25/2012	85	2	2	2	1	2
18N17	8.10	Scotch broom	8/8/2012	10	2	2	2	1	2
18N56	0.88	Scotch broom	8/8/2012	7	2	2	2	1	2

A beneficial effect of closing these routes is that in the absence of motorized vehicle use, the risk of introducing and spreading weeds will be lower.

Indicator(s): 1) The number of weed sites treated, lowering the risk of introduction and spread, on NFTS roads proposed for change in Maintenance Level. 2) The miles of road closed removing vehicles as vectors.

Alternative 3 – closes 18.5 miles of road to motorized use and treats 3 weed sites.

Alternative 4 - closes 15.6 miles of road to motorized use and treats 1 weed site.

Alternative 5 - closes 82.71 miles of road to motorized use and treats 12 weed sites.

Alternative 6 - closes 21.55 miles of road to motorized use and treats 3 weed sites.

8. Direct and indirect effects of those NFTS roads proposed for storm proofing.

Table 89 displays NFTS roads proposed for storm proofing. It is recommended that the weed sites in Table 88 be hand pulled prior to commencing storm proofing. Following initial treatment the routes should be maintained in a weed free condition. Introduction and spread of these infestations will continue in the absence of mitigations. The 4 weed sites listed have been treated multiple times and the infestations are now manageable provided follow up treatment occurs.

Table 89. NFTS roads proposed for storm proofing harboring weed infestations

Route	Miles	Species	Date Last Treated	Plants Treated	Exist	Alt3	Alt4	Alt5	Alt6
16N41	1.43	Scotch broom	5/27/2010	10	2	2	2	2	2
17N22J	0.12	Scotch broom	4/21/2011	5	2	2	2	2	2
17N36	2.50	Scotch broom	9/11/2012	1	2	2	2	2	2

Indicator(s): Under Alternative 3, 4, 5 and 6 implementation of the preceding mitigations will lower the risk of introduction and spread to low for the 4 weed infestations shown in Table 89. There is no difference in effects between action alternatives.

Summary of Effects Analysis across All Alternatives

The following indicators were derived from the effects analysis completed above. Alternatives that lower the risk of introduction and spread to low receive the highest indicator ratings.

1. Direct and indirect effects of the addition of UARs as roads to the National Forest Transportation System (NFTS).

Indicator(s): Alternative 1 – no weed sites treated, no reduction in risk.

Implementation of the preceding mitigations for alternative 3, 4, 5 and 6 will lower the risk of introduction and spread to low for 4 weed infestations.

Direct and Indirect effects are lowest where the number of miles of routes open is less. Action alternatives are ranked in this regard with the alternative with the lowest mileage having the least risk of introducing and spreading weeds.

Alternative 3 – 7.56 miles of UARs added to the NFTS

Alternative 4 – 12.27 miles of UARs added to the NFTS

Alternative 5 – 3.57 miles of UARs added to the NFTS

Alternative 6 – 4.35 miles of UARs added to the NFTS

2. Direct and indirect effects of adding inventoried unauthorized routes as motorized trails to the NFTS.

Indicator(s): Alternative 1 – no weed sites treated, no reduction in risk.

Implementation of the preceding mitigations for alternative 3, 4, 5 and 6 will lower the risk of introduction and spread to low for 1 weed infestation.

Direct and Indirect effects are less where the number of miles of routes not added is greatest. Action alternatives are ranked in this regard with the alternative with the lowest mileage having the least risk of introducing and spreading weeds.

Alternative 3 – 43.98 miles of UARs added to the NFTS as motorized trail.

Alternative 4 – 60.23 miles of UARs added to the NFTS as motorized trail.

Alternative 5 – 10.97 miles of UARs added to the NFTS as motorized trail.

Alternative 6 – 42.64 miles of UARs added to the NFTS as motorized trail.

3. Direct and indirect effects of adding seasonal gate closures on NFTS roads and on motorized trails proposed for addition to the NFTS.

Indicator(s): Alternative 1 – no seasonal closures, no reduction in risk.

Alternative 3 - seasonal gate closures are proposed on 2 roads and 5 motorized trails.

Alternative 4 - seasonal gate closures are proposed on 11 roads and 6 motorized trails.

Alternative 5 - seasonal gate closures are proposed on 3 roads and 1 motorized trails.

Alternative 6 - seasonal gate closures are proposed on 10 roads and 6 motorized trails.

4. Direct and indirect effects of adding mixed-use to 17N49.

Indicator(s): Alternative 1and 5 – reduction in risk of introduction and spread by not adding mixed-use.

Alternative 3 - no reduction in risk. Potential for increase in introduction and spread on 3.52 miles of mixed-use.

Alternatives 4 and 6 – No reduction in risk. Potential for increase in introduction and spread on 0.44 miles of mixed-use.

5. Direct and indirect effects of decommissioning NFTS roads.

Indicator(s): Alternative 1 – no seasonal closures, no reduction in risk.

Under Alternative 3, 4, 5 and 6 implementation of the preceding mitigations will lower the risk of introduction and spread to low for the 7 weed infestation.

Direct and indirect effects are less where the number of miles of NFTS roads closed through decommissioning is greatest.

Alternative 3 - 55.27 miles of road decommissioned.

Alternative 4 – 54.43 miles of road decommissioned.

Alternative 5 – 53.29 miles of road decommissioned.

Alternative 6 – 53.98 miles of road decommissioned.

6. Direct and indirect effects of the restoration of hydrologic function on inventoried unauthorized routes.

Indicator(s): Alternative 1 – no seasonal closures, no reduction in risk.

Alternative 3 - 162 UARs will be closed to motorized use.

Alternative 4 - 192 UARs will be closed to motorized use.

Alternative 5 - 411 UARs will be closed to motorized use.

Alternative 6 - 210 UARs will be closed to motorized use.

7. Direct and indirect effects of changes to the Maintenance Level (ML) of NFTS roads, specifically downgrading NFTS roads from Maintenance Level 2 (open) to Maintenance Level 1 (closed).

Indicator(s): Alternative 1 –no closures, no weed treatment, no reduction in risk.

Alternative 3 – closes 18.5 miles of road to motorized use and treats 3 weed sites.

Alternative 4 - closes 15.6 miles of road to motorized use and treats 1 weed site.

Alternative 5 - closes 82.71 miles of road to motorized use and treats 12 weed sites.

Alternative 6 - closes 21.55 miles of road to motorized use and treats 3 weed sites.

8. Direct and indirect effects of those NFTS roads proposed for storm proofing.

Indicator(s): Alternative 1 – no treatment of weed sites associated with roads proposed for storm proofing, hence, no reduction in risk.

Under Alternative 3, 4, 5 and 6 implementation of the preceding mitigations will lower the risk of introduction and spread to low for the 3 weed infestations associated with storm proofing.

Table 90. Ranking of alternatives by indicator for noxious weeds

Indicators – Noxious Weeds	Rankings of Alternatives for Each Indicator[a]				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
1. Addition of UARs as roads.	5	2	1	4	3
2. Addition of UARs as motorized trails.	5	2	1	3	4
3. Addition of seasonal closures	1	3	5	2	4
4. Addition of mixed-use.	3	1	2	3	2
5. Decommissioning NFTS roads.	1	5	4	2	3
6. Restoring hydrologic function and barricading.	1	2	3	5	4
7. Changing ML, closing NFTS roads.	1	3	2	5	4
8. NFTS roads proposed for storm proofing.	1	4	4	4	4
Indicator Score	1	3	3	5	5

a - A score of 5 indicates the alternative has the highest potential to reduce the risk of introduction and spread of noxious weeds related to the indicator; A score of 1 indicates the alternative has the most impact for botanical resources related to the indicator.

Table 91. Comparison of effects of lowering the risk of introducing and spreading weeds

Indicators – Noxious Weeds		Rankings of Alternatives for Each Indicator[a]			
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Reducing the risk of introduction and spread of weeds.	1	3	3	5	5

a - A score of 5 indicates the alternative has the highest potential to reduce the risk of introduction and spread of noxious weeds related to the indicator; A score of 1 indicates the alternative has the most impact for botanical resources related to the indicator.

Soils

Introduction

The soil resource provides many essential functions for National Forest System (NFS) lands. It sustains plant growth that provides forage, fiber, wildlife habitat, and watershed protection. It absorbs precipitation, stores water for plant growth, and gradually releases surplus water which attenuates runoff rates. It sustains microorganisms which recycle nutrients for continued plant growth. The National Forest Management Act of 1976 and other acts recognized the fundamental need to protect, and where appropriate improve, the quality of soil. The primary focus for management of soils is retention of productivity in the long term. The modified proposed action could potentially impact soil productivity and its other ecosystem functions and is therefore addressed in this section.

This analysis primarily focuses on the effects to the soil resource within the Smith River National Recreation Area of adding unauthorized routes (roads and motorized trails) to the current National Forest Transportation System (NFTS) for public motor vehicle use. Other aspects of the proposed action will also be analyzed including changes to the NFTS, including designation of mixed-use, and upgrading or downgrading maintenance levels on existing NFTS roads; decommissioning of roads; and restoring drainage patterns on unauthorized routes not added to the NFTS. Related resources to soils are discussed in the Water Quality and Geology sections of this FEIS.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action as it affects the soil resource includes:

National Forest Management Act of 1976. Renewable Resource Program. "…recognize the fundamental need to protect and where appropriate, improve the quality of soil, water, and air resources."

National Soil Management Handbook. The Soil Management Handbook (USDA 1991) is a national soils handbook that defines soil productivity and components of soil productivity, establishes guidance for measuring soil productivity, and establishes thresholds to assist in forest planning.

Region 5 Soil Management Handbook Supplement. The Forest Service Region 5 Soil Management Handbook Supplement (R5 FSH Supplement 2509.18-95-1) establishes regional soil quality analysis standards. The analysis standards address three basic elements for the Soil Resource: (1) soil productivity (including soil loss, porosity, and organic matter), (2) soil hydrologic function, and (3) soil buffering capacity. The analysis standards are to be used for areas dedicated to growing vegetation. They are not applied to lands with other dedicated uses, such as developed campgrounds, administrative facilities or, in this case, the actual land surface authorized for travel by the public using various kinds of vehicles.

Regional Forester's Letter (dated Feb 5, 2007). This letter provided clarification to Forest Supervisors on the appropriate use of the R5 Soil Management Handbook Supplement (R5 FSH Supplement 2509.18-95-1). It states in part:

Analysis or evaluation of soil condition is the intended use of the thresholds and indicators in R5 FSH Supplement 2509.18-95-1. They are not a set of mandatory standards or requirements. They should not be referred to as binding or mandatory requirements in NEPA documents. Standards and guidelines in Forest Land and Resource Management Plans provide the relevant substantive standards to comply with NFMA.

The thresholds and indicators represent desired conditions for the soil resource. Utilization of these and their indicators provides a consistent method to analyze, describe, and report on soil condition throughout the Region.

Six Rivers National Forest Land and Resource Management Plan (Forest Plan): The Six Rivers Forest Plan provides for Standards and Guidelines for management areas that include:

- Maintain soil productivity by applying guidelines to areas where management prescriptions are applied.
- 85 percent of areas affected by soil disturbing activities will not exceed soil property thresholds.
- Soil porosity is at least 90 percent of its natural conditions.
- The organic matter in the upper 12 inches of soil should be at least 85 percent of its natural conditions.
- Design management activities not to exceed an R5 Erosion Hazard Rating of moderate.
- Alternative road/routes should be evaluated where proposed management would increase the potential for mass movement and soil erosion.
- Where applicable and practical, restore the productive capacity of soils damaged by past events.

USDA National Best Management Practices Motorized and Nonmotorized Trails (Rec-4).

Objective: Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling soil erosion, erosion of trail surface materials, and water quality problems originating from construction, maintenance, and use of motorized and nonmotorized trails.

Explanation: The Travel Management Rule restricts motor vehicle use to designated routes to better manage motor vehicle use and protect National Forest resources.

Applicable Practices:

- Use suitable public relations and information tools and enforcement measures to encourage the public to conduct motorized vehicle use activities within designated areas in a manner that will avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.
- Locate and maintain designated motor vehicle use to minimize adverse effects to soil, water quality, and riparian resources.
- Designate season of use periods to avoid adverse impacts to soils.
- Designate class of vehicle suitable for soil and terrain or to protect National Forest resources.
- Place restrictions on motor vehicle use off designated routes for dispersed camping to minimize or mitigate adverse effects to soil, water quality, and riparian resources.

If considerable adverse effects are occurring, or are likely to occur, immediate corrective action will be taken. Corrective actions may include, but are not limited to, reduction in the amount of motorized trail use, signing, or barriers to redistribute use, partial closure of areas, rotation of use on areas, closure to

causative vehicle type(s), or total closure, and structural solutions, such as culverts and bridges. Closure is accomplished through authority of the Forest Supervisor.

Effects Analysis Methodology and Assumptions

This section describes the methodology and assumptions used for the effects analysis of the proposed project for soils. It also establishes indicators chosen to measure potential effects, the analysis area, timeframe, methods used, and assumptions made for the effects analysis to soil resources for all action alternatives.

Based on an assessment conducted using GIS data, a subset of unauthorized routes located in areas sensitive to watershed resources (riparian areas) and providing the greatest risk to watershed resources (e.g. proximity to stream channels, slope steepness, length of route) were field visited by qualified earth scientists. A combination of field data that identified erosion and slope on individual routes was evaluated against the average erosion hazard ratings and types of travel way (unauthorized route, road, or motorized trail). The methods and assumptions used are described below.

Soil productivity is affected by soil type, cover, compaction, and displacement (erosion). Soil characteristics of texture, slope, and hydrologic conductivity are grouped by the soil survey (USDA Forest Service, 1993). The inventory classifies forest soils into erosion hazard rating (EHR) categories of low, moderate, and high. Combinations of steep slopes, non-cohesiveness, and coarse texture (which promote erosion and degrade water holding capacity for plants) add to higher erosion hazard rating ratings and make recovery of productivity in the long term problematic. A classification of high indicates that these soils, once de-vegetated, will not recover quickly. While high ratings can provide a relative gauge of the potential for soil displacement (movement of soil off the site which can end up as sediment in a stream), they are not indicative of soil movement or sedimentation issues on any specific route. They are a better guide for whether the route will recover soil productivity within the foreseeable future.

The potential for sedimentation reaching a stream is dependent on a site's connectivity to a stream channel (see Water Quality section of discussion of sediment impacts). While some unauthorized routes have evident gullying problems, others are stable or show no signs of surface damage. Routes with erosion concerns are identified, and mitigations would be implemented to reduce or eliminate the potential for sedimentation.

Effects of compaction on soil productivity are calculated on a management unit basis (Soil Quality Standards require that 15 percent or less of a unit be subjected to compaction resulting in detrimental impacts to soils). Application of this standard across the entire Smith River NRA would not provide a meaningful result. Therefore, effects on soil productivity are presented as the number of acres (by alternative) where soil productivity would be foregone, or improved, in the long term due to additions or removal of routes to the NFTS.

For analysis purposed, each mile of route is assumed to equal 2 acres of ground where roadless characteristics (effects on soil or vegetation) are foregone.

Assumptions Specific to the Soil Resources Analysis

- Soil productivity is adversely affected by soil displacement, compaction and erosion.
- Soil productivity is considered lost on unauthorized routes when ongoing vehicle use maintains compaction and inhibits the growth of vegetation.
- Over the long term (25-30 years), where vehicle use of a route is discontinued, soils can regain productivity through natural recovery of soil porosity lost to compaction, and eventually vegetative

recovery. This is referred to as passive soil recovery or passive restoration. This assumption is based on on-the-ground observations of recovery of closed roads on the Smith River NRA by current and preceding watershed specialists. The climate, soils and other factors promote relatively rapid growth of vegetation.

- Where vehicle use of a route is discontinued and restored through active restoration, existing erosion features (rills, gullies) will be remedied and thereby a reduction in further erosion, loss of soil productivity, and sedimentation would occur in the future.
- There is no difference in effects to soils from different types of vehicles using existing NFTS roads (mixed-use).
- There is no difference in effects to soils of conversion of roads to motorized trails.
- Use of motorized trails on the Smith River NRA is limited to the dry season only (normally May through October), thereby minimizing road-related erosion and sedimentation associated with motorized use. These dates are based on Forest Plan direction.
- Short term effects on the soil resource will continue after unauthorized route (UAR) closures (barricades) are in place.
- Recovery times for routes in soil types with high erosion hazard ratings are variable (depending on rainfall, soil type and level of compaction) but will generally be longer than for routes in low and moderate erosion hazard ratings (25-30 years).
- By definition, NFTS roads, trails and other areas not dedicated to growing vegetation are not considered activity areas to which the Regional soil standards should be applied. Therefore, any route or area brought into the NFTS by any alternative considered in this plan is not subject to standards of soil productivity.

Data Sources

All routes included in the proposed action were investigated on the ground by qualified Forest Service and private contractor earth scientists. Field review of routes documented the number and condition of existing road-related erosion sites.

The assumption was made that analyzed routes in a high erosion hazard rating would provide the greatest long term benefits to reducing erosion and result in off-site impacts. This assumption was corroborated by field data showing that soil erosion is closely related to steep slopes and high erosion hazard ratings. See the Travel Analysis Process 2005 (TAP) Report for additional information on criteria used for NFTS roads proposed for decommissioning. Miles of routes by erosion hazard rating were calculated through GIS using the Six Rivers National Forest Soil Survey data (USDA Forest Service, 1993).

Indicators

- Miles of unauthorized routes, changes to the NFTS, and other proposed action treatments in each of the R5 average erosion hazard ratings.
- Acres in which the soil productivity will be impacted through proposed action treatments by alternative (both short and long term)
- Acres that will recover either by active or passive restoration techniques through implementation of the alternatives (restoration of soil productivity in the long term).
- Miles of unauthorized routes with inventoried erosion sites treated by alternative
- All indicators were used for all actions.

Methodology by Action

Changes to the NFTS

- Unauthorized routes added to the NFTS
    - Upgrading of existing NFTS roads
    - Downgrading of existing NFTS roads
    - Conversion of roads to motorized trails- Note: this is not considered to have any impact on the soil resource. This action will not be addressed further in this section
    - Designation of mixed-use roads – Note: this is not considered to have any impact on the soil resource. This action will not be addressed further in this section.
    - Decommissioning of existing NFTS roads
- Restoration of Drainage Patterns on Unauthorized Routes
    - Barricade
- Resource Risk Mitigations
    - Seasonal gate closure
    - Stormproofing

For all of the above actions:

Short-term timeframe: 1 year.

Long-term timeframe: 25-30 years

Spatial boundary: Smith River National Recreation Area, Six Rivers National Forest.

Methodology: GIS analysis of route and erosion hazard rating layers; miles of unauthorized routes with inventoried erosion sites

Cumulative Effects

Short-term timeframe: not applicable; cumulative effects analysis will be done only for the long-term timeframe.

Long-term timeframe: 25 to 30 years

Spatial boundary: Smith River National Recreation Area, Six Rivers National Forest.

Methodology: Utilize observations and understanding of short-term effects to soil productivity to estimate long-term expected cumulative effects on soil productivity.

Cumulative effects result from the incremental impact of an action when added to the effects of past, present, and reasonably foreseeable future actions. Past activities are considered part of the existing conditions.

Soil cumulative effects parallel cumulative watershed effects. The size or extent of detrimental soil disturbance is allowable and which affects hydrologic function is determined by the Region 5 Cumulative Watershed Effects Analysis (chapter 20, R5-FSH 2509.22) otherwise known as the equivalent roaded acre model (see Water Quality section). There are various kinds of cumulative soils effects including additive

effects and pulsed or chronic effects associated with off-site impacts associated with winter weather and large storm events. The addition of unauthorized routes to the NFTS under this project expands the potential for cumulative effect of off-site soils impacts and is considered an additive cumulative effect.

The ongoing and foreseeable projects that could affect soil conditions include vegetation management projects utilizing heavy equipment (such as loaders or chippers) that can compact soils, or road construction/decommissioning. Compliance with soil quality standards for these types of activities is assessed on a unit-by-unit basis; each unit must meet the 15 percent disturbance threshold. Cumulative effects would involve analysis of each management unit that includes an unauthorized route. Ongoing and reasonably foreseeable projects within the Smith River NRA that include travelways are identified in the Cumulative Effects project list in the appendix of the FEIS, and also discussed in the Water Quality section. These UARs have been addressed at the activity area and cumulative effects scale. Effects to soils from road construction or decommissioning projects would be similar to the types of effects analyzed in this project. Therefore, cumulative effects for the soils resource are considered to be the combined long term effects on soil productivity from addition of routes to, and deletion of routes from, the NFTS.

Affected Environment

Soils within the Smith River NRA Restoration and Motorized Travel Management are underlain dominantly by rocks of the Western Klamath terrane of the Klamath Mountains Geologic Province. The principal components of this accreted terrane in the project area include the Galice formation and the Josephine Ophiolite. The Galice formation is comprised of marine slate, meta-graywacke sandstones, and other sedimentary rocks metamorphosed to the green-schist facies. The Josephine Ophiolite consists of a suite of mostly ultramafic rock types, principally peridotite, that represent a largely intact sequence of ancient mantle and oceanic crust. Older rocks of the Rattlesnake Creek terrane, a highly disrupted mélange terrane composed of metavolcanics, serpentine and mafic dikes, crop out along the eastern margin of the project area. Plutonic rocks, including the ultramafic Lower Coon Mountain pluton, make up the remainder of the bedrock in the area.

The western periphery of the project area is bounded by the Rattlesnake Fault, a northern extension of the South Fork Mountain Fault. This tectonic feature sometimes referred to as the Coast Range Thrust, separates Franciscan rocks of the Coast Range Geologic Province on the west from the Klamath Mountains on the east. The fault zone is exhibited as a broad, arcuate band of serpentinized rock. Minor portions of Franciscan greywacke and broken formation of the Yolla Bolly terrane occur on the extreme western margin of the area.

Dominant parent materials of the soils (based on the SRI) in the analysis area are metasedimentary rock (29.3 percent), serpentinized peridotite (27.5 percent), and meta-igneous rock (20 percent). Serpentinite rock associated with faults and shear zones comprise 7.6 percent. These percentages may differ than those described in the Geology section.

Bedrock type and slope gradients have strongly influenced soil development and depth. The soils range in depth from shallow (less than 20 inches) to very deep (greater than 60 inches) throughout the area and soils of different depths are often associated, although the majority of soils are moderately deep (20 to 40 inches) to deep (40 to 60 inches). Elevations range from 160 to 6,240 feet. Slope ranges from 5 to 35 percent on the broad ridges to 35 to 90 percent on sideslopes with all aspects. Landscapes can be characterized predominantly as mountain sideslopes with numerous broad ridges.

The dominant general soils are characterized as major timber producing soils with slopes greater than 35 percent (44 percent) and ultramafic (35 percent). Rock outcrop and very steep and shallow soils comprise approximately 7 percent of the area. These figures are derived from the Six Rivers NF SRI, and may

differ from what is described in the Geology section. Parent rocks of concern are ultramafics (peridotite and serpentine). These soils have higher clay content than other soils, which make them prone to deformation or rutting when wet.

Soil moisture regime is xeric, characteristic of a Mediterranean climate. Soil temperature regime is dominantly mesic – mean soil temperature is greater than 8˚C but lower than 15˚C. The most common soils are classified in the Great Groups Xerochrepts and Haploxeralfs. The major difference between these two groups is a greater clay composition in the subsoil of Haploxeralfs. Common soil properties include gravelly loam and clay loam textures, very good drainage, moderate to moderately slow surface water permeability, and very low to moderate water holding capacity (high in a very few soils with very high clay content). Slope gradient, along with ground cover, are the most important factors determining the potential for soil erosion. Generally, the northern and western part of the Smith River NRA has much steeper terrain than the eastern and southern sides, leading to more miles of routes with higher erosion hazard ratings. Soil erosion hazard rating is high in 46 percent of the mapped soils in the planning area, moderate in 49 percent, and low in 5 percent of the soils. On disturbed soils, runoff potential is low to moderate, depending on the steepness of slope. The dominate (51 percent) vegetation community is Douglas-fir – Tan Oak – Madrone Forest, while Knobcone Pine-Huckleberry Oak-Manzanita comprises approximately 20 percent of the total representative vegetation communities. Many of the soils located under the forest canopy have an organic layer of decomposing needle duff.

The dominate soil types and common soil families of Smith River NRA include Jayel, Clallam, Gasquet, Kistirin, Goldridge, and Oragran. Susceptibility to soil compaction for the majority (75 percent) of the soils in the analysis area is moderate, while high comprises about 23 percent and low is about 2 percent.

Soil Risks Related to Roads and Trails

Roads are considered the principal cause of accelerated erosion in forests throughout the western United States (Reid and Dunne 1984, Furniss and others 1991, Grace and Clinton, 2007, Trombulak, and. Frissell. 2000.). The use of roads, trails and other areas on national forest for public operation of motor vehicles also has potential to affect the soil resource through interception of runoff, compaction of soils, and detachment of sediment (Foltz, 2006). The locations of roads determine the degree of potential impacts, making some roads more environmentally sensitive than others. The presence of roads can increase the frequency of slope failures compared with the rate for undisturbed forest by hundreds of times (Furniss and others 1991). A single, poorly designed road or trail on a highly erosive soil could cause unacceptable soil loss, but result in no impact to water quality if not delivered to a stream. A very high density of roads/trails on a moderately erosive soil in an area with a high stream density could be unacceptable for water quality (the likelihood of delivery is high), but not necessarily a major impact to the soil resource.

Past human activity in the Smith River NRA has resulted in the creation of roads and unauthorized routes where soil compaction, displacement (removal of topsoil), and erosion have altered soil productivity. Effectively, road construction is a long-term commitment of the soil to use as a road. Returning soil to its original productivity after use as a road is a chemical, physical, biologic, and geologic process that can take hundreds of years. Soil productivity begins to return after road closure to vehicle travel, allowing some vegetation to grow within a year.

Soils that were once porous and easily penetrated by water are now more susceptible to overland flow and surface erosion. Where topsoil has been removed or excessively compacted, minimal vegetation will grow, perhaps some grasses, forbs, and perhaps invasive species exist. Froehlich et al. (1985) and Wert and Thomas (1981) found slow rates of natural recovery of compacted soil restricted primarily in the top 6 inches. Wert and Thomas (1981) observed that heavy compaction persisted at the 8 and 10-inch depths.

Bulk density of the soil is often used to characterize compaction. Froelich (1976) has reported that most productive soils in the Pacific Northwest are characterized by relatively low bulk densities, ranging from about 0.5 g/cm3 to 0.9 g/cm3, and as a result have high macroporosity, high infiltration rates, and low soil strength. Heilman (1981) found that the roots of Douglas-fir seedlings could no longer penetrate soil at about 1.8 g/cm3. For reference a road surface with igneous rock and then heavily compacted would exceed 2.0 g/cm3. Pure igneous rock would be about 2.65 g/cm3.

Drainage is not a problem on the majority of soils within the Smith River NRA project area, as nearly all of the soils are well-drained. Erosion is greatest where runoff is concentrated and runoff dispersion features are lacking. Most erosion problems observed were on the steeper portions of routes (generally over 35 percent slopes). Roads that have been closed due to natural events showed very little erosion, due mainly to high levels of soil cover from needle cast and leaf litter.

There are two types of soil loss on roads and trails. First is the loss of soil from the tread itself. Because the road or trail surface is a dedicated use of the land, this is really not so much a soil productivity issue as it is a loss of facility function. Loss of soil productivity occurred when the road or trail was constructed as part of the transportation system. In the case of user created trails, the loss of soil productivity occurred as the trail became more compacted and established over time. The second type of erosion is the loss of soil that occurs when concentrated water from the road or trail surface creates a gully or some other erosion features down slope. This reduces soil productivity, vegetative growth and water quality when sediment is delivered to a watercourse. Concentrated runoff is the primary agent of erosion on native surfaced roads and motorized trails. Mechanical displacement of soil by traffic is also important, although most mechanically displaced soil is ultimately transported by concentrated runoff. Mechanical displacement is impacted more as road or trail gradients become steeper.

The Water Quality section of the FEIS provides additional information regarding erosion and sedimentation effects on water quality for the analysis area.

Unauthorized Routes

Much of the Smith River NRA Travel Management analysis area is too steep for off-highway vehicle use. About 234,000 acres are lands with less than 35 percent slopes where use of off-road vehicles is practicable. Off-road vehicle use can result in soil displacement and compaction on any of these acres. Most use is currently concentrated on the user-created routes, which are compacted and mostly bare of vegetation.

Unauthorized routes mapped in the project area are a combination of abandoned Forest Service roads, which were primarily intended for temporary use related to timber harvesting, fire suppression activities, exploratory mining routes and user-created routes. Most of these unauthorized routes are native surfaced roads that have no drainage structures other than occasional water bars.

Of the approximately 155 miles of unauthorized routes in the Smith River NRA, about 62 percent are in the high average erosion hazard rating category (Table 92). It should be noted that approximately 8.2 percent (12.7 miles) of the unauthorized routes fall into areas that do not have soil map coverage; therefore, the total number of miles for each alternative does not match the number listed in the alternative description.

Table 92. Miles of unauthorized routes (Alternative 1) or routes proposed for designation to the NFTS (action alternatives) in each R-5 average erosion hazard rating

Alternative	Erosion Hazard Rating			No map coverage	Totals
	Low	Moderate	High		
1	5.2	49.8	96.0	3.4	154.7
3	4.8	43.3	87.4	2.5	138.0
4	5.4	47.0	89.7	2.3	144.4
5	5.5	50.5	96.0	0.9	155.1
6	5.5	50.4	96.0	3.6	155.5

All values are miles. Some miles do not have soil map coverage and therefore no assigned erosion hazard rating.

There are about 59 sites located on 36 miles (23%) of the inventoried unauthorized routes that have notable erosion features (e.g. rilling or rutting) on these UARs. The majority of the unauthorized routes have native (unsurfaced) road prisms that are potentially susceptible to tread wear and erosion.

Most of the routes considered in this analysis are not engineered roads; that is, they have not been designed but have been created through repeated vehicle travel on relatively gentle slopes. Site visits have confirmed that most have been hardened through use, and running surfaces are generally stable and self-maintaining. Much of the mileage proposed for addition to the NFTS consists of relatively short, rough-surfaced routes that access dispersed recreation sites. Routes proposed for designation as ML1, 2, and 3 roads will require improvement work to meet Road Management Objectives.

Environmental Consequences

Common to All Action Alternatives

Direct and Indirect Effects

Direct impacts to soils and adjacent watersheds that result from this project are limited. There are no new ground disturbing activities proposed with this project. The UARs and existing NFTS roads being evaluated in this analysis already exist on the ground. Most routes being evaluated to be added to the NFTS are likely in need of upgrading to NFTS standards as well as maintenance. They are compacted and generally lack vegetation. Runoff from the surface is collected and discharge as potentially erosive flows at points below the road. Some are eroded or causing erosion, other are stable and are not causing any negative resource impacts.

From the standpoint of soil productivity and growing vegetation, these routes are already non-productive and the direct effects to soil productivity have already occurred. Therefore, on these unauthorized trails, the potential effects on soil and watershed resource are related to sustaining motorized trail function, protecting adjacent soils from runoff and gully erosion, protection water quality, or restoring drainage patterns unauthorized routes not added to the NFTS to a productive state. It should be noted that most roads and motorized trails within the Smith River NRA Travel Management area have some site specific risk to soil and water resources, and that these risks can be reduced to acceptable levels through decommissioning, upgrading, downgrading, restoring drainage patterns, stormproofing and barricading.

Prohibiting motorized use on native surface trails may result in less erosion to the extent the recurrent disturbance of the soil surface by users is the primary cause of erosion. In many circumstances however, erosion and subsequent sediment delivery to water bodies is the result of a combination of factors

including motorized use, season of use, a lack of drainage and maintenance, and poor trail design or location.

The primary concern or effect of this project on soil resources are indirect effects associated with the potential for soil erosion and subsequent effects on-off trail soil productivity or the ability of the soils to produce vegetation. Secondary effects from erosion are the loss of soil depth, infiltration capacity and permeability. In other words, a reduction in soil hydrologic function, which can in turn affect aquatic resources (see Water Quality section). Because this analysis covers existing wheel tracks, the direct impacts to soil productivity, hydrologic function and soil buffering capacity have already taken place.

The erosion that may occur from the unauthorized motorized routes proposed for addition to the NFTS is a concern regarding loss or degradation of the facility, but not a particular concern for the soil resource, because the roads and motorized trails are dedicated to the NFTS and are no longer dedicated to growing vegetation. The effects analysis for the soil resource will therefore focus on the secondary (indirect) risk of soil erosion from trail runoff water to the soil adjacent to or down slope from the route. Erosion and sediment generated by the motorized trail or road surface may be a concern to water quality if there is the potential for its delivery to a stream course (see Water Quality section).

If use of the route ceases, in the short-term (five years or less), some native vegetation may establish on routes that have little soil compaction. It is likely that routes with moderate to heavy soil compaction will take more than five years to recover vegetation and some stable and moderately used trails will recover within twenty-five to thirty years.

The type of route affects the potential for passive recovery (e.g. no active restoration measures implemented). Forest Service temporary roads used as unauthorized routes would recover very slowly (25-30 years). Most fill slopes and cut slopes would re-vegetate in time, but compacted road prisms recover very slowly (decades) unless the surface is mechanically ripped.

In contrast, user-created trails have the potential to recover faster, because these trails are narrower than a constructed road, the compaction is not as deep, and the soils profiles have not been disturbed. Recovery of user created trails is quite variable and mostly depends on slope gradients. Generally, all unauthorized roads and user created trails can be assumed to be compacted to the point where natural recovery would take decades. However, actively eroding user created trails will continue to erode without adequate drainage. User created trails that occur on shallow soils and/or lack forest or brush cover would recover very slowly.

Surface erosion is highly dependent on soils, road surfacing, and road grade and cross slope, age of the road, traffic volumes, and the effectiveness and spacing of drainage structures. The greatest surface erosion problems generally occur in highly erodible terrain, particularly landscapes with high erosion hazard ratings.

Drainage structure, function, and spacing are key to minimizing the amount of surface flow, which directly affects surface erosion from roads. The Water Conservation Practices Handbook (FSH 2509.25) provides guidelines for drainage structure spacing.

Road maintenance is important to protect the roads cross slope and drainage features. Without sufficient maintenance, road surfaces may develop ruts that drain runoff down the road instead of off to the side. Lack of maintenance also leads to plugging of culverts, ditchlines with sediment or vegetative debris, leading to washouts.

When culverts plug and are over-topped, the water may run across the road and into the same drainage or may run down the road for some distance, leaving the road in drainage. Where water is diverted into drainage it adds to the flow volume in that drainage, and can cause long term gully erosion (Furniss et al, 1997). The ability of the water to run down the road to drainage is termed diversion potential.

Alternative 1 – No Action

As described in Chapter 2, no changes would be made to the NFTS. Current management plans would continue to guide project area management. Unauthorized routes would continue to have no status as NFTS facilities and drainage patterns would not be restored. There would be no restoration or resource protection treatments implemented. Routine road maintenance of NFTS roads would be pursued under a separate environmental analysis.

Direct and Indirect Effects of Changes to the NFTS

Routes Added to the NFTS

There are no direct or indirect effects of adding unauthorized routes to the existing NFTS because no new NFTS facilities would be added. The agency would take no affirmative action on any unauthorized route and they would continue to have no status or authorization as NFTS facilities. The inventoried 59 sites with erosion features located on approximately 36 miles of unauthorized routes would not be rehabilitated.

There unauthorized routes within the Smith River NRA that total about 155 miles would continue to receive motorized vehicle traffic, at least 96 miles (61 percent) have high erosion hazard ratings that are subject to higher erosion rates, off-site impacts and difficulty in establishing vegetation. In both the short and long term, soils on these routes would remain compacted and generally unvegetated. There is no way to quantify how many additional motorized routes may be created in soils with high erosion hazard ratings in the future by continued motorized use.

In both short and long term, soils on about 310 acres would remain compacted and unvegetated. In addition, there would be ongoing impacts to soil productivity from the creation of new routes. It is impossible to estimate the additional number of acres that would be subject to compaction and soil displacement within the Smith River NRA.

Upgrading ML1 (closed) Roads

No NFTS ML1 roads would be upgraded to ML2 that would provide additional motorized access to high clearance vehicles. These roads would likely receive minimal road maintenance, subjecting them to future erosion, drainage problems and potential sedimentation. Vegetation recovery/encroachment within these road prisms would continue, providing additional soil cover, reducing soil loss, and decompacting roadbeds. Lack of adequate road maintenance, especially functioning ditchlines and drainage structures, would likely result in further alteration of hillslope hydrology, water diversions, increasing surface erosion and loss of soil productivity.

Downgrading ML2 (open) Roads

No NFTS roads would be downgraded to ML1 that would prohibit future motorized access to high clearance vehicles. Existing ML2 roads would continue to receive motorized use by both the public and for administrative use. Road-related surface erosion associated with motorized use and traffic would remain unchanged. There would be no change to long term soil productivity.

Decommissioning Roads

No NFTS roads or trails would be decommissioned under this alternative. NFTS routes that have signs of erosion (e.g. rilling or rutting) on some portion(s) of the routes would likely not be treated. There would be no change in long term soil productivity, since road surfaces would remain in a high degree of soil compaction. There would be no long term benefits to the soil resource associated with decommissioning of NFTS roads and trails.

Direct and Indirect Effects of Restoration of Drainage Patterns on Unauthorized Routes

There are no direct or indirect effects of restoring unauthorized routes because no restorative actions would be implemented. Under Alternative 1, direct effects to loss in soil productivity have already occurred. Past cross-country motorized travel on unauthorized routes has resulted in soil compaction and erosion of the A-horizon portion of soil profiles to the point where vegetation productivity in the disturbed areas is reduced. Unauthorized routes that have signs of erosion (e.g. rilling or rutting) on some portion(s) of the routes would not be treated. There would be no active or passive restoration treatments to UARs where existing erosion, water diversions and sedimentation is occurring. No additional barricades would be installed to prohibit motorized vehicles. Additional direct and indirect soil effects would be similar to those described in the Routes added to the NFTS section above.

Direct and Indirect Effects of Resource Risk Mitigations

Under Alternative 1, there would be no resource risk mitigations applied to the NFTS to reduce impacts to resources, notably seasonal gate closures and stormproofing that would benefit the soil resource. NFTS roads and trails that have signs of erosion (e.g. rilling or rutting) on some portion(s) of the routes would not be treated. No road improvements that reduce erosion, road drainage and sedimentation such as culvert removal/installation, replacements, and additional drainage structures, thereby leading to higher risk of future erosion and sedimentation.

Cumulative Effects

The No Action alternative would result in a total of 96 miles (62 percent) of unauthorized routes rated as high erosion hazard risk to watershed resources and water quality concerns remaining on the NFTS.

Soil productivity will be foregone in the long term on all 155 miles (310 acres) of unauthorized routes that continue to be used, and on roads added to the NFTS through ongoing and foreseeable road-related actions. These actions are described in the Water Quality Cumulative Effects section of the FEIS.

Alternative 2

Alternative 2 was the publicly scoped Proposed Action in April 2012, and has been eliminated from detailed study based on comments received from the public.

Alternative 3 – The Modified Proposed Action

Direct and Indirect Effects of Changes to the NFTS

Routes Added to the NFTS

Alternative 3 would add 44 miles of motorized trails and 15 miles of road to the NFTS that are currently unauthorized routes. Approximately 43 miles (73 percent) of routes to be added to the NFTS as motorized routes have a high erosion hazard risk rating which indicates that there is the potential for tread wear of the facility and increased risk of soil erosion. The remaining 16 miles (27 percent) of routes to be added to the NFTS have a moderate to low erosion hazard rating.

Under this alternative, 9 (1.97 miles) of the 36 inventoried sites that have varying degrees of rilling and rutting erosion occur on the unauthorized routes proposed to be added. These sites are displayed in Table 93 below. All routes identified with erosion will have water bars installed to disperse water and reduce risk of erosion and offsite impacts, either through maintenance improvements associated with adding routes to the NFTS, or under the restoration of drainage patterns on unauthorized routes action.

Table 93. Unauthorized motorized routes to be added to NFTS that have rilling or rutting

ID	Length (miles)	ID	Length (miles)	ID	Length (miles)
427.105	0.29	17N49.11	0.11	17N22A.1	0.18
427.103	0.05	17N49.11	0.09	17N49.7	0.09
427.106	0.09	17N49.11P	0.17	17N49.102	0.90
Total = 1.97 miles					

While there is the risk of off-site impacts to soils, water quality and aquatic resources associated with erosion of the motorized trails and roads, the potential for impacts to watershed resources would be lower than when compared to Alternative 1. Many routes have the potential to erode but are not located near a stream channel. Nevertheless, even if there is not a risk to water quality, then there is risk to off-site soil resources associated with gullying and loss in off-site productivity.

On the unauthorized routes to be added as NFTS (both motorized trails and roads), mitigation measures to lessen the impacts to soil resources would occur on all high risk routes proposed to be added. Mitigations include: rock surfacing, water bar installation, culvert installation and/or replacement, and route definition (signage or physical barriers to restrict use to only designated routes). All mitigation measures would be completed prior to use by the public. Implementation of these mitigation measures is expected to lower higher risk routes to moderate or low risk by managing runoff, minimizing offsite movement of soil, and preventing degradation of the running surface. These types of measures have been used for drainage control on roads and trails on the Six Rivers National Forest for many years, and have been shown to be effective in controlling water, reducing erosion and sedimentation. In both the short and long term, routes added to the NFTS will remain compacted and unvegetated. No new ground disturbance would occur as the routes already exist. The only ground disturbance would be associated with activities to improve drainage (waterbars, culvert removal/replacement) and to limit use to the designated travel way (road barriers). These activities would occur only on the existing travel way, which is already a disturbed site.

Upgrading ML1 (closed) Roads

This alternative would move 3.0 miles of ML 1 (closed) roads to ML2 (open) status. Of this total mileage, 0.9 miles (30 percent) are rated as high erosion hazard, while the remaining 2.1 miles have a moderate or low erosion hazard. The ML1 roads with high erosion hazard ratings are subject to have higher overall erosion rates and may require additional road maintenance treatments to address erosion risk. The direct and indirect impacts to soils by changing maintenance levels would result in improvements to on and off-site erosion and potential sedimentation since these roads would receive much needed road maintenance treatments, such as surface rocking, drainage structures, and culvert replacements or additions. However, by opening these roads that have been previously closed to motorized vehicles, there would be a slight increase in risk of road-related erosion and potential sedimentation associated with increased motorized traffic. These routes are not expected to receive a lot of use, and road maintenance improvements and

inspections should address these concerns. Soil productivity will remain foregone on these 3 miles (6 acres).

Downgrading ML2 (open) Roads

This alternative would downgrade 19 miles of ML2 (open) roads to ML 1 (closed). Of this total, approximately 5.5 miles (28.9 percent) are rated as high erosion hazard. Downgrading of roads, especially those in the high erosion hazard category, would result in lower overall tread wear and road-related erosion due to road closure and road maintenance treatments associated with placing roads into storage ML 1. These treatments include waterbarring and other stormproofing techniques designed to reduce potential erosion, sedimentation and diversion potential. There would be no change in overall soil productivity, with 38 acres remaining in an unproductive state.

Decommissioning Roads

Alternative 3 proposes to remove (decommission) 55 miles of ML 1 and 2 roads from the NFTS. Approximately 9.9 miles (18 percent) were rated as a high risk erosion hazard rating, while the remaining 45.1 miles were rated moderate and low erosion hazard. All roads that are decommissioned are considered beneficial to long term soil productivity, especially those with high erosion hazard ratings since roads with these ratings are likely to have higher risk of tread wear and erosion hazard rates, and subsequent sedimentation and water quality risks. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to soils and water quality, measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate.

Soil productivity would be expected to eventually return on a total of 110 acres.

Direct and Indirect Effects of Restoration of Drainage Patterns

Under Alternative 3, 79 miles of unauthorized routes and would receive restoration of drainage patterns that includes both active and/or passive restoration treatments. Examples of active restoration treatments include waterbarring, rolling dips, removal of culverts and associated fills. Passive restoration includes the placement of a vehicle barrier at the entrance or junction to a road or route. The objective is to prevent motorized use and promote the passive restoration of the travelway (vegetation recovery).

General direct and indirect effects of unauthorized motorized routes were previously discussed in the soil resources section common to all alternatives and include loss of soil site productivity through soil compaction (past effects during creation of unauthorized motorized routes) and offsite soil productivity through erosion (current indirect effect). Table 97 shows the range of erosion hazard ratings for the 79 miles of unauthorized routes that will not be added to the NFTS. Of these 79 miles to be restored, approximately 44.7miles (57 percent) were rated as having a high erosion hazard rating, while the remaining 43.3 percent have a low or moderate erosion hazard rating. Routes that have a high erosion hazard rating, in the short-term, have a greater potential for continued indirect, off-site impacts to soils and watershed resources even though these routes will receive some form of active or passive treatment. Active treatments will have more success in reducing erosion and accelerating the timeframe for revegetation and improved soil productivity, especially those that have high erosion hazard ratings.

Passive restoration of drainage patterns on UARs will also be beneficial to long term soil productivity and recovery, but will be achieved over a longer time period. Over time, affected soils would gradually recover through revegetation, and a gradual decompaction of remnant soil. Vegetation regrowth on these

routes is anticipated to accelerate in the long-term and further reduce the risk of soil erosion. Stems that grow on the route surface will intercept surface runoff, slowing and shortening the flow path to reduce the occurrence of concentrated runoff that leads to on-site and off-site erosion and impacts to water resources. By barricading of UARs and restricting future motorized use, erosion, compaction and other detrimental soil conditions would be reduced. Decompaction of the A horizon and vegetation regrowth is typically not limited due to the high level of winter precipitation and natural vegetation recovery found within the Smith River NRA. Active restoration of unauthorized routes (primarily waterbarring) will occur on those UARs that have been identified as posing a high or moderate watershed risk (see Water Quality section) and those that have existing erosion problems.

Soil productivity would be expected to eventually return on a total of 158 acres.

Direct and Indirect Effects of Resource Risk Mitigations

Resource risk mitigations apply to NFTS current and proposed roads and trails to reduce risk and impacts to resources, including soils. When resource risks were identified as high or moderate in the Travel Analysis Process, mitigations are required to reduce the risk to an acceptable level. Stormproofing treatments would provide the greatest benefit to soil resources by addressing existing and potential surface erosion and drainage needs.

Barricades

This alternative would barricade 72 miles of unauthorized routes not added to the NFTS. Of this total, about 44.7 miles (62 percent) were determined to have a high erosion hazard rating. This would result in similar effects to soil resources previously described as passive restoration, and be an overall benefit to soil productivity.

Seasonal Gate Closure

This alternative would also place 11 miles of NFTS roads and motorized trails of season-of-use that would be reinforced through seasonal gate closures. By placing gates on these NFTS routes, motorized use would be restricted to when routes are dry, thereby reducing risk of road-related erosion and potential sedimentation. There would be no change in overall soil productivity.

Stormproofing

Stormproofing treatments would be applied to 122 miles of NFTS roads and motorized trails would be a benefit to soil productivity by reducing on and off-site erosion, both short term and long term, depending on the type of specific treatment. These routes are targeted because they have been identified through watershed inventories as having existing or potential erosion and sediment sources. Of the 81 miles, 40.2 miles (50 percent) are rated as high erosion hazards, so treatments on these roads would be especially beneficial in reducing soil impacts.

Overall soil productivity would remain unchanged, although indirect benefits to soil productivity would be achieved by reducing onsite erosion and potential for off-site erosion and sedimentation.

Cumulative Effects

Soil productivity would be adversely affected on all routes and facilities that are added to the NFTS through this project or through ongoing and foreseeable road-related actions. The ongoing and foreseeable road-related actions are described in the Water Quality Cumulative Effects section of the DEIS. Soil conditions should improve with eventual natural loosening of the compacted soil and revegetation of decommissioned roads, active/passive restoration of drainage patterns on unauthorized routes, and resource risk mitigation treatments.

Implementation of Alternative 3 overall would result in 59 miles (118 acres) of unauthorized routes added to the NFTS as motorized trails and roads, thereby resulting in a long term negative effect to soil productivity. This alternative would also decommission, restore and close 134 miles (268 acres) of unauthorized roads and NFTS roads, resulting in a long term beneficial effect for soil productivity. Overall, a net benefit of 150 acres of the soil resource should improve or be restored.

Alternative 4

Alternative 4 responds to issues concerning impacts on motorized recreation opportunities. This alternative was developed to provide increased opportunities for motorized recreation and access to dispersed sites. Compared to Alternative 3, this alternative adds more motorized trails and roads to the NFTS, more stormproofing on level 2 roads, and designates parking areas along Forest Road 17N49 (Gasquet Mountain Road). Removing roads from the NFTS and restoration of drainage patterns on unauthorized routes are also included.

Direct and Indirect Effects of Changes to the NFTS

Routes Added to the NFTS

Alternative 4 would add 58 miles of motorized trails and 16 miles of road to the NFTS that are currently unauthorized routes. Approximately 56 miles (76 percent) of routes to be added to the NFTS as motorized routes have a high erosion hazard risk rating which indicates that there is the potential for tread wear of the facility and increased risk of soil erosion and potential for sedimentation. The remaining 18 miles (24 percent) of routes to be added to the NFTS have a moderate to low erosion hazard rating.

Under this alternative, 8 (3.50 miles) of the 36 inventoried sites that have varying degrees of rilling and rutting erosion occur on the unauthorized routes proposed to be added. These sites are displayed in Table 94 below. All routes identified with erosion will have water bars installed to disperse water and reduce risk of erosion and offsite impacts, either through maintenance improvements associated with adding routes to the NFTS, or under the restoration of drainage patterns on unauthorized routes action.

Table 94. Unauthorized motorized routes to be added to NFTS that have rilling or rutting

ID	Length (miles)	ID	Length (miles)	ID	Length (miles)
424.105	0.29	303.130	1.13	17N49.11	0.12
427.103	0.05	1749.11P	0.09	17N49.11	0.09
17N49.7	0.81	1749.102	0.90		
Total=3.5					

When adding unauthorized routes to the NFTS, it is important to understand what risks those routes will have regarding tread wear and loss of usability of the facility (e.g. erosion, rilling, gullying, etc.) and the off-site effects of the tread wear. The potential for impacts to watershed resources associated with adding UARs to the NFTS does exist, especially on those with high erosion hazard ratings. Some routes have the potential to erode but are not located near a stream channel. Nevertheless, even if there is not a risk to water quality, then there is risk to off-site soil resources associated with gullying and loss in off-site productivity. On the unauthorized routes to be added as NFTS, mitigation measures to lessen the impacts to soil resources would occur on all high risk routes proposed to be added. Mitigations to be applied were discussed in detail in Alternative 3.

Upgrading ML1 (closed) Roads

This alternative would move 11.0 miles of ML 1 (closed) roads to ML2 (open) status. Of this total mileage, 0.9 miles (30 percent) are rated as high erosion hazard, while the remaining 10.2 (70 percent) miles have a moderate or low erosion hazard rating. The ML1 roads with high erosion hazard ratings are subject to have higher overall erosion rates and may require additional road maintenance treatments to address erosion risk. The direct and indirect impacts to soils by changing maintenance levels would result in improvements to on and off-site erosion and potential sedimentation since these roads would receive much needed road maintenance treatments, such as surface rocking, drainage structures, and culvert replacements or additions. However, by opening these roads that have been previously closed to motorized vehicles, there would be a slight increase in risk of road-related erosion and potential sedimentation associated with increased motorized traffic. These routes are not expected to receive a lot of use, and road maintenance improvements and inspections should address these concerns. Soil productivity will remain foregone on these 11 miles (22 acres).

Downgrading ML2 (open) Roads

This alternative would downgrade 16 miles of ML2 (open) roads to ML 1 (closed). Of this total, approximately 5.4 miles (34 percent) are rated as high erosion hazard. Downgrading of roads, especially those in the high erosion hazard category, would result in lower overall tread wear and road-related erosion due to road closure and road maintenance treatments associated with placing roads into storage ML 1. These treatments include waterbarring and other stormproofing techniques designed to reduce potential erosion, sedimentation and diversion potential. There would be no change in overall soil productivity, with 32 acres remaining in an unproductive state.

Decommissioning Roads

Alternative 4 proposes to remove (decommission) 57 miles of ML 1 and 2 roads from the NFTS. Approximately 10.1 miles (18 percent) were rated as a high risk erosion hazard rating, while the remaining 40.1 miles were rated moderate and low erosion hazard. All roads that are decommissioned are considered beneficial to long term soil productivity, especially those with high erosion hazard ratings since roads with these ratings are likely to have higher risk of tread wear and erosion hazard rates, and subsequent sedimentation and water quality risks. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to soils and water quality, measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate.

Soil productivity would be expected to eventually return on a total of 114 acres.

Direct and Indirect Effects of Restoration of Drainage Patterns

Under Alternative 4, 70 miles of unauthorized routes and would receive restoration of drainage patterns that includes both active and/or passive restoration treatments. Examples of active restoration treatments include waterbarring, rolling dips, removal of culverts and associated fills. Passive restoration includes the placement of a vehicle barrier at the entrance or junction to a road or route. The objective is to prevent motorized use and promote the passive restoration of the travelway (vegetation recovery).

General direct and indirect effects of unauthorized motorized routes were previously discussed in the soil resources section common to all alternatives and include loss of soil site productivity through soil compaction (past effects during creation of unauthorized motorized routes) and offsite soil productivity

through erosion (current indirect effect). Table 97 shows the range of erosion hazard ratings for the 70 miles of unauthorized routes that will not be added to the NFTS. Of these 70 miles to be restored, approximately 34 (49 percent) were rated as having a high erosion hazard rating, while the remaining 51 percent have a low or moderate erosion hazard rating. Routes that have a high erosion hazard ratings, in the short-term, have a greater potential for continued indirect, off-site impacts to soils and watershed resources even though these routes will receive some form of active or passive treatment. Active treatments will have more success in reducing erosion and accelerating the timeframe for revegetation and improved soil productivity, especially those that have high erosion hazard ratings.

Passive restoration of drainage patterns on UARs will also be beneficial to long term soil productivity and recovery, but will be achieved over a longer time period. Over time, affected soils would gradually recover through revegetation, and a gradual decompaction of remnant soil. Vegetation regrowth on these routes is anticipated to accelerate in the long-term and further reduce the risk of soil erosion. Stems that grow on the route surface will intercept surface runoff, slowing and shortening the flow path to reduce the occurrence of concentrated runoff that leads to on-site and off-site erosion and impacts to water resources. By barricading of UARs and restricting future motorized use, erosion, compaction and other detrimental soil conditions would be reduced. Decompaction of the A horizon and vegetation regrowth is typically not limited due to the high level of winter precipitation and natural vegetation recovery found within the Smith River NRA. Active restoration of unauthorized routes (primarily waterbarring) will occur on those UARs that have been identified as posing a high or moderate watershed risk (see Water Quality section) and those that have existing erosion problems.

Soil productivity would be expected to eventually return on a total of 140 acres.

Direct and Indirect Effects of Resource Risk Mitigations

Resource risk mitigations apply to NFTS current and proposed roads and trails to reduce risk and impacts to resources, including soils. When resource risks were identified as high or moderate in the Travel Analysis Process, mitigations are required to reduce the risk to an acceptable level. Stormproofing treatments would provide the greatest benefit to soil resources by addressing existing and potential surface erosion and drainage needs.

Barricades

This alternative would barricade 67 miles of unauthorized routes not added to the NFTS. Of this total, about 31 miles (46 percent) were determined to have a high erosion hazard rating. This would result in similar effects to soil resources previously described as passive restoration, and be an overall benefit to soil productivity.

Seasonal Gate Closure

This alternative would also place 39 miles of NFTS roads and motorized trails of season-of-use that would be reinforced through seasonal gate closures. By placing gates on these NFTS routes, motorized use would be restricted to when routes are dry, thereby reducing risk of road-related erosion and potential sedimentation. There would be no change in overall soil productivity.

Stormproofing

Stormproofing treatments would be applied to 97 miles of NFTS roads and motorized trails with a moderate or high watershed risk, which would benefit soil productivity by reducing on and off-site erosion, both short term and long term, depending on the type of specific treatment. These routes are targeted because they have been identified through watershed inventories as having existing or potential erosion and sediment sources. Of the 97 miles, 56 miles (58 percent) are rated as high erosion hazards, so treatments on these roads would be especially beneficial in reducing soil impacts.

Overall soil productivity would remain unchanged, although indirect benefits to soil productivity would be achieved by reducing onsite erosion and potential for off-site erosion and sedimentation.

Cumulative Effects

Soil productivity would be adversely affected on all routes and facilities that are added to the NFTS through this project or through ongoing and foreseeable road-related actions. The ongoing and foreseeable road-related actions are described in the Water Quality Cumulative Effects section of the FEIS. Soil conditions should improve with eventual natural loosening of the compacted soil and revegetation of decommissioned roads, active/passive restoration of drainage patterns on unauthorized routes, and resource risk mitigation treatments.

Implementation of Alternative 4 overall would result in 74 miles (148 acres) of unauthorized routes added to the NFTS as motorized trails and roads, thereby resulting in a long term negative effect to soil productivity. This alternative would also decommission, restore and close 127 miles (254 acres) of unauthorized roads and NFTS roads, resulting in a long term beneficial effect for soil productivity. Overall, a net benefit of 106 acres of the soil resource should improve or be restored.

Alternative 5

This alternative responds to the issues raised by the public concerning the potential for adverse impacts to forest resources and Inventoried Roadless Areas. When compared to Alternative 3 (Modified Proposed Action), this alternative increases protection of Port Orford-cedar (POC) and other sensitive botanical resources. No unauthorized routes would be designated within Inventories Roadless Areas. Alternative 5 also proposes closure and restoration of drainage patterns for unauthorized routes not added to the NFTS, and designates one parking area. No mixed-use of 17N49 is proposed.

Direct and Indirect Effects of Changes to the NFTS

Routes Added to the NFTS

Alternative 5 would add 11 miles of motorized trails and 9 miles of road to the NFTS that are currently unauthorized routes. Approximately 10.5 miles (53 percent) of routes to be added to the NFTS as motorized routes have a high erosion hazard risk rating which indicates that there is the potential for tread wear of the facility and increased risk of soil erosion and potential for sedimentation. The remaining 9.5 miles (47 percent) of routes to be added to the NFTS have a moderate to low erosion hazard rating.

Under this alternative, 2 (1.2 miles) of the 36 inventoried sites that have varying degrees of rilling and rutting erosion occur on the unauthorized routes proposed to be added. These sites are displayed in Table 95 below. All routes identified with erosion will have water bars installed to disperse water and reduce risk of erosion and offsite impacts, either through maintenance improvements associated with adding routes to the NFTS, or under the restoration of drainage patterns on unauthorized routes action.

Table 95. Unauthorized motorized routes to be added to the NFTS that have rilling or rutting

ID	Length (Miles
427.105	0.3
17N49.102	0.9
Total=1.2 miles	

When adding unauthorized motorized routes to the NFTS, it is important to understand what risks those routes will have regarding tread wear and loss of usability of the facility (e.g. erosion, rilling, gullying, etc.) and the off-site effects of the tread wear. The potential for impacts to watershed resources associated with adding UARs to the NFTS does exist, especially on those with high erosion hazard ratings. Some routes have the potential to erode but are not located near a stream channel. Nevertheless, even if there is not a risk to water quality, then there is risk to off-site soil resources associated with gullying and loss in off-site productivity. On the unauthorized routes to be added as NFTS, mitigation measures to lessen the impacts to soil resources would occur on all high risk routes proposed to be added. Mitigations to be applied were discussed in detail in Alternative 3.

Upgrading ML1 (closed) Roads

This alternative would move 4.0 miles of ML 1 (closed) roads to ML2 (open) status. Of this total mileage, 1.0 miles (25 percent) are rated as high erosion hazard, while the remaining 3.0 (75 percent) miles have a moderate or low erosion hazard rating. The ML1 roads with high erosion hazard ratings are subject to have higher overall erosion rates and may require additional road maintenance treatments to address erosion risk. The direct and indirect impacts to soils by changing maintenance levels would result in improvements to on and off-site erosion and potential sedimentation since these roads would receive much needed road maintenance treatments, such as surface rocking, drainage structures, and culvert replacements or additions. However, by opening these roads that have been previously closed to motorized vehicles, there would be a slight increase in risk of road-related erosion and potential sedimentation associated with increased motorized traffic. These routes are not expected to receive a lot of use, and road maintenance improvements and inspections should address these concerns. Soil productivity will remain foregone on these 4 miles (8 acres).

Downgrading ML2 (open) Roads

This alternative would downgrade 97 miles of ML2 (open) roads to ML 1 (closed). Of this total, approximately 47 miles (49 percent) are rated as high erosion hazard. Downgrading of roads, especially those in the high erosion hazard category, would result in lower overall tread wear and road-related erosion due to road closure and road maintenance treatments associated with placing roads into storage ML 1. These treatments include waterbarring and other stormproofing techniques designed to reduce potential erosion, sedimentation and diversion potential. There would be no change in overall soil productivity, with 194 acres remaining in an unproductive state.

Decommissioning Roads

Alternative 5 proposes to remove (decommission) 54 miles of ML 1 and 2 roads from the NFTS. Approximately 10 miles (19 percent) were rated as a high risk erosion hazard rating, while the remaining 44 miles were rated moderate and low erosion hazards. All roads that are decommissioned are considered beneficial to long term soil productivity, especially those with high erosion hazard ratings since roads with these ratings are likely to have higher risk of tread wear and erosion hazard rates, and subsequent sedimentation and water quality risks. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to soils and water quality, measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate.

Soil productivity would be expected to eventually return on a total of 108 acres.

Direct and Indirect Effects of Restoration of Drainage Patterns

Under Alternative 5, 135 miles of unauthorized routes and would receive restoration of drainage patterns that includes both active and/or passive restoration treatments. Examples of active restoration treatments include waterbarring, rolling dips, removal of culverts and associated fills. Passive restoration includes the placement of a vehicle barrier at the entrance or junction to a road or route. The objective is to prevent motorized use and promote the passive restoration of the travelway (vegetation recovery).

General direct and indirect effects of unauthorized motorized routes were previously discussed in the soil resources section common to all alternatives and include loss of soil site productivity through soil compaction (past effects during creation of unauthorized motorized routes) and offsite soil productivity through erosion (current indirect effect). Table 97 shows the range of erosion hazard ratings for the 135 miles of unauthorized routes that will not be added to the NFTS. Of these 135 miles to be restored, approximately 85 (63 percent) were rated as having a high erosion hazard rating, while the remaining 47 percent have a low or moderate erosion hazard rating. Routes that have a high erosion hazard ratings, in the short-term, have a greater potential for continued indirect, off-site impacts to soils and watershed resources even though these routes will receive some form of active or passive treatment. Active treatments will have more success in reducing erosion and accelerating the timeframe for revegetation and improved soil productivity, especially those that have high erosion hazard ratings.

Passive restoration of drainage patterns on UARs will also be beneficial to long term soil productivity and recovery, but will be achieved over a longer time period. Over time, affected soils would gradually recover through revegetation, and a gradual decompaction of remnant soil. Vegetation regrowth on these routes is anticipated to accelerate in the long-term and further reduce the risk of soil erosion. Stems that grow on the route surface will intercept surface runoff, slowing and shortening the flow path to reduce the occurrence of concentrated runoff that leads to on-site and off-site erosion and impacts to water resources. By barricading of UARs and restricting future motorized use, erosion, compaction and other detrimental soil conditions would be reduced. Decompaction of the A horizon and vegetation regrowth is typically not limited due to the high level of winter precipitation and natural vegetation recovery found within the Smith River NRA. Active restoration of unauthorized routes (primarily waterbarring) will occur on those UARs that have been identified as posing a high or moderate watershed risk (see Water Quality section) and those that have existing erosion problems.

Soil productivity would be expected to eventually return on a total of 270 acres.

Direct and Indirect Effects of Resource Risk Mitigations

Resource risk mitigations apply to NFTS current and proposed roads and trails to reduce risk and impacts to resources, including soils. When resource risks were identified as high or moderate in the Travel Analysis Process, mitigations are required to reduce the risk to an acceptable level. Stormproofing treatments would provide the greatest benefit to soil resources by addressing existing and potential surface erosion and drainage needs.

Barricades

This alternative would barricade 135 miles of unauthorized routes not added to the NFTS. Of this total, about 76 miles (56 percent) were determined to have a high erosion hazard rating. This would result in similar effects to soil resources previously described as passive restoration, and be an overall benefit to soil productivity.

Seasonal Gate Closure

This alternative would also place 39 miles of NFTS roads and motorized trails of season-of-use that would be reinforced through seasonal gate closures. By placing gates on these NFTS routes, motorized

use would be restricted to when routes are dry, thereby reducing risk of road-related erosion and potential sedimentation. There would be no change in overall soil productivity.

Stormproofing

Stormproofing treatments would be applied to 22 miles of NFTS roads and motorized trails with a moderate or high watershed risk, which would benefit soil productivity by reducing on and off-site erosion, both short term and long term, depending on the type of specific treatment. These routes are targeted because they have been identified through watershed inventories as having existing or potential erosion and sediment sources. Of the 22 miles, 15 miles (68 percent) are rated as high erosion hazards, so treatments on these roads would be especially beneficial in reducing soil impacts.

Overall soil productivity would remain unchanged, although indirect benefits to soil productivity would be achieved by reducing onsite erosion and potential for off-site erosion and sedimentation.

Cumulative Effects

Soil productivity would be adversely affected on all routes and facilities that are added to the NFTS through this project or through ongoing and foreseeable road-related actions. The ongoing and foreseeable road-related actions are described in the Water Quality Cumulative Effects section of the FEIS. Soil conditions should improve with eventual natural loosening of the compacted soil and revegetation of decommissioned roads, active/passive restoration of drainage patterns on unauthorized routes, and resource risk mitigation treatments.

Implementation of Alternative 5 overall would result in 20 miles (40 acres) of unauthorized routes added to the NFTS as motorized trails and roads, thereby resulting in a long term negative effect to soil productivity. This alternative would also decommission, restore and close 189 miles (378 acres) of unauthorized roads and NFTS roads, resulting in a long term beneficial effect for soil productivity. Overall, a net benefit of 106 acres of the soil resource should improve or be restored.

Alternative 6

Alternative 6 is the preferred alternative. It represents much of the collaborative group recommendations of 2010 and issues raised by the public concerning dispersed recreation opportunities. When compared to Alternative 3 (modified proposed action), this alterative provides for more dispersed recreation opportunities and restores soil productivity to more unauthorized routes not added to the NFTS. Mixed-use designation on 17N49 (0.4 miles) and parking areas are also proposed.

Direct and Indirect Effects of Changes to the NFTS

Routes Added to the NFTS

Alternative 6 would add 42 miles of motorized trails and 12 miles of road to the NFTS that are currently unauthorized routes. Approximately 40.4 miles (75 percent) of routes to be added to the NFTS as motorized routes have a high erosion hazard risk rating which indicates that there is the potential for tread wear of the facility and increased risk of soil erosion and potential for sedimentation. The remaining 13.6 miles (25 percent) of routes to be added to the NFTS have a moderate to low erosion hazard rating.

Under this alternative, 6 (3.4 miles) of the 36 inventoried sites that have varying degrees of rilling and rutting erosion occur on the unauthorized routes proposed to be added. These sites are displayed in Table 96 below. All routes identified with erosion will have water bars installed to disperse water and reduce risk of erosion and offsite impacts, either through maintenance improvements associated with adding routes to the NFTS, or under the restoration of drainage patterns on unauthorized routes action.

Table 96. Unauthorized motorized routes to be added to NFTS that have rilling or rutting

ID	Length (miles)	ID	Length (miles
427.105	0.29	305.130	1.13
427.106	0.09	1749.7A	0.81
17N49.11P	0.19	1749.102	0.90
Total=3.4			

When adding unauthorized motorized routes to the NFTS, it is important to understand what risks those routes will have regarding tread wear and loss of usability of the facility (e.g. erosion, rilling, gullying, etc.) and the off-site effects of the tread wear. The potential for impacts to watershed resources associated with adding UARs to the NFTS does exist, especially on those with high erosion hazard ratings. Some routes have the potential to erode but are not located near a stream channel. Nevertheless, even if there is not a risk to water quality, then there is risk to off-site soil resources associated with gullying and loss in off-site productivity. On the unauthorized routes to be added as NFTS, mitigation measures to lessen the impacts to soil resources would occur on all high risk routes proposed to be added. Mitigations to be applied were discussed in detail in Alternative 3.

Upgrading ML1 (closed) Roads

This alternative would move 4.2 miles of ML 1 (closed) roads to ML2 (open) status. Of this total mileage, 1.0 miles (25 percent) are rated as high erosion hazards, while the remaining 3.0 (75 percent) miles have a moderate or low erosion hazard. The ML1 roads with high erosion hazard ratings are subject to have higher overall erosion rates and may require additional road maintenance treatments to address erosion risk. The direct and indirect impacts to soils by changing maintenance levels would result in improvements to on and off-site erosion and potential sedimentation since these roads would receive much needed road maintenance treatments, such as surface rocking, drainage structures, and culvert replacements or additions. However, by opening these roads that have been previously closed to motorized vehicles, there would be a slight increase in risk of road-related erosion and potential sedimentation associated with increased motorized traffic. These routes are not expected to receive a lot of use, and road maintenance improvements and inspections should address these concerns. Soil productivity will remain foregone on these 4 miles (8 acres).

Downgrading ML2 (open) Roads

This alternative would downgrade 21 miles of ML2 (open) roads to ML 1 (closed). Of this total, approximately 7 miles (33 percent) are rated as high erosion hazards. Downgrading of roads, especially those in the high erosion hazard ratings category, would result in lower overall tread wear and road-related erosion due to road closure and road maintenance treatments associated with placing roads into storage ML 1. These treatments include waterbarring and other stormproofing techniques designed to reduce potential erosion, sedimentation and diversion potential. There would be no change in overall soil productivity, with 42 acres remaining in an unproductive state.

Decommissioning Roads

Alternative 6 proposes to remove (decommission) 54 miles of ML 1 and 2 roads from the NFTS. Approximately 10 miles (19 percent) were rated as a high risk erosion hazard rating, while the remaining 44 miles were rated moderate and low erosion hazards. All roads that are decommissioned are considered beneficial to long term soil productivity, especially those with high erosion hazard ratings since roads with these ratings are likely to have higher risk of tread wear and erosion hazard rates, and subsequent

sedimentation and water quality risks. Roads removed from the NFTS would be decommissioned using heavy equipment. All culverts and associated fill would be removed and stored at stable locations. The travelway may be outsloped or decompacted and motor vehicle barriers will be installed. Because road decommissioning can result in short-term impacts to soils and water quality, measures such as; mulching, seeding, outsloping, waterbars, rip rap placement, and re-establishment of natural drainage pathways, restoring the stream channel to natural configuration (channel bottom widths and side slope gradients match the surrounding topography) would be implemented where appropriate.

Soil productivity would be expected to eventually return on a total of 108 acres.

Direct and Indirect Effects of Restoration of Drainage Patterns

Under Alternative 6, 101 miles of unauthorized routes and would receive restoration of drainage patterns that includes both active and/or passive restoration treatments. Examples of active restoration treatments include waterbarring, rolling dips, removal of culverts and associated fills. Passive restoration includes the placement of a vehicle barrier at the entrance or junction to a road or route. The objective is to prevent motorized use and promote the passive restoration of the travelway (vegetation recovery).

General direct and indirect effects of unauthorized motorized routes were previously discussed in the soil resources section common to all alternatives and include loss of soil site productivity through soil compaction (past effects during creation of unauthorized motorized routes) and offsite soil productivity through erosion (current indirect effect). Table 97 shows the range of erosion hazard ratings for the 101 miles of unauthorized routes that will not be added to the NFTS. Of these 101 miles to be restored, approximately 56 (55 percent) were rated as having a high erosion hazard rating, while the remaining 45 percent have a low or moderate erosion hazard. Routes that have a high erosion hazard rating, in the short-term, have a greater potential for continued indirect, off-site impacts to soils and watershed resources even though these routes will receive some form of active or passive treatment. Active treatments will have more success in reducing erosion and accelerating the timeframe for revegetation and improved soil productivity, especially those that have high erosion hazard ratings.

Passive restoration of drainage patterns on UARs will also be beneficial to long term soil productivity and recovery, but will be achieved over a longer time period. Over time, affected soils would gradually recover through revegetation, and a gradual decompaction of remnant soil. Vegetation regrowth on these routes is anticipated to accelerate in the long-term and further reduce the risk of soil erosion. Stems that grow on the route surface will intercept surface runoff, slowing and shortening the flow path to reduce the occurrence of concentrated runoff that leads to on-site and off-site erosion and impacts to water resources. By barricading of UARs and restricting future motorized use, erosion, compaction and other detrimental soil conditions would be reduced. Decompaction of the A horizon and vegetation regrowth is typically not limited due to the high level of winter precipitation and natural vegetation recovery found within the Smith River NRA. Active restoration of unauthorized routes (primarily waterbarring) will occur on those UARs that have been identified as posing a high or moderate watershed risk (see Water Quality section) and those that have existing erosion problems.

Soil productivity would be expected to eventually return on a total of 202 acres.

Direct and Indirect Effects of Resource Risk Mitigations

Resource risk mitigations apply to NFTS current and proposed roads and trails to reduce risk and impacts to resources, including soils. When resource risks were identified as high or moderate in the Travel Analysis Process, mitigations are required to reduce the risk to an acceptable level. Stormproofing treatments would provide the greatest benefit to soil resources by addressing existing and potential surface erosion and drainage needs.

Barricades

This alternative would barricade 101 miles of unauthorized routes not added to the NFTS. Of this total, about 55 miles (55 percent) were determined to have a high erosion hazard rating. This would result in similar effects to soil resources previously described as passive restoration, and be an overall benefit to soil productivity.

Seasonal Gate Closure

This alternative would also place 39 miles of NFTS roads and motorized trails of season-of-use that would be reinforced through seasonal gate closures. By placing gates on these NFTS routes, motorized use would be restricted to when routes are dry, thereby reducing risk of road-related erosion and potential sedimentation. There would be no change in overall soil productivity.

Stormproofing

Stormproofing treatments would be applied to 81 miles of NFTS roads and motorized trails with a moderate or high watershed risk, which would benefit soil productivity by reducing on and off-site erosion, both short term and long term, depending on the type of specific treatment. These routes are targeted because they have been identified through watershed inventories as having existing or potential erosion and sediment sources. Of the 81 miles, 56 miles (69 percent) are rated as high erosion hazards, so treatments on these roads would be especially beneficial in reducing soil impacts.

Overall soil productivity would remain unchanged, although indirect benefits to soil productivity would be achieved by reducing onsite erosion and potential for off-site erosion and sedimentation.

Cumulative Effects

Soil productivity would be adversely affected on all routes and facilities that are added to the NFTS through this project or through ongoing and foreseeable road-related actions. The ongoing and foreseeable road-related actions are described in the Water Quality Cumulative Effects section of the FEIS. Soil conditions should improve with eventual natural loosening of the compacted soil and revegetation of decommissioned roads, active/passive restoration of drainage patterns on unauthorized routes, and resource risk mitigation treatments.

Implementation of Alternative 6 overall would result in 54 miles (108 acres) of unauthorized routes added to the NFTS as motorized trails and roads, thereby resulting in a long term negative effect to soil productivity. This alternative would also decommission, restore and close 155 miles (310 acres) of unauthorized roads and NFTS roads, resulting in a long term beneficial effect for soil productivity. Overall, a net benefit of 202 acres of the soil resource should improve or be restored.

Summary of Soils Effects Analysis across All Alternatives

Effects to soil resources are summarized by ranking each indicator for each alternative. Table 97 provides the numeric value of the indicator and the relative ranking among alternatives in parenthesis. Higher ranks (5) indicate more benefits and/or less adverse effects to soil resource for that alternative and lower ranks (1) indicate least benefits and/or most adverse effects to soil resources. Rankings are average for each alternative.

Table 97. Comparison of effects to the soil resource by miles

Indicators - Soil Resource	Rankings of Alternatives for each Indicator				
	Alternative 1 – No Action	**Alternative 3 – Modified Proposed Action**	**Alternative 4**	**Alternative 5**	**Alternative 6**
Unauthorized Routes Added to the NFTS					
Miles of UARs added as motorized trails or NFTS roads by EHR (High, Mod and Low)-	High EHR – 0 Mod and Low - 0 (1)	High EHR – 43 Mod and Low – 16 (3)	High EHR – 56 Mod and Low – 18 (2)	High EHR – 8.3 Mod and Low -2.8 (5)	High EHR – 37.9 Mod and Low – 4.6 (4)
Decommissioning Roads					
Miles of NFTS Roads to be decommissioned by EHR (High, Moderate and Low)	High EHR – 0 Mod and Low – 0 (1)	High EHR – 9.9 Mod and Low – 40.7 (2)	High EHR – 10.1 Mod and Low – 40.1 (3)	High EHR – 10.1 Mod and Low – 40.1 (3)	High EHR – 10.1 Mod and Low – 41.5 (3)
Restoration of Unauthorized Routes					
Miles of UARs restored drainage pattern by EHR (High, Mod and Low)	0 miles (1)	High EHR – 44.7 Mod and Low -34.3 (3)	High EHR – 33.9 Mod and Low -34.4 (2)	High EHR – 85.4 Mod and Low-47.1 (5)	High EHR – 54.5 Mod and Low-39.1 (4)
Stormproofing Roads					
Miles of NFTS Roads Receiving Stormproofing Treatments	0 miles (1)	81miles (3)	97 miles (4)	22 miles (2)	81 miles (3)
Soils Cumulative Effects					
Soils Cumulative Effects- Acres of net soil productivity improved	Forgone-310 ac Improved/Restored – 0 acres Net improved (1)	Forgone – 118 Improved/Restored-268acres Net-150 ac improved (3)	Forgone – 148 Improved/Restored-254 acres Net 106 ac improved (2)	Forgone – 40 Improved/Restored-648 acres Net 608 ac improved (5)	Forgone -104 Improved/Restored-512 acres Net 408 ac improved (4)
Average Ranking for Soil Resource	1.0	2.8	2.6	4.0	3.6

EHR=erosion hazard rating

Comparison of Alternatives

Comparison of the soil resource indicators in Table 97 shows that the indicators do not provide a wide range between the action alternatives, although Alternative 5 does have an overall higher average ranking for the soil resource criteria used, followed by Alternative 6. The direct affect to the soil resources has already occurred and is similar under all alternatives. Alternatives 5 and 6 show less impacts to soils than the other action alternatives primarily due to more restoration of unauthorized routes and decommissioning than Alternatives 3 and 4. The main difference between the action alternatives is the ability of the unauthorized routes to recover, through both active and passive restoration, decommissioning and other treatments. The extent of the prohibition of motorized vehicles varies considerably by action alternative. The ability to recover is based on existing erosion and inherent site characteristics (e.g. slope steepness, erosion hazard rating).

When considering the full array of additions, closures, restore of unauthorized routes, and decommissioning, Alternative 5 has the least impact to soil resources and Alternative 1 the greatest. Under Alternative 5, there would be the least likelihood of indirect and off-site impacts due to the prohibition and associated lack of increased motorized tread wear and off-site impacts from these trails and NFTS routes. Alternative 5 also provides the greatest net acres of soil productivity improved and restored in the long term with 608 acres, followed by Alternative 6 with 408 acres. Alternative 3 and 4 are notably less net acres of soil productivity improved, with 150 and 106 acres respectively.

Compliance with the Forest Plan and Other Direction

A list of Standards and Guidelines and Best Management Practices that apply to this project are included in Appendix E of the DEIS. All Standards and Guidelines and BMPs apply to all action alternatives. Mitigation measures were proposed to have compliance with the Forest Plan and Clean Water Act. Alternative 1 would not be in compliance with the Forest Plan and Clean Water Act. This alternative allows for the creation of additional unauthorized routes where soil productivity could be compromised in the long term.

Under any action alternative, substantial gains in soil productivity will be realized in the long term due to restorative treatments to the NFTS roads, primarily decommissioning, restoration of drainage patterns, barricades and stormproofing. These treatments are consistent with Forest Plan direction. By definition NFTS roads and trails and other areas not dedicated to growing vegetation are not considered areas to which Soil Quality Standards are applied. Therefore, any route or area already within the NFTS or brought into the NFTS by any alternative considered in this plan is not subject to the regional or national standards of soil productivity. However, all action alternatives address the need to protect and improve soil resources, and all action alternatives include project design criteria and BMPs to minimize off-site soil movement.

Geology

Forest management activities, including the designation, development and maintenance of transportation systems, can result in ecosystem damage when the activity's location, design, construction, or implementation are not based on an understanding of geologic conditions and geomorphic processes.

Geologic resources are important underlying elements of all aspects of National Forest System lands. Geology influences watershed morphology and response, soil types, and other essential aspects of National Forest System (NFS) lands. Geologic resources managed on NFS lands include locatable and common variety mineral deposits, caves, paleontological resources, geologic special interest areas, and groundwater. Geologic hazards can impact public safety on National Forest System lands. Hazards can

include slope stability issues, mining-related hazards and public health concerns such as naturally occurring asbestos.

The pertinent geologic hazards within the project area are active landslides, unstable slopes and areas which have the potential to contain naturally occurring asbestos. The project area on the Six Rivers National Forest does not have any known significant paleontological sites, caves, or groundwater aquifers. Mineral exploration and development would not be affected by motorized travel management.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

The following statutory authorities govern geologic resources and services activities essential to Forest Service programs:

Forest and Rangeland Renewable Resources Planning Act of August 17, 1974 (RPA) (88 Stat. 476; 16 U.S.C. 1600-1614) as Amended by National Forest Management Act of October 22, 1976 (90 Stat. 2949; 16 U.S.C. 1609). This act requires consideration of the geologic environment through the identification of hazardous conditions and the prevention of irreversible damages. The Secretary of Agriculture is required, in the development and maintenance of land management plans, to use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences.

Asbestos Airborne Toxic Control Measure (ATCM) for Surface Application: The ATCM rule was adopted by the California Air Resource Board (CARB) in 1990 and amended in 2000. The amendment lowered the asbestos content to 0.25 percent for asbestos-bearing ultramafic rock materials used for surfacing applications subjected to vehicular, pedestrian or non-pedestrian use, such as cycling and horseback riding. In remote areas the naturally occurring asbestos content can be as high as one percent without concern.

Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 U.S.C. 4301 et seq). This act provides that Federal lands be managed to protect and maintain, to the extent practical, significant caves.

Region 5 Regional Forester's Direction on Naturally Occurring Asbestos issued February 11, 2009: The regional forester provided direction on addressing naturally occurring asbestos on National Forest lands in California. "Any land management decisions regarding naturally occurring asbestos must be based on sound data and analysis. According to EPA, the scientific assessment and identification of actual public health risks associated with naturally occurring asbestos is a complex and time intensive process. Until such studies are performed, the Region will not have definitive information regarding actual employee and public health risks posed by naturally occurring asbestos on national forest lands. Therefore, no decisions are being made or direction issued at this point in time to restrict or alter public access to and/or recreational use of the national forests." The letter further directs forests to make the public aware of the potential risk of naturally occurring asbestos and its presence on National Forest lands as well as guidance on how visitors can reduce their exposure to the substance.

Region 5 Regional Forester's Naturally Occurring Asbestos Clarification on Interim Direction issued June 30, 2009:

The last sentence (as quoted above) is directed at public access or recreational use that is currently permitted on the forests. Any new proposed activities or projects on the forests that require NEPA would analyze naturally occurring asbestos just like any other environmental hazard or concern.

As an example, a forest would not add unauthorized trail segments to the travel management plan until analysis of the segment for naturally occurring asbestos, water quality issues, fisheries or other issues of concern were analyzed.

Six Rivers Land and Resources Management Plan (Forest Plan) - 1994

There are three areas pertaining to geologic resources within the Forest Plan that influence this project. They are the Physical Environment, Special Interest Areas (SIAs) and Riparian Reserves.

Physical Environment:

Geology

Goals

- The primary management goal is maintenance of long-term soil productivity and high water quality.
- Identify geologic hazards and minimize the impacts from management activities on streams and facilities.
- Plan and conduct all forest management activities to maintain existing water quality or, where degraded, restore water quality to meet State water quality standards for the North Coast Region.
- Maintain the integrity of watersheds and riparian ecosystems, including riparian zones, for the protection or enhancement of riparian-dependent resources.

Direction

- Manage soil and water resources to protect and enhance long-term productivity of the forest, water quality, associated beneficial uses, and aquatic ecosystems.
- Program emphasis is to avoid or mitigate the impacts of management activities on slope instability, water quality and soil productivity.
- Identify watershed improvement needs to be included on the Forest's Watershed Improvement Needs Inventory. Prioritize projects based on severity, needs, effects on beneficial uses, and potential for recovery.
- Design all resource management activities to meet State water quality criteria. Best Management Practices will be applied in planning, implementation and maintenance of all Forest activities as means to achieve water quality standards. Proper installation, operation and maintenance of State approved BMPs are presumed to meet the manager's obligation for compliance with applicable water quality standards as well as compliance with the Clean Water Act (EPA, Water Quality Standards Handbook, Chapter 2. 1987/ MAA with SWRCB 1981.)
- Assessments of the cumulative effects of project level activities on soil and water resources will be provided during project analysis at whatever level of analysis is necessary (site, watershed, or basin).

Soil Erosion and Mass Movement

Standards and Guidelines

- 1-6. The potential for increased mass movement and soil erosion will be addressed for proposed timber harvest and road building. Landslide hazard maps and a risk assessment should be developed for timber harvest planning. Alternate road specifications or road locations should be evaluated where proposed management would increase the potential for mass movement and soil erosion.
- 1-7. Roads, landings, and timber harvest units will be located and designed to avoid triggering or accelerating mass movements that would adversely affect a stream or degrade a commercial timber growing site by removing a substantial volume of topsoil.

Management Area 10: Special Interest Areas (SIAs)

Fisheries, Wildlife, Watershed Management

Standards and Guidelines

- Adverse impacts to riparian/wetland areas shall be mitigated through educational means, barrier placement, fencing, or access closure.

Recreation

Standards and Guidelines

- The Recreation Opportunity Spectrum (ROS) classes provided within these areas include roaded natural, semiprimitive motorized and semiprimitive nonmotorized. Opportunities exist to manage portions of the areas as semiprimitive nonmotorized to avoid resource conflicts.
- Primitive camping is permitted in designated areas. Campsites will be located to minimize adverse impacts. Impacts associated with heavy visitor use may warrant site closure for camping or the development of appropriate support facilities.
- Recreational access will be determined on an area-by-area basis.

Transportation and Facilities

Standards and Guidelines

- Development of water and rock sources, stockpiling of rock materials and water sources within the areas are not compatible with the management direction for SIAs.
- Roads which are identified as contributing to resource damage shall be repaired to mitigate the problem, closed on a seasonal or year-round basis, or decommissioned. The course of action will depend on the severity of the resource problem and the potential for continued damage.
- Consider existing routes (old roads, trails) within the areas for designation as multiple-use routes where possible and appropriate. If identified as appropriate during SIA recreation planning, use existing routes for public access. Construct new routes as necessary to direct use so as not to impact sensitive areas and/or to encourage access to areas with interpretive values.

Management Area 9: Riparian Reserves

Riparian Reserve Widths

This direction was taken from the FSEIS ROD pages C-30 to C-31.

Riparian reserves are specified …..as follows (only the specifications which pertain to geologic areas are listed here):

- The extent of unstable and potentially unstable areas (including earthflows)

Standards and Guidelines

- This direction was taken from the FSEIS ROD pages C-31 to C-38.
- As a general rule, standards and guidelines for riparian reserves prohibit or regulate activities in riparian reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance is required to change Riparian Reserve boundaries in all watersheds.

Recreation

Standards and Guidelines

- New recreational facilities within riparian reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.
- Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

Transportation and Facilities

Standards and Guidelines

For each existing or planned road, meet Aquatic Conservation Strategy objectives by:

- Minimizing road and landing locations in Riparian Reserves.
- Preparing operation and maintenance criteria that govern road operation, maintenance, and management.
- Minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.
- Minimizing sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is not feasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.
- Regulating traffic during wet periods to prevent damage to riparian resources.

Effects Analysis Methodology

This section describes the methodology and assumptions used for the effects analysis of the alternatives. Impacts relevant to geologic hazards, resource specific assumptions, resource indicators, sources of information, timeframes (short-term and long-term), and spatial boundary of the effects analysis are addressed. The information and methodology behind the effects analysis is based on the best available science and is cited in this document.

The effects analysis will focus on the methodology and indicators for addressing the direct and indirect effects of each of the four types of actions that are elements of the alternatives, and the cumulative effects of implementing an alternative including the effects of ongoing and reasonably foreseeable actions.

Assumptions Specific to the Geological Resource Analysis

For every scientific analysis, it is necessary to make some assumptions. For this project, the assumptions made are necessary because: 1) variable geologic conditions are present on the ground: 2) the routes already exist: and 3) the project area is large.

See the Introduction to Chapter 3 for a list of common assumptions and limitations. The geology effects analysis assumptions are common to each of the 4 types of action within each alternative.

- The stability of active landslides, toe zones, landslide deposits and inner gorges is sensitive to ground-disturbing activities and concentration of water from roads. Gouging and gullying on these sensitive areas due to motorized travel on the hillslopes and the road surfaces can concentrate water, increasing the landslide potential.
- Users will stay on National Forest Transportation System (NFTS) roads and designated routes.
- While there existing impacts from unauthorized routes, this analysis treats the routes as though they are not in use, as they are not on the current Motor Vehicle Use Map (MVUM), and any such use is currently illegal.
- Most of the unauthorized routes considered in this analysis were established through repeated use by motor vehicles and do not have cuts and fills.
- Where necessary, routes will receive mitigations (i.e. waterbars) prior to allowed use.
- Road maintenance, especially on roads with cuts and fills, can reduce landslide risk. Maintenance activities (such as cleaning culverts and ditches) maintain drainage, keep water off road surfaces, and reduce the potential for failures of fills.
- All designated routes will receive trail maintenance which will adequately prevent water from concentrating on the route surface. Trails maintenance is largely focused on keeping waterbars effective.
- Routes in sensitive terrain (dormant and active landslides) are more likely to instigate mass wasting than routes on stable terrain.
- Routes already on the landscape that pose a threat to slope stability will not fully recover without restoration; therefore, the impacts to slope stability will continue, at least in the short term, until restoration of undesignated routes is complete.
- Hillslope hydrology altered due to re-routing of water by the existing road prism will be corrected when: a) existing unauthorized routes that are not added to the NFTS are restored to natural drainage patterns; b) designated routes with altered hydrology are improved to route water more naturally; or c) NFTS roads with drainage problems are stormproofed.
- Vegetation recovery will ultimately reduce, but not eliminate, the landslide potential in currently disturbed areas.
- The timeframes for this analysis are based on measurable changes in landslide potential in the Forest due to revegetation of disturbed areas. A short-term timeframe of 1-5 years is defined, based on the amount of time it typically takes for vegetation of to become reestablished after a disturbance has been discontinued. At 5 years the root support from the vegetation begins to stabilize the ground and landslide potential begins to decrease measurably. A long-term timeframe of 50 years is defined, based on revegetation by large trees, which provide significant root support and hydrologic relief to unstable land. Root support, interception of precipitation and evapotranspiration can substantially reduce the landslide potential of an unstable hillslope.
- All areas underlain by ultramafic bodies are considered to potentially contain naturally occurring asbestos unless testing indicates otherwise. Serpentine and ultramafic bedrock is more likely to contain naturally occurring asbestos than other bedrock types found within the project boundary. Published geologic maps accurately represent the extent of these rock types (Harper, 1980; Irwin, 1994; USDA Forest Service, 2012).

Data Sources

Smith River Roads Analysis and Off Highway Vehicle Strategy (2005)

A synthesis of existing data, aerial photo reconnaissance, and field investigation provided ratings of mass wasting potential related to existing roads and routes in the analysis area. These ratings were carried forward in the risk-need table used for this analysis.

GIS Analysis

The inventoried transportation network was analyzed with respect to sensitive geologic terrain and rock types known to have the potential to bear naturally occurring asbestos. These results were used to compare the proposed activities under each alternative with the selected geo-indicators. The bedrock and geomorphic data were derived from the Northern Province and Six Rivers National Forest GIS spatial geodatabases for bedrock geology, geomorphology and active landslides. (USDA Forest Service 2012, 2013).

Naturally Occurring Asbestos Sampling

Sampling of a selection of road and route surfaces for asbestos concentrations across the Six Rivers National Forest, including the analysis area, was conducted by a contractor (Engineering/Remediation Resources Group, Inc. or EERG) for the Forest Service. The results of this sampling are discussed in the affected environment section below.

Indicators

Geologic changes occur not only over spans of geologic time, but also at observable intervals of time that can be monitored or measured. Geo-indicators have been developed by the International Union of Geological Sciences as high-resolution measures of short-term changes in the geologic environment, which are important for environmental monitoring and assessment for use in environmental reporting and ecosystem management (FSM 2880.61, paragraph 2).

The following indicators will be used to compare the differences in geological effects between alternatives:

Slope Stability

Slope stability is a concern both in a route‘s role in potential landslides, and how a landslide would affect a route. Roads affect hillslope hydrology and can concentrate surface runoff onto sensitive ground, increasing the potential for landslides. Damage to routes as a direct or indirect result of slope instability is a potential physical hazard to motorists. The sediment delivered to streams and hillslopes by landslide activity can be exacerbated by the presence and use of routes.

Metric: Miles of road or route located on mapped dormant or active landslides.

Asbestos Hazard

Asbestiform minerals are naturally-occurring fibrous silicate minerals that are commonly associated with ultramafic rock, including serpentinite (Van Gosen 2007). Asbestos exposure has been associated with several forms of lung and esophagus diseases. In order for asbestos to be a public health issue it must be released as dust into the air and inhaled by a human. The greatest potential risk related to motorized travel occurs when dust is generated by vehicle passage over a native surface that is high in asbestos. Inhalation hazard is particularly high in an open, as opposed to enclosed, vehicle traveling close behind another vehicle, and at higher speeds such as on a mixed-use road on a straight road segment.

Metric: Miles of road or route located on mapped ultramafic rock.

The following indicators were considered, but not chosen for effects analysis, because effects of proposed activities related to these indicators would not occur at a measurable or significant level:

Groundwater

Groundwater sensitive areas are areas within a municipal groundwater basin (California Department of Water Resources) or in zones of permeable rock (alluvial deposits, fault zones, young lava flows, and caves). The risk to groundwater quality by the addition of routes to the NFTS or changing the class of existing NFTS routes will have a negligible impact on water quality. Vehicle accidents are uncommon on NFTS routes, and any spills from a vehicle accident would likely consist of small amounts of vehicle fluids. The primary issue of concern with open roads and groundwater is potential groundwater pollution as a result of large fluid spills such as overturned tanker trucks or large diesel spills from an accident. Any large spills of hazardous fluids initiate an emergency response from the Forest Service, California Department of Fish and Game, and other affected agencies with the purpose of immediate containment, control, and mitigation in order to minimize impacts to groundwater quality. Catastrophic spills are not considered to be an action related to this project, and their impacts cannot be meaningfully evaluated. In light of this, the impact to groundwater will not be addressed further in this analysis.

Unique Geologic Areas

Easier access to special interest areas, natural research areas and caves may increase the frequency of visits to the location. (There are no known caves in the analysis area, nor are there any designated geologic special interest areas. Four special interest areas related to botany are located within the analysis area, and they are also noteworthy for unique geologic characteristics.) Enhanced access in itself is not detrimental to the resource. However, increased access to unique geologic areas has the potential to increase vandalism in sensitive areas. There has been little to no notable damage to the resource thus far, and a minimal length of routes (approximately two miles) is proposed to be added to the transportation system in any alternative that pass through or to the unique geologic areas. Therefore, the risk to unique geologic areas from this project is considered to be minimal.

Paleontological Resources

There are sparse paleontological resources in the analysis area. The most noteworthy are plant fossils that have been found in the Wimer Formation, mostly in the vicinity of French Flat. While some existing roads and proposed routes do pass through or in the vicinity of mapped Wimer outcrops, to date there has been little to no notable damage to these paleontological resources. Therefore, the risk of destruction of paleontological resources is minimal and will not be addressed further in this analysis.

Effects Analysis Methodology by Action – Direct and Indirect Effects

The two indicators selected for effects analysis are used to evaluate the direct and indirect effects of each of the four types of actions (listed below) for each alternative. Direct effects are those effects which are caused by the project actions and which occur at the same time and place as the action. Indirect effects are those caused by the action, which occur later in time or removed in distance from the location of the action. Direct and indirect effects of each project alternative will be analyzed and compared separately for the four action components:

I. Additions to the NFTS

Some action alternatives propose designation of unauthorized roads and trails for addition to the NFTS, and identify vehicle class and, if appropriate, season of use for those proposed additions. Where resource risks related to the presence or use of these routes have been identified, mitigation measures including seasonal gate closure, road surface improvement, route delineation, posting of speed limits, dissemination

of public information regarding risks, and route drainage improvement are proposed as conditions of adding the facilities to the NFTS. These types of mitigations are described in detail in the Alternative Descriptions (Chapter 2), and in Chapter 3 by discipline. Although all of the routes proposed for designation currently exist on the landscape (no new construction is proposed), these additions are analyzed with respect to any additional slope stability hazard or asbestos exposure hazard they may present compared to the existing authorized road system (the NFTS represented on the MVUM). Implementation of the mitigation measures listed above should reduce the risks described by both geo-indicators. A few routes would be added to the NFTS as closed (ML 1) roads; therefore the potential asbestos exposure hazard to the public on these routes would not change. Any reduction in risk levels from proposed mitigations is difficult to quantify; therefore the analysis treats all proposed added mileage as presenting equal risk as measured by the geo-indicators.

Analysis Method: Comparison of alternatives by GIS analysis of length in miles of proposed additions to the NFTS (route designation) by indicator - a) tabulation of mileage of proposed additions within areas of active or dormant landslides; b) tabulation of mileage of proposed additions (excepting those added as ML1) within mapped areas of ultramafic bedrock.

II. Changes to road maintenance status, vehicle class and season of use

The action alternatives include limited changes to the vehicle class and other use restrictions on existing NFTS roads and/or trails. The proposed limited changes to the existing NFTS road network include designating mixed-use (managing a given route as both a motorized trail and a road), upgrading roads from maintenance level 1 to 2, downgrading roads from maintenance level 2 to maintenance level 1, and changing the season of use (wet season closures of some roads). Also, three alternatives propose designating parking areas adjacent to Road 17N49 on Gasquet Mountain, a popular destination for off-highway vehicle use. Resource risk mitigations as described above may apply.

This action component is difficult to analyze effectively with regard to slope stability, even qualitatively. Mass wasting and surface erosion depend on hydrologic-topographic interactions which are site-specific. On roads which intercept and concentrate groundwater or overland surface flow, the mass wasting potential due to the road would in most cases remain the same. Concentrated water would continue to saturate or otherwise undermine the stability of the hillslope or fill, regardless of the type or season of use. Road closure without decommissioning can increase slope instability because regular inspection and maintenance of road drainage is eliminated. However, roads with high hydrologic or geologic risk have already been identified and proposed for drainage improvements or decommissioning during roads analysis. Also, Maintenance Level 1 roads, when closed, are left in a free-draining state that should reduce failure potential related to drainage concentration. For higher maintenance level roads, even substantial changes in traffic patterns are unlikely to have measurable effects on slope stability, except where the factor of safety for a given natural hillslope or road prism is already very close to failure conditions. Given these considerations, no quantitative analysis of changes in slope stability hazard related to changes in NFTS classification has been attempted.

Likewise, there are unlikely to be detectable differences in effects to health risks due to these actions. Wet season closures would likely slightly reduce the overall immediate risk from landslide impacts to motorist safety, but the aggregate risk would change little due to light winter use of routes. The change in type or season of use of the existing NFTS will not alter the presence of naturally occurring asbestos along roadways. Seasonal differences in use may change the degree of exposure to potentially hazardous asbestos-bearing dust, but since seasonal closures would occur in the wet season, when route usage is lighter, and increased moisture tends to reduce the ability of dust to become airborne, this action would probably effect a minor reduction if any in overall exposure risk. Designation of mixed-use and the designation and improvement of parking areas may slightly increase the risk of asbestos exposure due to

increased visitor use in an area of known ultramafic and naturally occurring asbestos presence. However, these changes in risk are difficult to quantify and will be only discussed qualitatively in the effects analysis. The only changes in use of existing NFTS roads that may measurably affect this geo-indicator are maintenance level downgrades to ML 1 (closed) status, and maintenance level upgrades from ML 1 to ML 2 or 3 (open to travel) status, on roads that cross ultramafic bedrock. Therefore, only these subsets of this action component will be analyzed.

Analysis Method: Comparison of alternatives by GIS analysis of net length in miles of proposed changes in maintenance levels by one indicator - tabulation of net mileage of proposed maintenance level changes within mapped areas of ultramafic bedrock.

Increases in mileage of open roads on ultramafic bedrock may correspond to slight increases in asbestos hazard risk to human health. Decreases in mileage of open roads on ultramafic bedrock may correspond to slight decreases in risk of exposure to naturally occurring asbestos. Road closure (downgrade) and road opening (upgrade) are analyzed as having equivalent but opposite effects.

III. Decommissioning roads

The action alternatives may include decommissioning of existing NFTS roads. Decommissioning of roads is considered in order to respond to a variety of criteria, including reducing damage to soil, vegetation, and other forest resources; reducing wildlife habitat fragmentation; and effective distribution of resources for maintenance and administration needs of roads, trails and areas that would arise if the uses under consideration are designated.

Analysis Method: Comparison of alternatives by GIS analysis of length in miles of proposed road decommissioning by indicator - a) tabulation of mileage of proposed decommissioning within areas of active or dormant landslides; b) tabulation of mileage of proposed decommissioning within mapped areas of ultramafic bedrock.

In contrast to the above effects analysis method descriptions, greater mileage of this proposed activity by indicator would result in decreased risks of slope instability and exposure to naturally occurring asbestos.

IV. Restoration of Drainage Patterns on Unauthorized Routes

The action alternatives may include restoration of drainage patterns on unauthorized routes. Restoration of drainage patterns is considered in order to respond to a variety of criteria, including reducing damage to soil, vegetation, and other forest resources; reducing wildlife habitat fragmentation; and effective distribution of resources for maintenance and administration needs of roads, trails and areas that would arise if the uses under consideration are designated.

Analysis Method: Comparison of alternatives by GIS analysis of length in miles of proposed route restoration by indicator - a) tabulation of mileage of proposed route restoration within areas of active or dormant landslides; b) tabulation of mileage of proposed route restoration within mapped areas of ultramafic bedrock.

Similarly to the road decommissioning analysis method description, greater mileage of this proposed activity by indicator would result in decreased risks of slope instability and exposure to naturally occurring asbestos.

Cumulative Effects

The cumulative environmental effects of this project on slope stability ultimately impact water quality and the integrity of the transportation network. They are addressed within the Hydrology and Water Resources

section and the Transportation Facilities section. The hydrology analysis includes the projected water quality effects of past, present and future foreseeable actions within the cumulative watershed effects analysis area, which encompasses the geologic analysis area.

Cumulative impacts on human health are specific to the individual and depend on their personal history. They are not analyzed here because they are beyond the scope of this analysis.

Affected Environment

Overview

The Six Rivers National Forest occupies portions of the northern Coast Range and Klamath Mountains geologic provinces. The forest boundary stretches southward from the Oregon border for approximately 140 miles. The affected analysis area is the Smith River National Recreation Area (Smith River NRA), which is coincident with the Gasquet Ranger District, located in the Smith River watershed from the Oregon border south about 35 miles to Red Mountain, and from about 10 miles inland from the Pacific Coast east to the Siskiyou Crest.

The Smith River NRA includes 358,759 acres, or 561 square miles. The analysis area for the project is somewhat reduced as described in the Alternatives description. It includes the Smith River NRA /Gasquet Ranger District exclusive of declared Wilderness Areas, Traditional Cultural Properties, and outlying National Forest System (NFS) lands. Only roads and routes on NFS lands within the described area are considered in the analysis.

Geologic Setting and Bedrock Geology

The analysis area occupies a montane upland area of the western Klamath Mountains geologic province, and a small portion of the Coast Range geologic province. The Klamath Mountains consist of a number of accreted terranes of Paleozoic and Mesozoic age intruded by plutonic igneous rocks both during and following accretion to the North American continent. Accreted terranes are defined by Irwin (1960, etc.) as discrete tectonostratigraphic units that have been transported, subducted, and sutured to the North American margin by plate tectonic processes. The project area is dominantly within the Smith subterrane of the Western Klamath terrane, the westernmost of the Klamath accreted terranes. Ultramafic rocks of the Josephine Ophiolite predominate, with lesser proportions of associated intrusive rocks and of Galice Formation metasediments (Figure 3). The easternmost portion of the area is underlain by rocks of the structurally lower Rattlesnake Creek Terrane. The Rattlesnake Creek Terrane is composed of diamictite and mélange (tectonically mixed lithologies with a wide range of textures), and includes metasediments, metavolcanics and serpentinite, with blocks of limestone, chert and conglomerate. It belongs to Western Paleozoic and Triassic Belt of Irwin (1960), and consists of Permian age rocks accreted in the Jurassic. Along the western fringe of the analysis area and in its northwest corner, small areas of Yolla Bolly terrane rocks of the Franciscan Complex occur. These are also accreted rocks that are associated with Coast Range province. The Yolla Bolly terrane is part of the Eastern Belt of Franciscan rocks, in this unit’s closest proximity to the Pacific coast. It consists largely of moderately metamorphosed greywacke sandstones and finer-grained mudstones and shales, with some conglomerate and chert bodies, and is of Jurassic to Cretaceous age. Many areas of “broken formation” (disrupted fragments of stratigraphic packages) are present.

Landscape Setting and Evolution

Cycles of erosion, uplift, and incision have formed the modern landscape of the analysis area. Gentle upland topography relict of an ancient erosional surface is preserved on concordant ridge tops. The steep mountainsides and deep narrow canyons that characterize the landscape are the topographic expression of

relatively recent tectonic uplift. Mass wasting processes are most active in inner gorge and lower hillslope settings, chiefly as shallow debris slides, although some active and many dormant slump-earthflows, rotational-translational landslides and other deep-seated landslides are present under forest canopy. Bedrock geology and hillslope position influence a mosaic of vegetation types, with ultramafic lithologies in upper hillslope positions representing the least productive sites and supporting sparse, often stunted forests and unique serpentinite-endemic vegetation.

The topography of the assessment area consists of a series of narrow linear ridges and valleys of generally E-W to NE-SW orientation, with gently convex concordant ridge tops whose elevations increase from west to east, from roughly 2,000 feet in the western portion of the area to 6,308 feet on Youngs Peak in the northeast. The base elevation of the area, at Douglas Park on the mainstem Smith River, is approximately 120 feet MSL. Steep narrow ridges and canyons predominate, although there are areas of broader, gentler topography in the area of Lower Coon Mountain in the west-central portion of the area, and in the High Plateau area east of the North Fork Smith River. Deep dissection of a former upland surface produced this topography. This surface has been dubbed the “Klamath peneplain” by some (Maxson 1933, Aalto 2006, Anderson 2008), after Diller (1902). It likely represents a late Cenozoic planation to sea level prior to uplift. The landscape is the westernmost extent of the Klamath Mountains geologic province in its closest proximity to the Pacific coast. Uplift of these ranges is associated with tectonic forces of convergence related to accretion and subduction, most recently during the ongoing Cascadia subduction event.

Surficial Geology

Surficial geologic deposits that mantle the older bedrock units are present across the analysis area landscape, and have relevance to landscape evolution and geomorphic processes that affect forest ecology and management. The most widespread of these is the late Tertiary Wimer Formation, which is associated with west-central occurrences of the old erosion surface representative of the “Klamath peneplain” as described above. It consists of erosional remnants of weakly consolidated shallow marine and near-shore sediments that are fossiliferous in places (Irwin, 1997). The erosion surface itself is evident in ridge top positions across the western half of the analysis area (Figure 3). In a few locations in the eastern portion of the analysis area, Pleistocene cirque glaciation occurred (Figure 4), and glacial till is present in the upper canyon of the Middle Fork Smith River (Figure 3). Recent alluvial deposits (Qya) and slightly older stream terrace deposits (Qt) are present near the Smith River channel in the Hiouchi area.

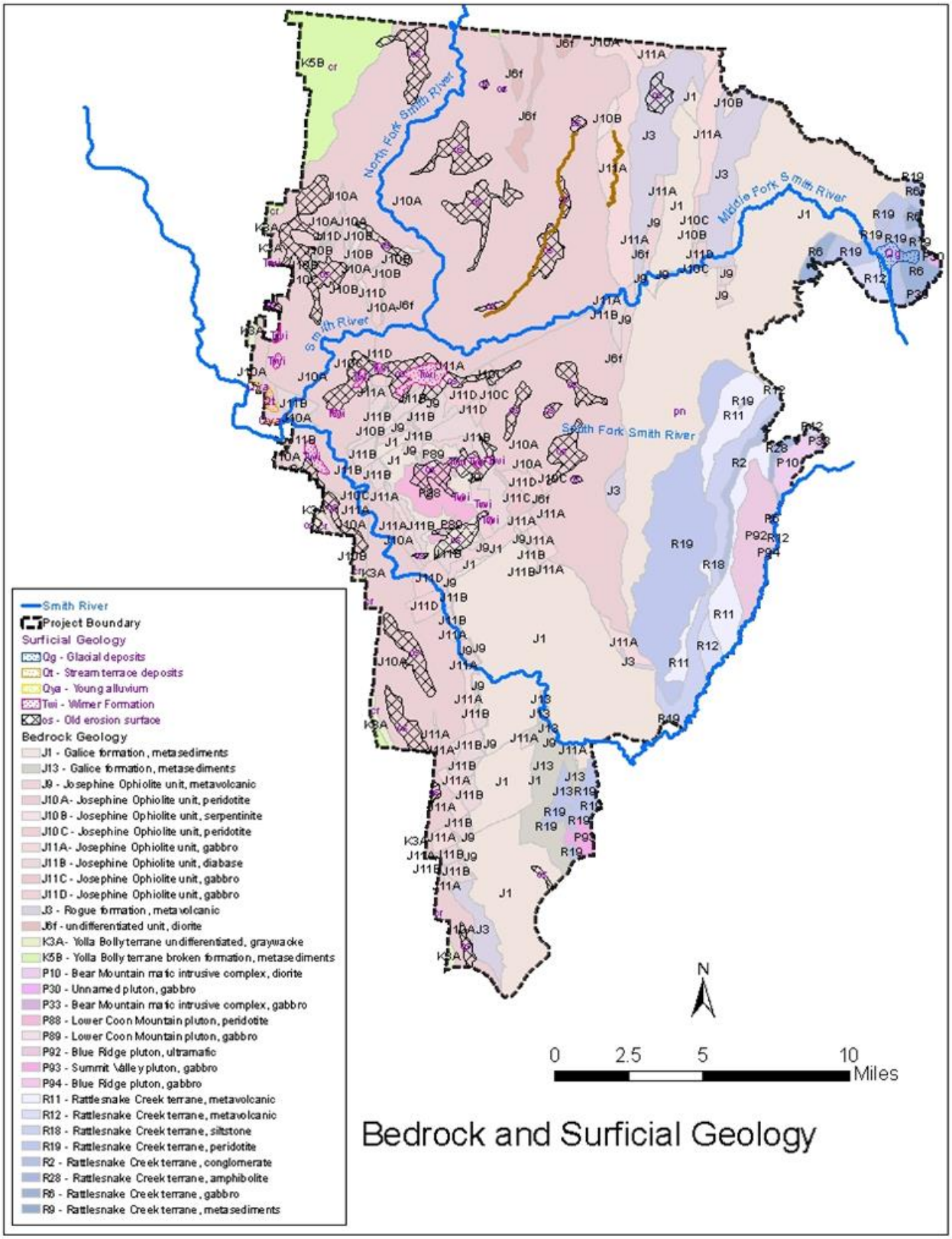

Figure 3. Bedrock and surficial geology

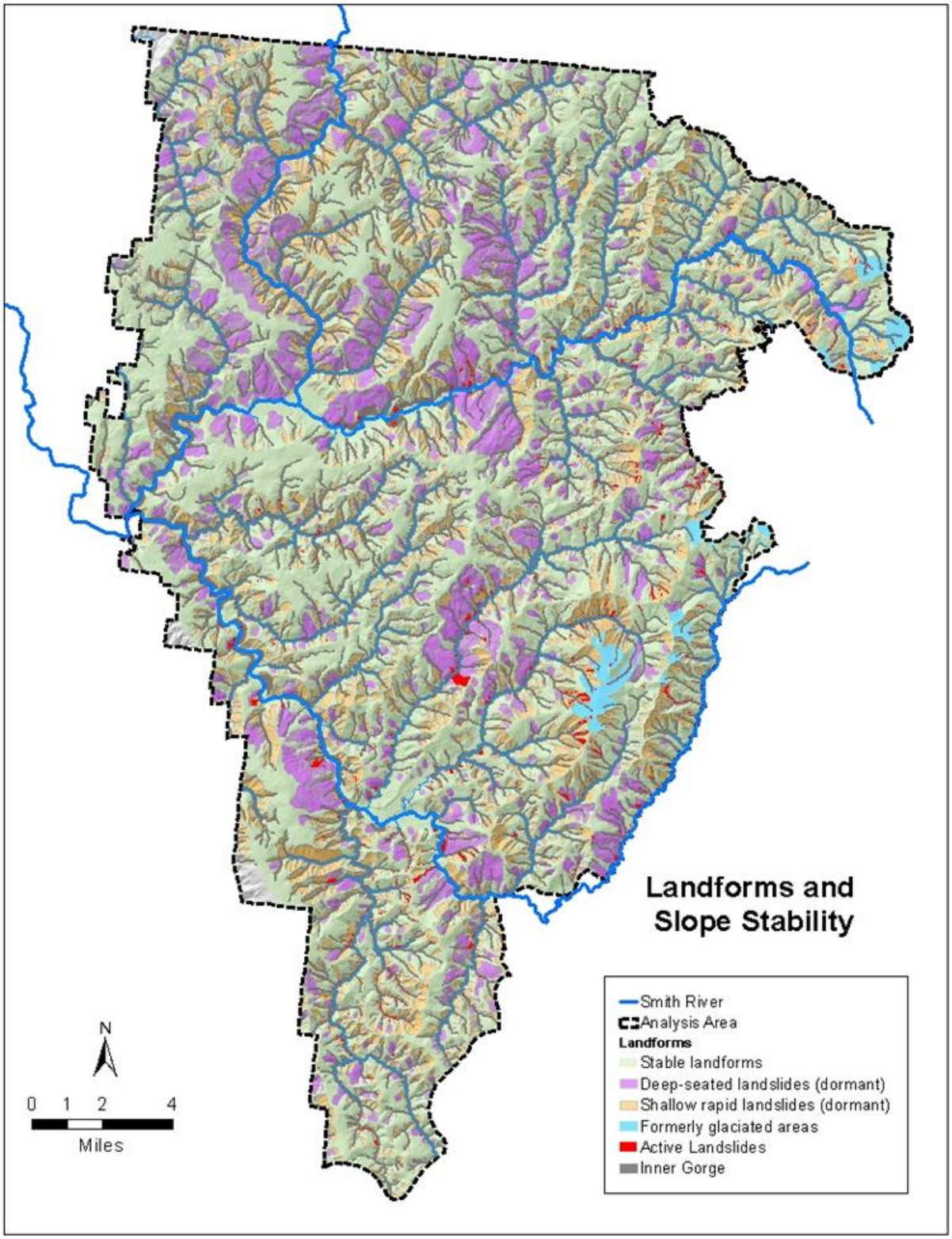

Figure 4. Landforms and slope stability

Geomorphic Processes and Landforms

The project area encompasses a variety of landforms characteristic of the Klamath Mountains province and specific to the tectonic history and geologic setting of northwesternmost California. Rapid Late Tertiary uplift of the Miocene littoral zone and coastal plain, and subsequent deep incision under wet Pacific climatic conditions, have resulted in the existing landscape of high relief, subparallel to trellis drainage patterns, linear ridges and/or upland plateaus with gentle, broadly convex crests, and steep stream gradients. Deep-seated landslides that largely initiated under wetter Pleistocene climates mantle much of the landscape, and many presently inactive shallow rapid landslides are present as well (Figure 4). Most of these older mass wasting features are dormant, although some recently active deep-seated slide activity has been noted in the analysis area. Recently active shallow rapid landslides are also common, generally on steep slopes in inner gorge and lower hillslope positions (Figure 4). The majority of these were initiated either prior to 1944 (the earliest aerial photographic record of the area), or during or immediately following the 1964 storm/flood event which is the flood of record in the area. Many of these have regained vegetative cover in the intervening half-century, and are no longer chronic sediment sources. In total, 113,638 acres of unstable hillslopes are mapped within the analysis boundary, covering 42 percent of the area. Landslides mapped as recently active cover 2,056 acres, or 0.76 percent of the area within the analysis boundary.

Geologic Hazards – Naturally Occurring Asbestos

Aside from instability related hazards, there is one other relevant hazard within the analysis area, namely the presence of bedrock that may contain naturally occurring asbestos. Naturally occurring asbestos can be found within serpentinite and other ultramafic bedrock units (Van Gosen 2007, Van Gosen and Clinkenbeard 2011)). A majority (138,000 acres or 51 percent) of the analysis area is underlain by these bedrock types. The mapped extent of lithologies that may bear asbestiform minerals is displayed in Figure 5.

Naturally occurring asbestos includes a suite of fibrous, silicate minerals that are commonly associated with ultramafic rock. Asbestos can pose a health hazard if it is released as dust into the air and inhaled by humans. The potential for exposure during vehicle travel is greatest for riders of all-terrain vehicles which are open and provide no shielding from the dust, or for riders in multiple passenger vehicles traveling in close proximity with open windows. The degree of health hazard from chrysotile, the form of asbestiform mineral associated with serpentinite and the only form present in the analysis area, and the validity of risk assessment methods for asbestos exposure are topics subject to debate in the scientific, regulatory and health advocacy communities (Nicholson 1986, California Air Resources Board 2000, Berman and Case 2012, Environmental Information Association - unknown date, World Health Organization 2010) Some evidence suggests that chrysotile asbestos may present less long-term health risk related to exposure than do asbestiform minerals in the amphibole group, but to date this is not a generally accepted conclusion (Bernstein and Hoskins, 2006, Berman and Crump 2008a, Gibbs and Berry 2008).

The Forest has followed the Regional Forester direction outlined in a letter dated February 11, 2009, regarding the addition of roads and trails to the NFTS that may contain naturally occurring asbestos. The letter states: “Any land management decisions regarding naturally occurring asbestos must be based on sound data and analysis. According to EPA, the scientific assessment and identification of actual public health risks associated with naturally occurring asbestos is a complex and time intensive process. Until such studies are performed, the Region will not have definitive information regarding actual employee and public health risks posed by naturally occurring asbestos on national forest lands. Therefore, no decisions are being made or direction issued at this point in time to restrict or alter public access to and/or recreational use of the national forests.” The letter further directs Forests to make the public aware of the potential risk of exposure to natural asbestos and its potential presence on National Forest lands as well as

guidance on how visitors can reduce their exposure to the substance. This has been accomplished with a fact sheet addressing natural asbestos hazards, available on the web at http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=STELPRDB5363833, along with maps showing distribution of asbestos-bearing rock on the Forest. Both are available to the public in the Supervisor's Office as well as in District offices.

The Forest conducted laboratory testing of unauthorized route surfaces for presence of asbestos. In most cases more than one sample was taken per route. Twenty-seven unauthorized route segments proposed to be added to the NFTS on the Smith River NRA were tested for presence of naturally occurring asbestos. The final results of the testing show that three had no detection, 18 had less than 0.25 percent (low) asbestos content, and six had greater than or equal to 0.25 percent (high) asbestos content (ERRG, 2011) (Figure 5). No tests have been conducted on 24 unauthorized routes proposed for addition to the NFTS. Figure 5 characterizes the distribution of ultramafic rock and the asbestos test results.

The California Air Resources Board (CARB) has developed regulations prohibiting the use of serpentine aggregate for road surfacing that has a measurable asbestos content, with the detection threshold set at 0.25 percent (CARB 2000). While no threshold has been set for road surfaces with native naturally occurring asbestos surfaces (as opposed to applied serpentinite aggregate), the CARB and US EPA do list dust control measures for unpaved roads that are exempted from the surfacing prohibition due to their remote location (CARB 2002, US EPA 1992). These include: 1) source reduction, such as speed reduction and/or traffic reduction; 2) source improvement such as paving or surfacing with gravel; and 3) surface treatment such as watering and/or chemical stabilization. The exemption also requires permanently posted signage warning of the potential for asbestos exposure The airborne asbestos dust mitigations proposed in this document align with this direction (see below).

The test results show that the presence or absence of asbestos, and its concentration, is variable in samples taken in relatively close proximity. In addition, there is no method to reliably predict the concentration of asbestos in the air, given the concentration of a known amount of asbestos in the soil (EPA 2008).

In light of these uncertainties, the proposed mitigation for adding routes to the NFTS that may contain naturally occurring asbestos would be to: 1) inform the public of the potential exposure to asbestos; 2) identify the NFTS roads and trails that may present this risk; and 3) impose speed limits on such roads and motorized trails to reduce dust generation and the risk associated with inhaling dust. Additionally, such roads would be posted in the field for lower speeds to reduce dust generation, and identified as having the potential to contain asbestos. No new laboratory testing for asbestos is proposed. Nor is any additional road surface treatment for hazard mitigation proposed at this time, such as capping of road surfaces with non-ultramafic rock, oil or chip-seal. For this analysis, given the uncertainty of test results as compared to actual exposure and any possible health risks, all areas mapped on ultramafic bedrock will be regarded as presenting an equal degree of hazard related to naturally occurring asbestos exposure, and will be evaluated with the metric listed above, namely changes in mileage of open roads or routes located on mapped ultramafic rock. This metric is used for evaluation of all alternatives. Likewise, the same mitigation proposal described above is common to all alternatives.

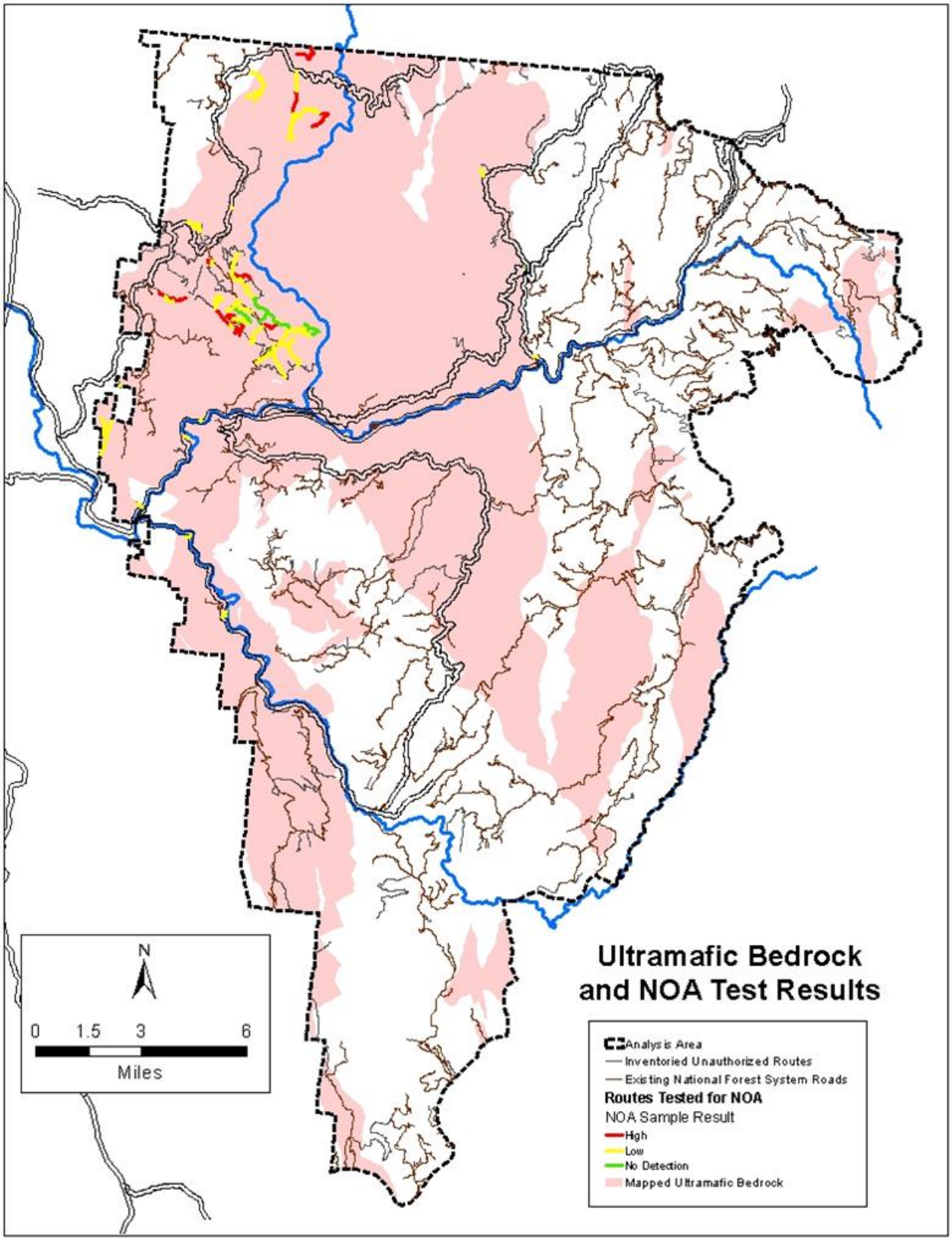

Figure 5. Ultramafic bedrock distribution and naturally occurring asbestos test results

Existing Condition

The Six Rivers National Forest currently manages and maintains 367 miles of roads of the National Forest Transportation System (NFTS) in open, drivable condition in the analysis area. There are 86 miles of Level 1 (closed roads considered in storage) in the present road system, for a total length of all NFTS roads equaling 453 miles. Also, there are presently 12 miles of motorized trails authorized for use. 152 miles of unauthorized routes have been inventoried in the area. There are currently no passenger car roads (Maintenance Level 3 and above) designated for mixed-use (highway- and non-highway-legal vehicles both permitted) in the area. The following table (Table 98) describes the total distance in miles of each of these types of motor vehicle route by the two geo-indicator metrics listed above (miles of road or route located on mapped dormant or active landslides; miles of road or route located on mapped ultramafic rock).

Table 98. Mileage and percentage of total mileage by route type and geo-indicator

Route Type	Total Mileage	Mileage on Mapped Landslides	Percent of Total Mileage on Mapped Landslides	Mileage on Ultramafic Bedrock	Percent of Total Mileage on Ultramafic Bedrock
NFTS Level 1	85.9	20.3	23.6%	25.2	29.3%
NFTS Level 2-5	366.9	71.1	19.4%	116.6	31.8%
Motorized Trail	12.3	1.0	8.1%	8.1	65.9%
Unauthorized Routes	151.6	50.3	33.2%	97.0	64.0%
All Routes	616.7	142.6	23.1%	246.9	40.0%

It is evident from Table 98 that a substantial portion of the transportation system in the analysis area has slope stability and/or asbestos hazard risk based on the geo-indicators. The asbestos hazard geo-indicator is more prevalent than the slope stability geo-indicator by nearly a factor of two. It is also evident that for both geo-indicators, the overall amount of risk as indicated by the selected metrics is higher on unauthorized routes as compared to NFTS routes maintained for highway vehicles.

The level of risk for slope instability is mitigated to an extent by several factors. Most landslide terrain is dormant, or if mapped as active, is only episodically active following major storms and other disturbance events such as wildfire. The bulk of landslide activity occurs during the wet winter season when road system usage is light, and many roads are closed seasonally. Therefore, the direct risk from slope failure to motorists is generally low. Slope instability affects the transportation network most by disruption of road network continuity when landslides are activated, potentially rendering portions of the transportation system inaccessible until repairs can be performed.

With regard to hazard from exposure to naturally occurring asbestos, as measured by route mileage on ultramafic bedrock, it is evident that the risk on motorized trails and unauthorized routes is approximately double the risk on the remainder of the transportation system. The ratio of exposure risk between these route types is probably actually even greater, given that: 1) almost all off-highway vehicle (OHV) routes are native-surfaced, while developed roads may be surfaced with materials such as chip-seal, oil or non-ultramafic rock; and 2) OHV riders are more likely to be exposed to airborne dust generated from route surfaces due to the unenclosed nature of these types of vehicles. As noted above, however, the actual degree of risk of exposure to naturally occurring asbestos related to dust generated from ultramafic bedrock is not well defined or quantified at this time, and potential exposure cannot be translated directly to increased health risk. Therefore, while it appears valid to state that there is increased risk of exposure to

naturally occurring asbestos on motorized trails and unauthorized routes compared to NFTS roads, the actual degree of risk is difficult to quantify.

Geologic Risk

The indicators in the above table can be summarized into risk categories. Geologic risk ratings represent a combination of potential environmental impacts and risk to the public from hillslope failure, and risk of exposure to naturally occurring asbestos. A summary of geologic risk is presented in Table 99.

The risk categories are as follows:

- A low geologic risk route is not on landslide terrain, and it is not on bedrock which may contain naturally occurring asbestos.
- A moderate geologic risk route is located on dormant landslide terrain. It is not on active landslides nor is it on bedrock which may contain naturally occurring asbestos.
- A high geologic risk route is located on active landslides, and/or on bedrock which may contain naturally occurring asbestos.

It is evident from Table 99 that substantial levels of geologic risk are present on roads and routes in the analysis area, based on the defined risk categories. Similarly to the analysis by geo-indicator, geologic risk is much higher on motorized trails and unauthorized routes compared to NFTS roads. The same mitigating factors for slope stability apply to this analysis as well. The overall higher risk on motorized trails and unauthorized routes can be seen as an expected outcome, given: 1) the area has a high incidence of the geo-indicators of risk; 2) the NFTS, unlike the unauthorized route network, was engineered and constructed to avoid hazardous terrain where possible in order to reduce safety risks and provide for easier, less expensive maintenance; and 3) off-highway vehicle routes are preferentially situated to provide a user experience that includes steep terrain and unobstructed vistas, characteristics which reflect less stable slopes and also less heavily vegetated areas that are typical of ultramafic bedrock and soils.

Table 99. Mileage and percentage of total mileage by route type and geologic risk category

Risk		Low		Moderate		High	
Route Type	**Total Mileage**	**Mileage**	**Percent**	**Mileage**	**Percent**	**Mileage**	**Percent**
NFTS Level 1	85.9	46.3	53.9%	14.2	16.5%	25.4	29.6%
NFTS Level 2-5	366.9	205.6	56.0%	43.9	12.0%	117.4	32.0%
Motorized Trail	12.3	3.5	28.1%	0.7	5.9%	8.1	66.0%
Unauthorized Routes	151.6	42.2	27.9%	11.7	7.7%	97.7	64.4%
All Routes	616.7	297.6	48.3%	70.5	11.4%	248.6	40.3%

Comparison of the geo-indicator analysis displayed in Table 98 with the geologic risk analysis displayed in Table 99 shows that the two analyses show similar results in describing the existing condition. The total road and route mileage that is positive for one or both geo-indicators is also reflected in the total mileage that is in the high geologic risk category. For the remainder of the alternative analyses, the geo-indicator analysis method is employed.

Environmental Consequences

This section discloses the environmental effects of each of the alternatives as described by the selected geo-indicators, namely: 1) slope stability hazard as measured by the total mileage of the proposed transportation network located on mapped landslides; and 2) asbestos hazard as measured by the total mileage of the proposed transportation network located on ultramafic bedrock. The four discrete actions analyzed in each of the alternatives are: 1) the addition of facilities (unauthorized roads, trails, and/or areas) to the National Forest Transportation System (NFTS); 2) changes to road maintenance status, vehicle class and season of use; 3) decommissioning of existing NFTS roads; and 4) restoration of drainage patterns on unauthorized routes. The types of environmental effects associated with each of the geo-indicators are discussed above in the Indicators and Existing Condition sections. All direct and indirect effects are analyzed and discussed with respect to the selected geo-indicators and the four types of proposed activities for each alternative.

Alternative 1 – No Action – Direct and Indirect Effects

Under this alternative, no changes would be made to the existing NFTS. Current management plans would continue to guide project area management. Unauthorized routes would continue to have no status as NFTS facilities and drainage patterns would not be restored. The current MVUM would continue to provide direction on motorized use on NFTS roads and motorized trails in the analysis area. None of the four types of proposed actions described above would occur. The same trends in geologic conditions related to the existing transportation system and unauthorized route network would continue, at the same or possibly increased levels of risk. An overall increase in risk is likely because as noted in the Transportation Facilities chapter, maintenance backlogs related to budget shortfalls would likely continue, allowing slope instability and naturally occurring asbestos hazards to go unabated and potentially increase risk to users and to the roads and routes.

Table 100 summarizes the effects analysis of Alternative 1, as described by changes in each geo-indicator as compared to the existing condition.

Table 100. Changes in geo-indicators by miles and percentage for Alternative 1 (No Action) compared to the existing condition

Action	Geo-Indicator	Change from Existing Condition (Miles)	Percent Change from Existing Condition
Additions to the NFTS	Slope Stability	0	0%
	Asbestos Hazard	0	0%
	Combined	0	0%
Changes to NFTS	Slope Stability	0	0%
	Asbestos Hazard	0	0%
	Combined	0	0%
Road Decommissioning	Slope Stability	0	0%
	Asbestos Hazard	0	0%
	Combined	0	0%
Route Restoration	Slope Stability	0	0%
	Asbestos Hazard	0	0%
	Combined	0	0%
Total of All Actions	Slope Stability	0	0%
	Asbestos Hazard	0	0%
	Combined	0	0%

As there are no changes to the existing NFTS and no unauthorized routes would be added to the NFTS under Alternative 1, there would be no measurable change in either of the geo-indicators for this alternative. As noted above, slope stability and asbestos exposure hazards would remain the same or on similar trends as compared to the existing condition, and might possibly increase as use continues in light of a persistent maintenance backlog.

Alternative 2 – Proposed Action

Alternative 2, the original proposed action, was dropped from detailed consideration because as described in Chapter 2 (Alternatives Description) it exceeded the scope of analysis for the current project area. Therefore, no analysis of Alternative 2 will be presented here.

Alternative 3 – Modified Proposed Action

Alternative 3 represents the proposed action, modified to remove from present consideration NFTS facilities and unauthorized routes within Traditional Cultural properties (TCPs). In all other respects, it is identical to the original proposed action.

Under this alternative, the total of proposed activities would:

- Add unauthorized routes to the NFTS as trails or open roads - 51.5 miles
- Add unauthorized routes to the NFTS as closed roads (ML 1) - 7.3 miles
- Upgrade ML 1 (closed) roads to ML 2 (open) - 2.6 miles
- Downgrade ML 2 (open) roads to ML 1 (closed) - 18.5 miles
- Decommission NFTS roads - 55.3 miles
- Designate NFTS roads for mixed-use – 3.9 miles
- Restore drainage patterns on unauthorized routes - 79.2 miles
- Barricade unauthorized routes not added to the NFTS– – 71.8 miles
- Add seasonal gate closures to NFTS roads - 11.2 miles
- Stormproof – 122.3 miles

Table 101 summarizes the effects analysis of Alternative 3, as described by changes in each geo-indicator as compared to the existing condition. Note that the mileage and percentage changes calculated for each geo-indicator category do not sum to the calculated combined totals, because of overlap between facilities co-located on landslide terrain and ultramafic bedrock.

Direct and Indirect Effects

Table 101 shows that Alternative 3 would measurably increase the geo-indicators for slope stability risk and asbestos exposure for additions to the NFTS, and would measurably decrease the geo-indicators of slope stability risk and asbestos exposure hazard for each other type of action.

Table 101. Changes in geo-indicators by miles and percentage for Alternative 3 (Modified Proposed Action) compared to the existing condition

Action	Geo-Indicator	Change from Existing Condition (Miles)	Percent Change from Existing Condition
Additions to the NFTS	Slope Stability	21.1	23.1%
	Asbestos Hazard	41.9	29.6%
	Combined	46.5	23.1%
Upgrading and Downgrading of Roads (ML 1and2)	Slope Stability	N/A[a]	N/A[a]
	Asbestos Hazard	-1.5	-1.1%
	Combined	-1.5	N/A
Road Decommissioning	Slope Stability	-12.8	-14.0%
	Asbestos Hazard	-8.6	-6.1%
	Combined	-18.9	-9.4%
Restoration of Drainage Patterns on Unauthorized Routes	Slope Stability	-25.7	-51.2%
	Asbestos Hazard	-43.9	-45.2%
	Combined	-51.2	-46.8%
Total of All Actions	Slope Stability	-17.4	-12.1%
	Asbestos Hazard	-12.1	-4.9%
	Combined	-25.2	-8.1%

a - See below and also the Effects Analysis Methodology by Action section for explanation of why effects of changes to the maintenance levels and vehicle class on slope stability, or the effects of seasonal closures and mixed-use designation on either geo-indicator, were not analyzed quantitatively.

As discussed above (in Effects Analysis Methodology by Action), although the unauthorized routes proposed to be added to the NFTS currently exist, they are analyzed here as though they are new features with respect to the risks associated with the geo-indicators. Proposed mitigations would likely reduce the risk defined by the geo-indicators to an unknown extent. The effects of changes in maintenance levels (opening or closing roads) cannot be readily measured for the geo-indicator of slope stability. Proposed changes in maintenance levels would have a small measurable benefit (decrease) in the geo-indicator for asbestos exposure. The effects of designation of mixed-use and changes in season of use (wet weather closures) were not analyzed quantitatively, as they are not easily quantified.

It is apparent that under this alternative, system road decommissioning would bring about a substantial reduction (benefit) in the geo-indicators for slope stability, asbestos hazard and combined hazard, and a parallel but much greater reduction in each indicator would result from restoration of drainage patterns on unauthorized routes not added to the NFTS. These risk reductions from removing and restoring those roads and routes with the highest overall resource risks compared to benefits would more than offset the added risk from route designation under this alternative. While the reductions in the geo-indicator metrics do not necessarily equate to linear ratios of risk reduction, it is evident that this alternative reduces both slope stability hazard and asbestos hazard somewhat, especially through the restoration of unauthorized routes.

Stormproofing proposed on existing system roads should further enhance slope stability by directing drainage away from unstable areas and from diversion to stream channels, reducing the risk of hillslope, road/stream crossing and stream bank failure.

Alternative 4

Alternative 4 was designed to respond to issues regarding impacts to motorized recreation. This alternative was developed to provide increased opportunities for motorized recreation and access to dispersed sites. Specifically, this alternative adds more motorized trails and level 2 roads; adds more motorized trails accessing dispersed recreation sites (including short inventoried unauthorized routes); maintains more level 2 roads; and designates parking along Road 17N49.

Under this alternative, the total of proposed activities would consist of:

- Add unauthorized routes to the NFTS as trails or open roads - 70.4 miles
- Add unauthorized routes to the NFTS as closed roads (ML 1) - 3.6 miles
- Upgrade ML 1 (closed) roads to ML 2 (open) - 11.1 miles
- Downgrade ML 2 (open) roads to ML 1 (closed) - 15.6 miles
- Decommission NFTS roads - 56.7 miles
- Designate NFTS roads for mixed-use - 0.44 miles
- Restore drainage patterns on unauthorized routes - 70.4 miles
- Barricade unauthorized routes not added to the NFTS - 65.5 miles
- Add seasonal gate closures to NFTS roads - 38.9 miles
- Add parking areas - 5
- Stormproof – 113.9 miles

Table 102. Changes in geo-indicators by miles and percentage for Alternative 4 compared to the existing condition

Action	Geo-Indicator	Change from Existing Condition (Miles)	Percent Change from Existing Condition
Additions to the NFTS	Slope Stability	29.2	32.0%
	Asbestos Hazard	56.6	39.9%
	Combined	61.8	30.8%
Upgrading and Downgrading of Roads (ML 1 and2)	Slope Stability	N/A[a]	N/A[a]
	Asbestos Hazard	-0.7	-0.5%
	Combined	-0.7	N/A
Road Decommissioning	Slope Stability	-12.8	-14.0%
	Asbestos Hazard	-8.8	-6.2%
	Combined	-19.1	-9.5%
Restoration of Drainage Patterns on Unauthorized Routes	Slope Stability	-20.0	-39.8%
	Asbestos Hazard	-33.0	-34.0%
	Combined	-40.3	-36.8%
Total of All Actions	Slope Stability	-3.5	-2.5%
	Asbestos Hazard	14.1	5.7%
	Combined	1.8	0.6%

a - See below and also the Effects Analysis Methodology by Action section for explanation of why effects of changes to the maintenance levels and vehicle class on slope stability, or the effects of seasonal closures and mixed-use designation on either geo-indicator, were not analyzed quantitatively.

Table 102 summarizes the effects analysis of Alternative 4, as described by changes in each geo-indicator as compared to the existing condition. Note that the mileage and percentage changes calculated for each geo-indicator category do not sum to the calculated combined totals, because of overlap between facilities co-located on landslide terrain and ultramafic bedrock.

Direct and Indirect Effects

Table 102 shows that Alternative 4 would also measurably increase the geo-indicators for slope stability risk and asbestos exposure for additions to the NFTS, to a greater degree than Alternative 3, and would measurably decrease the geo-indicators for slope stability risk and asbestos exposure hazard for each other type of action.

As discussed above (in Effects Analysis Methodology by Action), although the unauthorized routes proposed to be added to the NFTS currently exist, they are analyzed here as though they are new features with respect to the risks associated with the geo-indicators. Proposed mitigations would likely reduce the risk defined by the geo-indicators to an unknown extent. The effects of changes in maintenance levels (opening or closing roads) cannot be readily measured for the geo-indicator of slope stability. These changes would have a small measurable benefit (decrease) in the geo-indicator for asbestos exposure.

It is apparent that under this alternative, system road decommissioning would bring about a substantial reduction (benefit) in the geo-indicators for slope stability, asbestos hazard and combined hazard, and a parallel but greater reduction in each indicator would result from restoration of drainage patterns on unauthorized routes not added to the NFTS. The benefit from road decommissioning would be comparable to Alternative 3. The benefit from route restoration would be measurably less compared to Alternative 3. The overall level of risk across the analysis area would change little from the existing condition when the risk added by route designation is weighed against the risk reduction from decommissioning and restoration, although there would be a measurable overall increase in the geo-indicator for asbestos exposure.

Stormproofing proposed on existing system roads should further enhance slope stability by directing drainage away from unstable areas and from diversion to stream channels, reducing the risk of hillslope, road/stream crossing and stream bank failure. Greater mileage of stormproofing in this alternative (97 miles compared to 81 miles in Alternative 3) would potentially enhance overall slope stability more.

The addition of five parking areas adjacent to road 17N49 might increase asbestos exposure hazard, since they would be located on a popular off-highway vehicle route network on Gasquet Mountain, where there is a high degree of ultramafic bedrock exposure and several routes that tested high for asbestos presence. This is also the proposed location for designation of mixed-use on Road 17N49. Exposure might increase related to designation of the parking areas and mixed-use, concentrating vehicle activity and thereby increasing dust generation and exposure. These sites would be suitable locations for posting information about the presence of ultramafic bedrock, potential naturally occurring asbestos presence, exposure and hazards, as described in the Description of Alternatives (Chapter 2) and in the Geologic Hazards - Naturally Occurring Asbestos section of this chapter.

Alternative 5

Alternative 5 responds to issues concerning impacts to forest resources and Inventoried Roadless Areas (IRAs). This alternative was developed to reduce the number and miles of roads and motorized trails open for motorized travel with specific attention given to protecting nonmotorized recreation opportunities in IRAs and increased level of protection for Port-Orford-cedar, and other botanical resources. Specifically, this alternative does not add motorized trails in IRAs; does not add inventoried unauthorized routes to the NFTS with a high risk and low need; does not keep routes on the NFTS with high resource risks and low

need; reduces motorized access to stands of Port-Orford-cedar; reduces motorized access to areas with Threatened and Endangered and Region 5 Sensitive botanical species; and barricades and restores drainage patterns on inventoried unauthorized routes.

Under this alternative, the total of proposed activities would:

- Add unauthorized routes to the NFTS as trails or open roads - 13.8 miles
- Add unauthorized routes to the NFTS as closed roads (ML 1) - 6.2 miles
- Upgrade ML 1 (closed) roads to ML 2 (open) - 4.2 miles
- Downgrade ML 2 (open) roads to ML 1 (closed) - 97.1 miles
- Decommission NFTS roads - 54.4 miles
- Designate NFTS roads for mixed-use - 0 miles
- Restore drainage patterns on unauthorized routes - 135.1 miles
- Barricade unauthorized routes not added to the NFTS – 134.6 miles
- Add seasonal gate closures to NFTS roads - 2.2 miles
- Add parking areas - 0
- Stormproof – 120.9 miles

Table 103 summarizes the effects analysis of Alternative 5, as described by changes in each geo-indicator as compared to the existing condition. Note that the mileage and percentage changes calculated for each geo-indicator category do not sum to the calculated combined totals, because of overlap between facilities co-located on landslide terrain and ultramafic bedrock.

Table 103. Changes in geo-indicators by miles and percentage for Alternative 5 compared to the existing condition

Action	Geo-Indicator	Change from Existing Condition (Miles)	Percent Change from Existing Condition
Additions to the NFTS	Slope Stability	5.2	5.7%
	Asbestos Hazard	10.7	7.5%
	Combined	13.2	6.6%
Upgrading and Downgrading of Roads (ML 1 and2)	Slope Stability	N/A[a]	N/A[a]
	Asbestos Hazard	-36.9	-26.0%
	Combined	-36.9	N/A
Road Decommissioning	Slope Stability	-12.8	-14.0%
	Asbestos Hazard	-8.8	-6.2%
	Combined	-19.1	-9.5%
Restoration of Drainage Patterns on Unauthorized Routes	Slope Stability	-45.6	90.7%
	Asbestos Hazard	-85.0	87.7%
	Combined	-95.4	87.3%
Total of All Actions	Slope Stability	-53.1	-37.2%
	Asbestos Hazard	-120.1	-48.6%
	Combined	-138.3	-44.5%

a - See below and also the Effects Analysis Methodology by Action section for explanation of why effects of changes to the maintenance levels and vehicle class on slope stability, or the effects of seasonal closures and mixed-use designation on either geo-indicator, were not analyzed quantitatively.

Direct and Indirect Effects

Table 103 shows that Alternative 5 would also measurably increase the geo-indicators for slope stability risk and asbestos exposure for route additions to the NFTS, but to a much lesser degree than Alternatives 3 or 4, and would measurably decrease the geo-indicators for slope stability risk and asbestos exposure hazard for each other type of action, to a greater degree than either Alternatives 3 or 4.

As discussed above (in Effects Analysis Methodology by Action), although the unauthorized routes proposed to be added to the NFTS currently exist, they are analyzed here as though they are new features with respect to the risks associated with the geo-indicators. Proposed mitigations would likely reduce the risk defined by the geo-indicators to an unknown extent. The effects of changes in maintenance levels (opening or closing roads) cannot be readily measured for the geo-indicator of slope stability. Unlike Alternatives 3 and 4, under Alternative 5 these changes would have a substantial measurable benefit to (decrease in) the geo-indicator for asbestos exposure, due to the much greater road mileage proposed for closure (downgrade to ML 1) under this alternative.

It is apparent that under this alternative, system road decommissioning would bring about a substantial reduction (benefit) in the geo-indicators for slope stability, asbestos hazard and combined hazard, and a parallel but greater reduction in each indicator would result from restoration of drainage patterns on unauthorized routes not added to the NFTS. The benefit from road decommissioning would be comparable to Alternatives 3 and 4. The benefit from route restoration would be measurably greater compared to Alternative 3, and greater yet compared to Alternative 4. With net reductions in the geo-indicators of approximately 80 percent, this alternative would come the closest to fully mitigating the risks associated with slope instability and asbestos exposure on currently unauthorized routes of any of the alternatives analyzed. While the reductions in the geo-indicator metrics do not necessarily equate to linear ratios of risk reduction, it is evident that this alternative reduces both slope stability hazard and asbestos hazard substantially, especially through the restoration of unauthorized routes, to a greater extent than any of the other alternatives analyzed.

Drainage improvements (stormproofing) proposed on existing system roads should further enhance slope stability by directing drainage away from unstable areas and from diversion to stream channels, reducing the risk of hillslope, road/stream crossing and stream bank failure. Lesser mileage of storm-proofing in this alternative (22 miles compared to 81 miles in Alternative 3 and 97 miles in Alternative 5) would potentially enhance overall slope stability to a lesser degree; however, many of the roads that would be storm-proofed under other alternatives would be closed (downgraded to ML 1) and treated to achieve a free-draining state under Alternative 5. Consequently, the overall difference in slope stability risk between Alternative 5 and other alternatives related to drainage improvements is probably small.

The addition of one parking areas adjacent to road 17N49 may slightly increase asbestos exposure hazard, since it would be located on a popular off-highway vehicle route network on Gasquet Mountain, where there is a high degree of ultramafic bedrock exposure and several routes that tested high for asbestos presence. This is also the proposed location for designation of mixed-use on Road 17N49. Exposure might increase related to designation of the parking areas and mixed-use, concentrating vehicle activity and thereby increasing dust generation and exposure. This would be a suitable location for posting information about the presence of ultramafic bedrock, potential naturally occurring asbestos presence, exposure and hazards, as described in the Description of Alternatives (Chapter 2) and in the Geologic Hazards - Naturally Occurring Asbestos section of this chapter.

Alternative 6

Alternative 6 is similar to Alternative 3; however, it makes limited changes to address key issues identified through public scoping related to dispersed recreation and restoration of drainage patterns on

unauthorized routes. Alternative 6 adds short inventoried UARs to popular dispersed recreation sites to the NFTS; restores drainage patterns on short inventoried UARs to dispersed recreation sites not added to the NFTS; barricades inventoried UARs not added to the NFTS; and designates parking along road 17N49.

Under this alternative, the total of proposed activities would:

- Add unauthorized routes to the NFTS as trails or open roads - 47 miles
- Add unauthorized routes to the NFTS as closed roads (ML 1) - 7.4 miles
- Upgrade ML 1 (closed) roads to ML 2 (open) - 4.2 miles
- Downgrade ML 2 (open) roads to ML 1 (closed) - 20.5 miles
- Decommission NFTS roads - 54.4 miles
- Designate NFTS roads for mixed-use - 0.4 miles
- Restore drainage patterns on unauthorized routes - 101.1 miles
- Barricade unauthorized routes not added to the NFTS - 100.7 miles
- Add seasonal gate closures to NFTS roads - 39.2 miles
- Add parking areas - 4
- Stormproof – 122.5 miles

Table 104 summarizes the effects analysis of Alternative 6, as described by changes in each geo-indicator as compared to the existing condition. Note that the mileage and percentage changes calculated for each geo-indicator category do not sum to the calculated combined totals, because of overlap between facilities co-located on landslide terrain and ultramafic bedrock.

Table 104. Changes in geo-indicators by miles and percentage for Alternative 6 compared to the existing condition

Action	Geo-Indicator	Change from Existing Condition (Miles)	Percent Change from Existing Condition
Additions to the NFTS	Slope Stability	19.7	21.5%
	Asbestos Hazard	41.0	28.9%
	Combined	44.3	22.1%
Upgrading and Downgrading of Roads (ML 1 and2)	Slope Stability	N/A[a]	N/A[a]
	Asbestos Hazard	-2.1	-1.5%
	Combined	-2.1	N/A
Road Decommissioning	Slope Stability	-12.8	-14.0%
	Asbestos Hazard	-8.8	-6.2%
	Combined	-19.1	-9.5%
Restoration of Drainage Patterns on Unauthorized Routes	Slope Stability	-31.1	-61.9%
	Asbestos Hazard	-54.7	-56.4%
	Combined	-64.3	-58.8%
Total of All Actions	Slope Stability	-24.2	-17.0%
	Asbestos Hazard	-24.6	-10.0%
	Combined	-41.2	-13.2%

a - See below and also the Effects Analysis Methodology by Action section for explanation of why effects of changes to the maintenance levels and vehicle class on slope stability, or the effects of seasonal closures and mixed-use designation on either geo-indicator, were not analyzed quantitatively.

Direct and Indirect Effects

Table 104 shows that Alternative 6 would also measurably increase the geo-indicators for slope stability risk and asbestos exposure for route additions to the NFTS, in extent comparable to Alternative 3, and would measurably decrease the geo-indicators for slope stability risk and asbestos exposure hazard for each other type of action, to a greater degree than Alternatives 3 or 4 but less than Alternative 5.

As discussed above (in Effects Analysis Methodology by Action), although the unauthorized routes proposed to be added to the NFTS currently exist, they are analyzed here as though they are new features with respect to the risks associated with the geo-indicators. Proposed mitigations would likely reduce the risk defined by the geo-indicators to an unknown extent. The effects of changes in maintenance levels (opening or closing roads) cannot be readily measured for the geo-indicator of slope stability. Proposed changes in maintenance levels would have a small measurable benefit (decrease) in the geo-indicator for asbestos exposure. The effects of designation of mixed-use and changes in season of use (wet weather closures) were not analyzed quantitatively, as they are not easily quantified.

It is apparent that under this alternative, system road decommissioning would bring about a substantial reduction (benefit) in the geo-indicators for slope stability, asbestos hazard and combined hazard, and a parallel but much greater reduction in each indicator would result from restoration of drainage patterns on unauthorized routes not added to the NFTS. The benefit from road decommissioning would be comparable to Alternatives 3, 4 and 5. The benefit from route restoration would be greater compared to Alternatives 3 and 4, but less compared to Alternative 5. While the reductions in the geo-indicator metrics do not necessarily equate to linear ratios of risk reduction, it is evident that this alternative reduces both slope stability hazard and asbestos hazard substantially, especially through the restoration of unauthorized routes.

Drainage improvements (stormproofing) proposed on existing system roads should further enhance slope stability by directing drainage away from unstable areas and from diversion to stream channels, reducing the risk of hillslope, road/stream crossing and stream bank failure. The mileage of, and assumed benefit from stormproofing for this alternative is equivalent to Alternative 3.

The addition of four parking areas adjacent to road 17N49 may increase the geo-indicator metric for asbestos hazard, since they would be located on a popular off-highway vehicle route network on Gasquet Mountain, where there is a high degree of ultramafic bedrock exposure and several routes that tested high for asbestos presence. Exposure might increase related to designation of the area, concentrating activity and thereby increasing dust generation and exposure. These sites would be suitable locations for posting information about the presence of ultramafic bedrock, potential naturally occurring asbestos presence, exposure and hazards, as described in the Description of Alternatives (Chapter 2) and in the Geologic Hazards – Naturally Occurring Asbestos section of this chapter.

Summary of Effects Analysis across all Alternatives

Table 105 is a summary of each alternative, and action, by geo-indicator. For all actions, the alternative with the least number of cumulative miles per geo-indicator would have the smallest potential impact on the terrain and/or least potential hazard to human health. Based on this, the alternatives are ranked. A higher rank (5) indicates more benefits and/or less adverse effects to geologic resources and hazards for a given alternative, and a lower rank (1) indicates fewer benefits and/or most adverse effects, based on the geo-indicators. The scores are then averaged across the indicators to generate a final scoring rank for the alternatives, and displayed in Table 105. Two ranking schemes are displayed; one is based on averaging all hazard indicators for each action by alternative; the second is based only on averaging the combined hazard indicators.

Table 105. Alternatives Ranked by Indicator[a] – Change in miles from the existing condition, and rank by geo-indicator for each action by alternative

Geo-Indicator	Alternative 1	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Action – Additions to NFTS					
Slope Stability	0 miles (5)	21.1 (2)	29.2 (1)	5.2 (4)	19.7 (3)
Asbestos Hazard	0 miles (5)	41.9 (2)	56.6 (1)	10.7 (4)	41.0 (3)
Combined Hazard	0 miles (5)	46.5 (2)	61.8 (1)	13.2 (4)	44.3 (3)
Action – Upgrading and Downgrading of Roads (ML 1 and2)					
Slope Stability	0 miles (1)	N/A	N/A	N/A	N/A
Asbestos Hazard	0 miles (1)	-1.5 (3)	-0.7 (2)	-36.9 (5)	-2.1 (4)
Combined Hazard	0 miles (1)	-1.5 (3)	-0.7 (2)	-36.9 (5)	-2.1 (4)
Action – Road Decommissioning					
Slope Stability	0 miles (1)	-12.8 (2)	-12.8 (2)	-12.8 (2)	-12.8 (2)
Asbestos Hazard	0 miles (1)	-8.6 (2)	-8.8 (3)	-8.8 (3)	-8.8 (3)
Combined Hazard	0 miles (1)	-18.9 (2)	-19.1 (3)	-19.1 (3)	-19.1 (3)
Action – Restoration of Drainage Patterns on Unauthorized Routes					
Slope Stability	0 miles (1)	-25.7 (3)	-20.0 (2)	-45.6 (5)	-31.1 (4)
Asbestos Hazard	0 miles (1)	-43.9 (3)	-33.0 (2)	-85.0 (5)	-54.7 (4)
Combined Hazard	0 miles (1)	-51.2 (3)	-40.3 (2)	-95.4 (5)	-64.3 (4)
Geology – Cumulative Ranking by All Hazards					
Overall Rank	2.00 (2)	2.45 (3)	1.91 (1)	4.09 (5)	3.36 (4)
Geology – Cumulative Ranking by Combined Hazards Only					
Overall Rank	2.00 (1)	2.50 (3)	2.00 (1)	4.25 (5)	3.50 (4)

a - Ranking of each geo-indicator and combined hazard class for each action. For each action, a rank of 5 for the hazard class equals the most benefit/least adverse effect for that alternative; a rank of 1 equals the least benefit/most adverse effect for that alternative. The cumulative ranking is the mean of the combined hazard classes for all alternatives

Based on the rankings in Table 105, Alternative 4 is slightly less beneficial than Alternative 1, the no action alternative, in terms of potential slope instability and risk of exposure to naturally occurring asbestos, as well as overall risk as ranked by the geo-indicators for each action. It therefore has the highest risk both to watershed resources and human health from a geologic perspective. Alternative 5 would provide the most potential benefit as described by the geo-indicators for each action, according to both ranking schemes. Alternative 6 would be second-best in terms of potential benefit based on these factors, followed by Alternative 3. While the numerical scales and rankings cannot be interpreted as linear indications of differences in risk, it appears that Alternatives 5 and 6 are close in the potential overall benefit provided from a geologic perspective, while Alternatives 3 and 4 would be much less beneficial.

All alternatives (except the no action alternative) are very similar in the mileage of road that would be decommissioned, and so are essentially identical in their geo-indicator metrics for decommissioning. The bulk of the difference in potential benefits is reflected in the mileage of unauthorized routes that would be added to the NFTS, and in the mileage of restoration of routes not added the NFTS that each would achieve. In this regard, Alternative 5 provides by far the most potential benefit. Also, Alternative 5 is the only alternative that provides substantial potential benefit in terms of reduction in risk from asbestos exposure related to modification of the existing in the NFTS, because of the relatively large number of miles of roads proposed for closure (downgrade to ML1) under this alternative.

Compliance with the Forest Plan and other Direction

A list of Best Management Practices that apply to this project are included in Appendix E of the DEIS. Also see the Riparian Reserves Management Area direction for information on the Aquatic Conservation Strategy (Northwest Forest Plan). Mitigation measures such as culvert upgrades, waterbars, and rolling dips (included in Alternatives 3, 4, 5 and 6) have been proposed in order to comply with the Forest Plan and Clean Water Act. In addition, frequent monitoring and maintenance will be needed in order to meet water quality related Standards and Guidelines. See Appendix B, Monitoring Plan.

If selected, Alternative 1 would not be in compliance with the Forest Plan and other regulatory direction regarding geologic resources and hazards. Alternative 1 is the no action alternative. Under Alternative 1, existing unauthorized routes in the analysis area would remain in their existing unmaintained condition, and NFTS roads would not receive the recommended treatments to mitigate risks and hazards. Water quality issues as well as slope stability and asbestos exposure hazards would remain unmitigated and unacknowledged. The same trends in geologic conditions related to the existing transportation system and unauthorized route network would continue, at the same or possibly increased levels of risk. Recovery would be impeded and existing risks to water quality, the transportation network and human health would continue unabated.

Alternatives 3, 4, 5, and 6 are consistent with Forest Plan direction and Standards and Guides. NFTS roads and proposed routes would be mitigated to comply with direction on erosion prevention, slope stability, water quality protection, and human health hazards.

Riparian reserves are subject to the Aquatic Conservation Strategy of the Northwest Forest Plan Record of Decision, 1994 (see the Riparian Reserves section for more discussion).

Earthflows and unstable lands are within the riparian reserve boundaries. Alternatives 3, 4, 5, and 6 propose adding routes on unstable terrain. These routes therefore, fall under the Aquatic Conservation Strategy Standards and Guides which mandate trails and roads within riparian reserves do not prevent the attainment of the Aquatic Conservation Strategy objectives. Drainage structures, maintenance, and monitoring for signs of instability will ensure these alternatives meet the Aquatic Conservation Strategy objectives.

With regard to routes proposed for addition to the NFTS in Alternatives 3, 4, 5, and 6 that are located where naturally occurring asbestos may be present, direction from the Regional Forester (letters of February 11, 2009 and June 30, 2009 cited above) states that public access to and/or recreational use of the National Forest that is currently permitted will not be restricted until the actual public health risks associated with naturally occurring asbestos are assessed, and that any new proposed activities or projects on the forests that require NEPA would analyze naturally occurring asbestos just like any other environmental hazard or concern. The forest is compliant with Regional Forester direction, because the risk has been analyzed to the extent possible given the current state of knowledge about the distribution of naturally occurring asbestos, the potential for exposure and known and unknown levels of risk from exposure. Given the degree of uncertainty regarding the potential for exposure and the amount of risk involved, the mitigation measures described above would be adopted for each of the action alternatives, namely: 1) informing the public of the potential exposure to asbestos; 2) identifying the NFTS roads and trails that may present this risk; and 3) imposing speed limits on such roads and motorized trails to reduce dust generation and the risk associated with inhaling dust. Additionally, such roads would be posted in the field for lower speeds to reduce dust generation, and identified as having the potential to contain asbestos.

Fire and Fuels

Introduction

Aggressive fire suppression activity across the Forest over the last 80 years has resulted in fuel profiles that are outside the Historic Range of Variability resulting in more continuous fuels, both horizontally and vertically. Given an ignition source, natural or human, resulting wildfires are becoming larger and more destructive than in the past. Substantial mortality is occurring in certain vegetation types, creating large expanses of snag patches and dead fuels.

Comparing the period's pre-and post-1950, actual fire starts have increased dramatically both for lightning and human causes since 1950. This can be explained by several factors, including increased detection efforts, increased road access, and more efficient reporting. Recent fire records show human caused fires tend to cluster along major highways, county roads, ML 3, 4, and 5 roads, and near communities and developed campgrounds. Human causes have accounted for the largest number of ignitions of wildfire for the past 34 years of fire history on the Smith River NRA (Table 106); however, lightning occurs frequently throughout the forest, often with multiple ignitions from the same storm, and is responsible by far for the greatest number of acres burned for the past 34 years.

Table 106. Fire history by acres and cause, period 1978-2012

lightning				human			
acres		frequency		acres		frequency	
total	avg. per year	total	avg. per year	total	avg. per year	total	avg. per year
47,017.45	1,383	125	4	3,196.95	94	356	10

Analysis Framework: Statute, Regulation, Forest Plan and Other Direction

Direction relevant to the proposed action as it affects Fire and Fuels include:

1994 Six Rivers Land and Resource Management Plan (Forest Plan):

The Six Rivers identifies the following standards and guidelines applicable to fire and fuels management, which are applied to all alternatives and will be considered during the analysis process:

Table 107. Forest Plan standards and guidelines for fire and fuels

Management Area 17 - General Forest	
IV-63	Wildfires will be suppressed. Management related fuels will be treated so as to be consistent with wildlife habitat needs as described in Forest-wide Standards and Guidelines.
Fire and Fuels Management/Chapter 4 Standard and Guideline	
IV-117 14-1	All wildfires will receive a suppression response that is appropriate to meet the management area objectives. The response will be safe, timely, and cost efficient.
IV-117 14-2	When properly equipped Forest Service engines and trained personnel are available, they will take fire suppression action to protect structures within the Forest's area of responsibility for all reported fires that involve a threat to life or pose a threat to National Forest resources.

Fire and Fuels Management/Chapter 4 **Standard and Guideline**	
IV-117 14-3	Concentrations of fuels created by management activities will be reduced to acceptable levels and arrangements based on the site specific wildfire risk and the needs of other resources. The selected treatment methods should consider resource values and environmental limitations (for example, topography, accessibility) as well as costs.
IV-117 14-4	Prescribed fire will be used in natural fuels treatment for various benefits including: a) enhancement of diversity in the structure and composition of plant communities; b) reduction of fire hazard; c) area enhancement for the production and protection of commercial timber yields; d) enhancement of the production of plants and other materials for Native American gathering; and e) enhancement of other resource outputs such as wildlife habitat, forage, and browse.
IV-117 14-5	When prescriptions for timber, wildlife, and other resource management projects call for burning as a method of accomplishment, the risk of fire damage to adjacent resource and property values will be evaluated and plans developed to minimize negative impacts.
IV-117 14-6	Naturally ignited fires may be managed as prescribed fires, as determined on a case-by-case basis through an assessment of hazard and risk and the direction found in the area specific fire management plan.
IV-117 14-7	Structural components such as snags, duff, and coarse woody debris should be protected from wildfire and suppression damage to the extent possible. Trees and snags should be felled only if they pose a threat to firefighter safety or contribute to the risk of wildfire spread.
IV-117 14-8	Those suppression actions which are likely to cause more damage to critical resources (for example, threatened and endangered plant or animal species,and their habitats) than the fire itself will be carefully evaluated and alternative actions considered. Resource management experts will be involved to evaluate potential suppression damage compared to potential wildfire damage.
IV-117 14-9	Appropriate resource management experts will be included in developing project level hazard reduction plans. These plans should identify levels of coarse woody debris and snags (of adequate size and in sufficient amounts) to meet the habitat requirements of species of concern. Additionally, these plans must provide for the safety of firefighting personnel and produce a fuel profile that supports land allocation objectives.
IV-117 14-10	Resource management activities should be designed and implemented so that the wildfire hazard level of the surrounding area is not increased to an unacceptable level.
IV-117 14-11	For areas in the matrix that are located in the rural interface, fire management activities should be coordinated with local governments, agencies, and landowners during watershed analysis to identify additional factors which may affect hazard reduction goals. Hazard reduction may become more important in the rural interface and areas adjacent to structures, dwellings or other amenities. *(FSEIS ROD page C-48)

Forest Plan Forest Wide Desired Conditions

The forest wide desired future condition (DFC) is described on pages IV-2 through IV-4 in the Six Rivers National Forest Plan. The project area is represented by Management Area 7 (page IV-34):

Management Area 7 - Smith River National Recreation Area:

The Smith River NRA was established in November of 1990, by SB 2566/HB4309. The Smith River NRA is managed under direction provided by eight management areas. The primary goals are to emphasize, protect, and enhance the unique biological diversity; anadromous fisheries; and the wild, scenic, and recreational potential of the Smith River while providing sustained yields of forest products. See Smith River NRA Plan (see Forest Plan Appendix A for additional information).

Goal

Provide well-planned and well-executed fire protection and fuel management programs (including fire use through prescribed burning) that are responsive to land and resource management objectives.

Direction

Fire is a fundamentally important ecological process in most grassland, shrubland, and forest types in California. In fire-adapted ecosystems fire regulates biotic productivity and stability in ways that cannot be fully emulated by mechanical or chemical means. In the prolonged absence of fire, and aggravated by other disturbance factors, these fire-adapted forests and grasslands have undergone significant changes in species composition and structure. Intermediate canopy layers and higher ground fuel loadings have developed which allow ground fires to reach the crown more easily, making fires more difficult to control. Often more apparent during prolonged periods of drought, these changes have predisposed extensive areas to epidemic insect infestations, disease outbreaks, and severe stand replacing wildfires. Also, the growing urban/wildland intermix requires adjustments in strategies to protect life and property.

A programmatic diversity will be maintained in fire management, but efforts in prevention, suppression, hazard reduction, and fire rehabilitation will be aligned to more fully complement one another in support of ecosystem management.

Application of prescribed fire for ecosystem maintenance and restoration, and for hazard reduction should vary in extent and frequency of application, and intensity of burning. The differences in applications should be related to the role of natural fire in specific landscapes, current ecosystem needs, and wildfire hazard analysis included in fire management planning efforts.

Table 108. Emergency response route closer exemption

Title 36: Forests, Chapter 11: Forest Service, Part 261 Prohibition-subpart A, CFR 261.13- Motor Vehicle Use	
261.13	After National Forest System roads, National Forest System trails, and areas on National Forest System lands have been designated pursuant to 36 CFR 212.51 on an administrative unit or a Ranger District of the National Forest System, and these designations have been identified on a motor vehicle use map, it is prohibited to possess or operate a motor vehicle on National Forest System lands in that administrative unit or Ranger District other than in accordance with those designations, provided that the following vehicles and uses are exempted from this prohibition: (e) Use of any fire, military, emergency, or law enforcement vehicle for emergency purposes

Other Documents:

In 2005, the Del Norte County Fire Safe Council completed the Community Wildfire Protection Plan (CWPP). The specific purpose of the CWPP was to identify and prioritize projects to reduce wildfire risk through the implementation of fuel hazard reduction, community education, and pre-fire suppression in Del Norte County. The CWPP was developed using a collaborative process involving all local, tribal, state, and federal government agencies, fire protection districts, land owners, and interested publics. The CWPP identified risks and mitigations to reduce risks from wildfire in Del Norte County. Nine community meetings were held throughout the County to determine what the local fire safety issues were and to prioritize projects for agency and community action.

Effects Analysis Methodology

In 2005, the Smith River NRA published its Roads Analysis and Off-Highway Vehicle Strategy (RAP). During this process roads/routes were analyzed and deemed either high, medium, or low based on fire management and fuels treatment needs. Routes were identified that provided necessary access for fire suppression activities and fuels treatment opportunities.

The RAP identified key questions and issues affecting road-related management on the Forest. Each team member used resource-specific evaluation criteria that had been developed to determine risk and/or need of each ML 1, 2 and unauthorized road/route. Fire and Fuels was considered an administrative need in this process.

Every ML1 and ML2 road and inventoried unauthorized route on the NRA was evaluated for current or future fuels management or fire suppression need. The evaluation included such factors as cost efficiency (quicker, easier access), fire-fighter safety, difficulty of the terrain, etc. Duplicate-access roads/routes were not identified as high fire need roads/routes.

Findings from the 2005 Smith River RAP, identified approximately 207 miles of ML 1, 2 roads and UARS as high need fire roads/routes to be added to or kept on the NFTS. ML 3, 4 and 5 provide an additional 151 miles of access that will not be changed or modified under this action.

After reviewing the spring 2001 issue of Fire Management provided during scoping comment period, we found that the issues raised in the article were similar to the criteria used by the NRA fire personnel to evaluate the road system, which led to the proposed action of removing routes/miles of road across on the District (See Appendix H for criteria used to select High Fire Need Routes/Roads.)

The routes identified will help firefighting efforts by having fuel breaks already in place, when suppression efforts are needed (fuel breaks have proven to be an effective tool on the NRA during the 1996 Panther Fire and on the Six Rivers National Forest during the 1999 Megram Fire (Jimerson and Jones 2000)). These breaks will provide a safer means for managing prescribed fire by reducing risk of an escape and permit the efficient re-introduction of fire into the ecosystem.

Although some authors such as Inglesbee question the use of fuels breaks in the article Fuel breaks for Wildland Fire Management: A Moat or a Drawbridge for Ecosystem Fire Restoration, others have found that fuel breaks have been effective (Agee and Skinner 2005, Jimerson and Jones 2000) including fuel breaks constructed on Six Rivers. Agee (2000) concluded that “a well-designed fuel break will alter the behavior of wildland fire entering the fuel-altered zone. Both surface and crown fire behavior may be reduced. Shaded fuel breaks must be created in the context of the landscape within which they are placed. Landscape-level treatments such as prescribed fire can use shaded fuel breaks as anchor points, and extend the zone of altered fire behavior to larger proportions of the landscape. Therefore, reducing surface fuels, increasing the height to the live crown base, and opening canopies should result in (a) lower fire intensity, (b) less probability of torching, and (c) lower probability of independent crown fire.” Fuel treatments are being planned and implemented on the Smith River NRA to help restore the natural fire cycle by use of prescribed burning.

Direct and Indirect Effects of Actions Analyzed in Each Alternative

- Addition of unauthorized routes to the NFTS as maintenance level 2 or 3
- Addition of unauthorized routes to the NFTS as maintenance level 1
- Addition of unauthorized routes to the NFTS as motorized trails
- Decommissioning roads from the NFTS
- Downgrading maintenance level 2 roads on the NFTS roads to maintenance level 1
- Upgrading maintenance level 1 roads on the NFTS roads to maintenance level 2
- Stormproof ML 1 and 2 roads and motorized trails
- Restoring drainage patterns on Unauthorized Routes.

Indicator:

Miles of the NFTS as maintenance level 1, 2, or UARs that are identified as part of the High Priority Fire Road System.

Assumptions Specific to the Fire and Fuels Analysis

The criteria used to identify roads that provide necessary access for fire suppression activities and fuel treatment areas is listed in Appendix H.

- No major ridge top or main access roads (ML 3, 4, or 5) on the NFTS roads are proposed to be decommissioned from the NFTS, or downgraded from their existing ML level in this project.
- Each road was given a high, medium, or low rating for one or more of the evaluation criteria. An overall rating was based upon the answers from Appendix H questions and staff knowledge of the District's current and future fire suppression and fuels treatment programs.
- Each alternative in the project was analyzed for its ability to provide access for fire suppression and fuels management using the identified high fire need road system under this analysis (ML 1, 2, and UARs). Approximately 207 miles have been identified as high fire need roads/routes.
- The results of the analysis show the high priority fire roads proposed to be downgraded, decommissioned, or restored (UARs), and added or upgraded on the NFTS.
- ML2 roads are important roads for fire access and make up the majority of roads identified in the high priority fire needs.
- ML1 roads are closed to vehicle use year-round, and are generally roads that currently have limited feasible fire access due to road failures, vegetation encroachment, or other resource/access issues. Therefore, these roads would need improvements to meet accessibility needs for fire or fuels management.
- Miles of road downgraded to ML 1 are analyzed in this proposal as a loss in access.
- Motorized Trails would need improvements to meet accessibility needs for fire or fuels management.
- Roads do create access that could increase human caused fires, but roads also decrease initial attack response times.

Data Sources

- Forest-level GIS /Spatial data sources used for this analysis are listed in Table 109.

Table 109. Spatial data used for the analysis and a brief description of each data set

Spatial Data	
Layer Name	**Description**
SRF_Fire History2010-Layer	Smith River NRA Fire History
WUI_Srf_hoopa_uk-Layer Srf_Library_NRA.DBO.CommunitiesAtRisk	WUIs and Communities at high risk of wildland fire
RickNeed_join_PA_with_UAR_NewBoundary_732013-Table Layer	Fire and Fuels Administrative Needs
BasicOwnership	Private Land Ownership
SRNRA_Fuels_Treatments	Current and future fuels treatment areas
Alternative_1_UAR_9252013 Alternative_1_NFTS	Alternative 1 routes

Spatial Data	
Layer Name	**Description**
Alternative_3_9252013	Alternative 3 routes
Alternative_4_9252013	Alternative 4 routes
Alternative_5_9252013	Alternative 5 routes
Alternative_6_9252013	Alternative 6 routes

- Site-specific personal knowledge of agency fire and fuels specialist was used where Forest-level data were not current or not available.

Affected Environment

Roads provide access not only for accomplishing the suppression side of fire, allowing rapid response and safe deployment of firefighting resources, but also for fuels treatment to prevent catastrophic fire. Roads can be an impediment to fire spread at low fire intensity levels by acting as fuel breaks, which can aid in fuel treatments and suppression efforts; and act as anchor points and escape routes for fire personnel. Generally speaking, the more heavily traveled roads with wider un-vegetated prisms provide the greatest assistance as fire breaks for fire suppression efforts. Roads provide a means for efficiently and safely transporting firefighters, materials and equipment.

Recent fire records show human caused fires tend to cluster along major highways, county roads, ML 3, 4, and 5 roads, and near communities and developed campgrounds. Human causes have accounted for the largest number of ignitions of wildfire for the past 34 years of fire history on the Smith River NRA (Table 106); however, lightning occurs frequently throughout the forest, often with multiple ignitions from the same storm, and is responsible by far for the greatest number of acres burned for the past 34 years.

Roads do create access that could increase human caused fires, but roads also decrease initial attack response times.

Roads represent escape routes for firefighters engaged in fire suppression and access for hazardous fuels reduction work. Communities and other private landowners depend on the Forest Service for wildland fire suppression services. The road network in support of these private parcels will assist efforts to protect private lands and structures. In the event of an emergency (i.e. fire suppression, search and rescue, or law enforcement action, etc.), access for emergency responders shall be exempted from prohibition which officially closes routes (whether it is designated on the transportation system or not). (See 36 CFR 261.13).

Roads serve as escape routes for area residents in the case of emergency evacuations. The CWPP states that a first priority for defensibility of communities at high risk of wildland fire is to create strategically located shaded fuel breaks utilizing major road systems and ridge tops around the communities. No major ridge top (ML 3, 4, or 5) roads are proposed to be decommissioned from the NFTS or downgraded to maintenance level 1 or 2 in this project.

Environmental Consequences

Direct and Indirect Effects

Alternative 1, No Action

This alternative:

- Does not add miles of UARs to the NFTS as maintenance level 2 or 3
- Does not add miles of UARS to the NFTS as maintenance level 1
- Does not add miles of UARs to the NFTS as motorized trails
- Does not decommission roads from the NFTS
- Does not downgrade miles of roads to maintenance level 1
- Does not upgrade miles of roads to maintenance level 2
- Does not stormproof maintenance level 1 and 2 roads, or motorized trails
- Does not restore drainage patterns on UARs.

This alternative would maintain existing NFTS roads identified as High Fire Priority Roads, but will not add any high fire need UARs (approximately 12.42 miles) to the system or upgrade (improve accessibility) any existing system road.

As stated above, roads provide access not only for accomplishing the suppression side of fire management, allowing rapid response and safe deployment of firefighting resources, but also for fuels treatment to prevent catastrophic fire.

No major ridge top (ML 3, 4, or 5) roads are proposed to be decommissioned from the NFTS or downgraded to maintenance level 1 or 2 in this project.

Although CFR 261.13 allows any road/route to be opened in emergency situations, rapid response to a fire could be hampered by lower accessibility of the roads/routes (i.e. poor drivability). Fire size and costs may increase if access is delayed.

Technically the No Action Alternative appears to be the best option for fire access; however, this alternative will not add high fire need UARs or upgrade existing roads. NTFS roads under the No Action Alternative would continue to have limited access due to their current condition (i.e. failures, and/or veg. encroachment) without stormproofing.

Alternative 3, Modified Proposed Action

This alternative includes:

- Adding 7.6 miles of UARs as maintenance level 2 or 3
- Adding 7.3 miles of UARs as maintenance level 1
- Adding 44.0 miles of UARs to the NFTS as motorized trails
- Downgrading 55.3 miles of NFTS roads to maintenance level 1
- Upgrading of 2.6 miles of NFTS roads to maintenance level 2
- Decommissioning 20.4 miles of ML 2 roads from the NFTS

- Stormproofing 122.3 miles of maintenance level 1 and 2 roads and motorized trails
- Restoring drainage patterns on 78.4 miles of UARs.

This alternative would reduce miles of High Fire Priority Road System by decommissioning 6.7 miles of high fire priority roads, downgrading (i.e., closing) 13 miles of roads to maintenance level 1, and restoring drainage patterns on 1.02 miles of UARs. Field review and map review did not identify any system roads that will be removed under this alternative located near private residences with the exception of 17N23. However, currently there is no access to this road due to lack of access across private lands. An adjacent unauthorized route is proposed to be added to the system, effectively lowering the need to retain 17N23 for fire suppression purposes.

Lower Fire Priority roads/routes proposed to be added/upgraded could also provide access for fire and fuels management.

Of the 207 miles of roads identified as high need for fire suppression access and fuels treatment projects, approximately, 90 percent (187.30 miles) will be part of the NFTS under this alternative.

Alternative 4

Under this alternative:

- Add 12.5 miles of UARS to the NFTS as maintenance level 2 or 3
- Add 3.6 miles of UARS to the NFTS as maintenance level 1
- Add 58.0 miles of UARs to the NFTS as motorized trails
- Decommission 54.4 miles of roads from the NFTS.
- Downgrade 15.6 miles of roads to maintenance level 1
- Upgrade 11.1 miles of roads to maintenance level 2
- Stormproofing on 113.9 miles of maintenance level 1 and 2 roads and motorized trails
- Restore drainage patterns on 70.4 miles of UARs.

This alternative would reduce miles of High Fire Priority Road System by the decommissioning of 6.7 miles of high fire priority roads, downgrading of 11.9 miles of road to level 1, and the restoration of drainage patterns on UARs on 1.0 miles.

Lower Fire Priority roads/routes proposed to be added/upgraded will also provide access for fire and fuels management.

Approximately 188.4 miles or 91 percent of the High Priority Fire Need System roads will be part of the NFTS under this alternative.

Alternative 5

Under this alternative:

- Add 2.9 miles of UARS to the NFTS as maintenance level 2 or 3
- Add 6.2 miles of UARS to the NFTS as maintenance level 1
- Add 11.0 miles of UARs to the NFTS as motorized trails
- Decommission 54.4 miles of roads from the NFTS

- Downgrade 81.8 miles of roads to maintenance level 1
- Upgrade 4.2 miles of roads to maintenance level 2
- Stormproofing on 120.9 miles of maintenance level 1 and 2 roads and motorized trails
- Restore drainage patterns on 135.1 miles of UARs

This alternative would reduce miles of High Fire Priority Road System by the decommissioning 6.7 miles of high fire priority roads, downgrading of 75.5 miles of roads to maintenance level 1, and restoring drainage patterns on UARs on 3.5 miles.

Lower Fire Priority roads/routes proposed to be added/upgraded could also provide access for fire and fuels management.

Approximately 124.81 miles or 60 percent of the High Priority Fire Need System roads will be on the NFTS under this alternative.

Alternative 6

Under this alternative:

- Add 4.6 miles of UARs to the NFTS as maintenance level 2 or 3
- Add 7.4 miles of UARS to the NFTS as maintenance level 1
- Add 42.5 miles of UARs to the NFTS as motorized trails
- Decommission 54.4 miles from the NFTS
- Downgrade 20.6 miles of roads to maintenance level 1
- Upgrade 4.2 miles of roads to maintenance level 2
- Stormproofing on 122.5 miles of maintenance level 1 and 2 roads and motorized trails
- Restore drainage patterns on 101.6 miles of UARs.

This alternative would reduce miles of High Fire Priority Road System by the decommissioning 6.7 miles of high priority fire system roads, downgrading of 14.0 miles of roads to level 1, and restoring drainage patterns on UARs on 1.0 miles.

Lower Fire Priority roads/routes proposed to be added/upgraded could also provide access for fire and fuels management.

Approximately, 186.3 or 90 percent miles of the High Priority Fire Need System roads will be on the NFTS under this alternative.

Summary of Effects Analysis for All Alternatives

Technically the No Action Alternative appears to be the best option for fire access; however, this alternative will not add high fire need UARs or upgrade existing roads. NFTS roads under the No Action Alternative would continue to have limited access due to their current condition (i.e. failures, and/or veg. encroachment) without stormproofing.

A comparison of high fire need roads by alternative show that there is no significant difference concerning access for fire suppression activities and fuel treatment areas in Alternatives 3, 4, or 6. Implementing Alternatives 3, 4, or 6 would provide sufficient access for fire suppression and fuels treatment activities.

Alternative 5 reduces access for fire and fuels management the most; and has the greatest negative impact on rapid response and safe deployment of firefighting resources, and fuels treatment opportunities into the future (see Table 110).

Table 110. High fire need roads on the NFTS by alternative

Alternative Comparison	Alternative1 No Action	Alternative 3	Alternative 4	Alternative 5	Alternative 6
Percent Total Miles of high fire need Roads by Alternative[a]	94% 194.6 miles- No additions or upgrades[b]	90% 187.3 miles	91% 188.4 miles	60% 124.8 miles	90% 186.3 miles

a - 207 miles of roads were identified as high need for fire suppression access and fuels treatment projects and compared to proposal for each alternative.

b - Alternative 1, does not allow for additions or upgrades to the NFTS

Ranking for fire and fuels access by alternatives are as follows:

1-5 (1 being low fire/fuels treatment access and 5 being most fire/fuels access by alternatives)

Table 111. Alternative ranking comparison

Alternative Ranking	Alternative 1 No Action	Alternative 3`	Alternative 4	Alternative 5	Alternative 6
1-5 Miles of high fire need routes/roads to be added	5[a]	3	4	2	3

a - The No Action Alternative 1 appears to be the best option for fire access, when actually this alternative will not add high fire need routes or upgrade existing roads/routes. NTFS roads under the No Action Alternative would continue to have limited access due to their current condition (i.e. failures, and/or veg. encroachment) without stormproofing.

As stated above Alternatives 3, 4, and 6 provide all provide sufficient access for fire and fuels management priorities.

Cumulative Effects for All Alternatives

Wildfires have contributed dramatically to the vegetative makeup of the Smith River Basin. Historical records, fire evidence, and studies in adjacent areas show that fires regularly occurred in this area with a variety of fire frequencies and intensities. A certain degree of stand replacing, high intensity fires were a natural part of the Smith River NRA fire regime. Pre-settlement wildfires that were often large, stand replacing events, whose smoke could be seen far out to sea. Both wildfires and their exclusion through aggressive suppression affect plant and animal habitat, including stand structure, number of standing snags, amount of large woody debris, soil organic matter content, nutrient availability, and erosion hazard.

The dramatic reduction in wildfire burn acreages over the last 80 years appears to have resulted in non-Historic Range of Variability fuel profiles that are more continuous, both horizontally and vertically. Given this increased conifer density, future wildfires could become larger and more destructive than in the past.

In the prolonged absence of fire, and aggravated by other disturbance factors, these fire-adapted forests and grasslands have undergone significant changes in species composition and structure. Intermediate canopy layers and higher ground fuel loadings have developed which allow ground fires to reach the crown more easily, making fires more difficult to control.

This fire frequency suggests developmental pathways for stand structures which are in marked contrast to the development of old growth/late seral Douglas-fir forests farther north (Oregon Cascades or coast). These differences carry important implications for patterns of regeneration, coarse woody debris accumulations, stand structure, species composition, as well as historical levels of smoke. Frequent low-to-moderate severity fire was one of the more important ecological processes in the Klamath Province as well as in the eastside and southern Cascades. The structure, composition, productivity and overall health and vigor of today's forests are the consequence of various types of human intervention, and this includes long-term fire exclusion.

The absence of fire has decreased the abundance of some old-growth forest types that are dependent on frequent, low intensity fires. Substantial mortality is occurring on the Smith River NRA in knobcone pine, sugar pine, lodgepole pine, and Douglas-fir, creating large expanses of snag patches. Weather variations, whether related to long-term droughts or possible global warming trends, may also be increasing the number of dead trees and the amount of dead fuels. Also, topographic components of the NRA, that is, steep slopes, south-facing slopes, and funneling canyon winds from the dry interior, also contributes dramatically to the potential for high intensity wildfires. The NRA overall has large areas in the high to extreme fire hazard category. The extremely steep topography is a major component of this characterization.

A current shift is taking place towards larger area (several hundreds of acres) understory fuel treatments to counteract the unintended fuels buildup that have resulted from several decades of aggressive suppression. The first large area understory burn for hazard reduction was carried out on the Smith River NRA in May 1994. Its shaded fuel break and adjacent understory burn included approximately 550 acres and was designed to protect the community of Gasquet from wildfires burning westward through the Middle Fork Smith River canyon. Since then several other fuel breaks have been planned and constructed in strategic locations around communities within the District boundary (See project specifics in Appendix C). Approximately 3,100 acres of fuels reduction treatments around communities have been completed with an additional 1819 acres of the Big Flat Vegetation Management and Fuels Reduction Project currently being implemented. The Gordon Hill Vegetation Management and Fuels Reduction Project is currently in the planning stage, and proposes fuels reduction on 2649 acres. Fuel treatments are being planned and implemented on the Smith River NRA to help restore the natural fire cycle by use of prescribed burning.

Fire and Fuels Effects Summary

Roads provide access not only for accomplishing the suppression side of fire management, allowing rapid response and safe deployment of firefighting resources, and also for fuels treatment to prevent catastrophic fire. No major ridge top or main access (3, 4, or 5 ML) NFTS roads are proposed to be decommissioned or downgraded from in this project. Alternatives 3, 4 and 6 maintain at least 90 percent of the high fire priority roads, which will provide sufficient access for fire and fuels management needs into the future. Alternative 5 maintains 60 percent of the high fire priority roads which may result in longer response times, larger fires, and higher suppression costs. Roads can be an impediment to fire spread at low fire intensity levels by acting as fuel breaks, which can aide in fuel treatments and suppression efforts; and act as anchor points and escape routes for fire personnel.

Air Quality

This section describes the affected environment and environmental consequences for air quality.

It describes the area potentially affected by the alternatives and existing resource conditions within that area. Measurement indicators are used to describe the existing conditions for the forest. The measurement indicators will be used in the analysis to quantify and describe how well the proposed action and alternatives meet the project objectives and address resource concerns.

Analysis Framework: Statute, Regulation, Forest Plan and Other Direction

Air quality is managed through a series of Federal, state, and local laws and regulations designed to assure compliance with the Clean Air Act. A summary of how the regulations apply to this project is provided here.

Federal Clean Air Act - The Federal Clean Air Act (CAA) is the Federal law passed in 1970, and last amended in 1990, (42 U.S.C. §7401 et seq.) which is the basis for national control of air pollution.

Regional Haze Rule (1990 Clean Air Act Amendments), 40 CFR Part 51 - The Regional Haze Rule requires states to demonstrate “reasonable progress” toward improving visibility in each Class I area over a sixty-year period (to 2064), during which time visibility should be returned to natural conditions. Class I areas include wilderness areas or National Parks greater than 5000 acres which existed on August 7, 1977.

General Conformity Rule (1990 Clean Air Act Amendments) (Section 176 (c) of the Clean Air Act (part 51, subpart W, and part 93, subpart B.) - U.S. EPA passed the final General Conformity Rule in 1993. Under this rule, Federal agencies must work with State and local governments in a non-attainment or maintenance area to ensure that Federal actions conform to the initiatives established in the applicable state implementation plan (U.S. EPA, 2008).

California Clean Air Act (H & S §§ 39660 et seq.) - California adopted the California Clean Air Act (CCAA) in 1988. The Act provides the basis for air quality planning and regulation in California, independent of Federal regulations, and establishes ambient air quality standards for the same criteria pollutants as the Federal clean air legislation (CARB, 2007).

CARB Off-Road Recreational Vehicle Emissions Standards Rulemaking - In 1994, the CARB approved new off-highway recreational vehicle regulations (since amended in 1998). The rulemaking established emission standards for off-highway vehicles (OHVs) including off-road motorcycles (dirt bikes) and all-terrain vehicles (ATVs) (CARB, 2006). OHV registration became contingent on vehicle compliance to California emissions standards. Dirt bikes and ATVs that meet emission standards are eligible for OHV Green Sticker registration and have a year-round operating period, while noncompliant vehicles fall under the OHV Red Sticker program which has a limited operational season.

Air Quality Management District - The North Coast Unified Air Quality Management District (Air Quality District) covers the Six Rivers National Forest. The Air Quality District has published rules and regulations that are used to manage air quality within their District. In addition to following these rules and regulations, the Ranger Districts prepare Smoke Management Plans which contain specific measures that are designed to minimize smoke emissions during prescribed burns.

Six Rivers Land and Resources Management Plan (Forest Plan) - The Forest Plan includes the following direction related to air quality management:

- National Forest activities will be designed and managed to maintain air quality at levels which meet State and/or local government standards and regulations

- Proper dust abatement measures will be taken prior to any activity that will result in the sustained generation of dust
- Siskiyou Wilderness - maintain wilderness air quality to meet state Class II air quality standards at a minimum
- Trinity Alps Wilderness - maintain wilderness air quality to meet state Class II air quality standards at a minimum

Affected Environment

Topography and weather patterns determine the extent to which airborne particulate matter accumulates within a given area. Weather patterns strongly influence air quality through pollutant dispersion. The primary weather conditions that affect dispersion are atmospheric stability, mixing height and transport wind speed. Atmospheric stability refers to the tendency for air to mix vertically through the atmosphere. Mixing height is the vertical distance through which air is able to mix. The transport wind speed is a measure of the ability to carry emissions away from a source horizontally. These factors determine the ability of the atmosphere to disperse and dilute the released emissions.

The general climate of the Forest varies considerably with elevation and proximity to the coast. The Gasquet and northern Orleans Ranger Districts have a maritime climate, with cool to mild, and wet winters, with much drier, but still mild summers. At the other extreme, the southern portion of the Forest, the Mad River District climate varies from temperate to Mediterranean, being generally removed from the cool ocean effects. Most precipitation is connected with winter storms that move inland from the Pacific. The moist air ascends as it moves across the coastal mountains, and associated orthographic lifting results in a considerable increase in rainfall and intensity.

In general, winds in the river drainages are associated with daily diurnal winds and sea breezes are channeled inland by the topography and add to the local upcanyon winds. These winds are strongest in mid-to-late summer in the major river drainages, with 12-16 mph up-canyon winds during the late afternoons and in the evening on a daily basis.

Existing Conditions Forestwide

Air quality across the Forest is generally considered good to excellent due to low population density and the remote nature of the Forest. Air quality can be and has been severely impacted by particulate matter (PM) and other pollutants during large wildfire events on the Forest. A State of Emergency was declared due to smoke impacts both during the Megram Fire (1999) and the 2008 wildfire events.

Except during these extreme events, all Federal standards of air quality are consistently achieved across the entire Forest (including those for ozone, carbon monoxide, particulate matter [PM 2.5 and PM 10], and nitrogen dioxide). The overall area is considered to be in “attainment” by Federal standards, and it has previously met and currently meets ambient air quality standards.

Visibility across the Forest is also considered good, except during major wildfires. During the Megram Fire (1999) and the fires of 2008, visibility was often reduced down to 20-feet. Several times during this fire, imaging and suppression aircraft were prevented from flying due to dense smoke. The clear visibility of the Siskiyou Wilderness was severely degraded throughout the duration of these two large fire events. The Gasquet Ranger District contains a portion of the Siskiyou Wilderness, which is a Class II Wilderness. Visibility was also degraded for this wilderness during the 2008 fire season.

Fugitive Dust

Atmospheric dust arises from the mechanical disturbance of granular material exposed to the air. Dust generated from these open sources is termed “fugitive” because it is not discharged to the atmosphere in a confined flow stream. Common sources of fugitive dust include native surface roads, agricultural tilling operations, aggregate storage piles, and heavy construction operations. In the project area, native surface roads are the most common source of fugitive dust.

Fugitive road dust is a result of motor vehicle use when road surfaces are dry; the force of wheels moving across the native surfaces causes pulverization of surface material. Dust is lofted by the rolling wheels as well as by the turbulence caused by the vehicle itself. This air turbulence can persist for a period of time after the vehicle passes.

The quantity of dust emissions from a given segment of native surface road varies linearly with the volume of traffic. Variables which influence the amount of dust produced include the average vehicle speed, the average vehicle weight, the average number of wheels per vehicle, the road surface texture, the fraction of road surface material which is classified as silt (particles less than 75 microns in diameter), and the moisture content of the road surface (US EPA 2002).

The impact of a fugitive dust source on air quality depends on the quantity and drift potential of the dust particles injected into the atmosphere. In addition to large dust particles that settle out near the source, considerable amounts of fine particles also are emitted and dispersed over much greater distances from the source. Theoretical drift distance, as a function of particle diameter and mean wind speed, has been computed for fugitive dust emissions. Results indicate that, for a typical mean wind speed of 10 mph, particles larger than about 100 microns in aerodynamic diameter are likely to settle out within 20 to 30 feet from the edge of the route or other point of emission. Particles that are 30 to 100 microns in diameter are likely to undergo impeded settling. These particles, depending upon the extent of atmospheric turbulence, are likely to settle within a few hundred feet of the route. Smaller particles have much slower gravitational settling velocities and are much more likely to have their settling rate retarded by atmospheric turbulence.

Naturally Occurring Asbestos

As discussed in the geology section, naturally occurring asbestos is commonly found in serpentine and other ultramafic rock formations. When asbestos containing rocks are crushed or broken through weathering and ground disturbing activities (including driving over unpaved roads, trails, or soils), asbestos-containing dust can be generated. Once airborne, these asbestos fibers can be inhaled and can pose a potential health risk. A naturally occurring asbestos fact sheet has been produced by the Forest Service that includes best management practices for reducing your exposure to naturally occurring asbestos (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5363877.pdf). These best management practices are based on guidance from various Federal and state agencies such as the U.S. Environmental Protection Agency; U. S. Department of Health and Human Services; Agency for Toxic Substances and Disease Registry; and the California Air Resources Board (CARB).

CARB has adopted only two Airborne Toxic Control Measures (ATCMs) for naturally-occurring asbestos, which applies to the following activities: 1) Surfacing Applications, and 2) Construction, Grading, Quarrying, and Surface Mining Operations. CARB and the North Coast Unified Air Quality Management District (Air Quality District) have also received delegated authority to enforce the Federal National Emission Standards for Hazardous Air Pollutants regulations for asbestos (http://www.arb.ca.gov/toxics/asbestos/reginfo.htm). Accordingly, the Air Quality District has instituted a registration program for all construction, grading, quarrying, and surface mining operations within the Air Quality District. They do not have a program for monitoring the use of motorized trails.

The Forest Service has also prepared maps which identify the locations of ultramafic and serpentine rock formations on National Forest System lands. Not all ultramafic and serpentine rock contains asbestos. Maps also identify locations where naturally occurring asbestos has been detected to date. These maps should not be considered as providing the definitive locations of all naturally occurring asbestos on the Forest, but they should give an idea of where potential risks may exist. The maps were prepared based on best available information from Federal and state agencies such as the California Air Resources Board, California Geological Survey, U.S. Geological Survey, and Forest Service and will be updated as new information becomes available. Maps at a regional or Forest scale can be found at http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelprdb5363833. Finer detail maps can be viewed at the District and Supervisor's offices.

Particulate Matter (PM10 and PM2.5)

Sources of PM10 emissions include wood burning stoves from residential areas; smoke from pile burning, broadcast burning, and wildfires; and re-suspended road dust and cinders. The finer particles of PM2.5 primarily come from: car, truck, bus and off-road vehicle (e.g., construction equipment, snowmobile, locomotive) exhaust; other operations that involve the burning of fuels such as wood, heating oil or coal; and natural sources such as forest and grass fires.

The Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate these particles to protect visibility and human health. The Federal 24-hour ambient air quality standard is 150 micrograms/m3 for PM10 and 35 micrograms/m3 for PM2.5 (US EPA 2008). The entire Forest is in attainment for Federal standards of both PM10 and PM2.5.

Outdoor air levels of fine particles (PM 2.5) and inhalable coarse particles (PM10) increase during periods of stagnant air (very little wind and air mixing), when the particles are not carried away by wind, or when winds bring polluted air into the area from outside sources. In general, as the levels of PM2.5 in outdoor air increase, the air appears hazy and visibility is reduced. These conditions are similar in appearance to high humidity or fog.

Ozone

Ozone is a secondary pollutant formed by complex photochemical reactions of nitrogen oxides (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit nitrogen oxides and volatile organic compounds that help form ozone. Currently the Ozone - eight hour Federal standard is .075 ppm. The entire Forest is currently in attainment for the Ozone - eight hour standard (US EPA 2008).

Existing Conditions in Class I Airsheds

The Clean Air Act Amendments of 1977 require that a program be established to prevent degradation of air quality in pristine areas and protect air quality related values of Class I areas. Designation as a Class I area allows only very small increments of new pollution above already existing air pollution levels. Class I areas include National Parks and National Wilderness Areas greater than 5,000 acres in existence on August 7, 1977, when the amendments were signed into law. Redwood National Park is immediately adjacent to the Gasquet District. The nearest USFS managed Class I area is the Kalmiopsis Wilderness, which is just 2.25 miles north of the Gasquet District in the State of Oregon. Within Class I areas, visibility is the air quality related value that is most affected, especially by fugitive dust. Particulates that remain suspended in the atmosphere are efficient light scatterers, and therefore, contribute to regional haze. The air quality related value of visibility is considered good to excellent most of the time in these Classes I airsheds, except during major wildfires.

Environmental Consequences

The Affected Environment outlined in the previous section reflects the current air quality conditions for the Forest air basins, including those being considered in this analysis. In the Environmental Consequences section, the effects of the alternatives are analyzed to determine the potential for public motor vehicle travel to cause or contribute to violations of National Ambient Air Quality standards (NAAQs), degrade air quality, affect Class I areas, or to cause or contribute to visibility impairment beyond the existing conditions.

Effects Analysis Methodology

As described in Chapter 2, the action alternatives include proposals to prohibit cross-country vehicle travel, make limited changes to the existing NFTS, and add new facilities (presently unauthorized routes) to the NFTS. The following section describes the analysis methods used to assess the effects of the alternatives on air quality.

Measurement Indicators

The following indicators are used to evaluate the direct, indirect, and cumulative effects of prohibiting cross-country travel and adding facilities (presently unauthorized routes) to the NFTS.

- Miles of native surface routes available for public motorized use within one mile of Class I Airsheds – Redwood National Park
- Miles of native surface routes available for public motorized use within one mile of Class II Airsheds – Siskiyou Wilderness
- Miles of proposed NFTS routes with the potential for naturally occurring asbestos

Rationale: Motor vehicles generate dust (particulate matter) and ozone-forming emissions. Miles of native surface unauthorized routes within or adjacent to a Class I and Class II wildernesses is used to compare the dust-production potential of each alternative to existing levels.

Proposed changes to the existing NFTS (such as changes in vehicle class and season of use) will not be considered further in this analysis. Motor vehicles can already use NFTS roads. Allowing or prohibiting use of those roads by different types of vehicles will have no direct, indirect, or cumulative effect on air quality.

Direct and Indirect Effects

The number of vehicle miles traveled annually by forest users is not expected to change in any of the alternatives through the prohibition of cross-country travel and the redirection of motorized use onto a designated system of roads and trails. As a result, adverse effects to air quality (i.e., effects that would cause or significantly contribute to air quality impairment beyond the existing conditions) are not anticipated for any of the alternatives. This determination is based on the following:

- Emissions from unpaved roads are not a primary source of PM10 or PM2.5 in the study area.
- None of the alternatives propose routes, areas or terminal facilities that would result in a significant increase or change in concentration of use. Use levels for the vast majority of unauthorized routes are light (<25 trips/week) to low (25-100 trips/week, mainly during hunting season). In addition, many of these routes are short spurs off of existing NFTS roads. Since many of the routes do not provide through access and receive very low use, reductions in the miles of routes available for motorized use are not expected to result in major changes in use levels on designated routes.

Adjacent to Class I and Class II airsheds, motor vehicle use of native surface unauthorized routes would continue to produce dust and emissions at or below current levels. Less than one mile of routes would be added for motorized use within one mile of either a Class 1 or Class II airshed for Alternatives 3 through 6. In the existing condition, less than 1 percent of the total unauthorized routes on the Forest are located within 1 mile of a Class I airshed. Fugitive dust generated from unauthorized routes impacting visibility in Class 1 airsheds is of very low concern. The relative contribution of any of the alternatives to visibility concerns within Class I airsheds is expected to be negligible.

Unauthorized route mileage across the Forest is low (255 miles in the existing condition) and their use is also light to low, so use of these routes would not cause the Forest to be in non-attainment for ozone production. Recreational travel on the unauthorized routes will not cause or significantly contribute to violations of the National Ambient Air Quality Standards in the existing condition or the action alternatives. For all of the alternatives, direct and indirect effects of vehicle emissions on air quality would not result in measurable variations from current conditions.

The potential exposure to asbestos from dust generated by motor vehicle traffic does exist for these existing and proposed routes. See Table 112 for the miles of the proposed routes that pass through serpentine soils with the potential for naturally occurring asbestos.

Table 112. Miles of existing and additional miles within the project area with the potential for naturally occurring asbestos

	Alternative				
	1	3	4	5	6
Total Existing (same as no action alternative)	116.59	116.59	116.59	116.59	116.59
Added miles within potential naturally occurring asbestos	0	43.28	57.67	11.74	42.08

Effects of Mitigation Measures

Mitigation measures proposed to reduce or eliminate effects on forest resources are summarized in Chapter 2, and listed by route in Appendix A. All proposed mitigation measures are not expected to create dust above that generated through motorized use of the route itself. This is because the other mitigations do not involve new ground disturbance, disturbance is confined to the existing road prism, and/or ground disturbance is very limited in scope.

Cumulative Effects

Present and reasonably foreseeable future actions within the project area that would affect local air quality (particulate matter and visibility) include smoke from wildland fires and wood burning.

Recreational OHV use is the primary present and foreseeable future activity relevant to this discussion of cumulative effects to air quality. Most of the roads and trails in this area are part of the existing system; unauthorized route mileage is extremely limited. Although the study area is a popular destination for recreational OHV use, the relative contribution of emissions in this area to levels of ozone, particulate matter, or fugitive dust is considered to be low because:

- Proposals to add routes to the NFTS would not result in measurable adverse cumulative effects to air quality related issues, given the extremely limited added mileage within one mile of either Class I or Class II wildernesses.

As stated in the geology section, based on direction from the Regional Forester, the Forest has tested twenty-seven unauthorized route segments proposed for adoption in the NFTS on the Smith River NRA, which are most likely to contain NOA. The test results show that the presence or absence of asbestos, and its concentration, is variable in samples taken in relatively close proximity. In addition, there is no method to reliably predict the concentration of asbestos in the air, given the concentration of a known amount of asbestos in the soil (EPA 2008).

In light of these uncertainties, the proposed mitigation for adding routes to the NFTS that may contain naturally occurring asbestos is to inform the public of the potential exposure to asbestos, identify the NFTS roads and trails that may present this risk, and to impose speed limits on such roads and motorized trails to reduce dust generation and the risk associated with inhaling dust. Additionally, such roads will be posted in the field for lower speeds to reduce dust generation, and identified as having the potential to contain asbestos. No new lab testing for asbestos is proposed.

Global climate change must also be included in the discussion of the cumulative effects of this project. The Environmental Protection Agency (EPA) (2007) developed a “State of Knowledge” paper that outlines what is known and what is uncertain about global climate change. The following elements of climate change are known with near certainty:

1. Human activities are changing the composition of Earth’s atmosphere. Increasing levels of greenhouse gases like carbon dioxide (CO2) in the atmosphere since pre-industrial times are well-documented and understood.

2. The atmospheric buildup of CO2 and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.

3. An “unequivocal” warming trend of about 1.0 to 1.7 F occurred from 1906-2005. Warming occurred in both the Northern and Southern Hemispheres and over the oceans (IPCC, 2007).

4. The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades.

5. Increasing greenhouse gas concentrations tend to warm the planet.

According to EPA (2007), however, it is uncertain how much warming will occur, how fast that warming will occur, and how the warming will affect the rest of the climate system including precipitation patterns.

Given what is and is not known about global climate change, the following discussion outlines the cumulative effects of this project on greenhouse gas emissions and effects of climate change on forest resources.

Carbon Dioxide (CO_2), Methane (CH_4) and Nitrous Oxide (N_20) emissions generated by public motor vehicle travel on NFTS facilities are expected to contribute to the global concentration of greenhouse gases that affect climate change. Projected 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. The intensity and severity of these effects are expected to vary regionally and even locally, making any discussion of potential site-specific effects of global climate change on forest resources speculative.

Because greenhouse gases from vehicle emissions mix readily into the global pool of greenhouse gases, it is not currently possible to discern the effects of this project from the effects of all other greenhouse gas

sources worldwide, nor is it expected that attempting to do so would provide a practical or meaningful analysis of project effects. Potential regional and local variability in climate change effects add to the uncertainty regarding the actual intensity of this project's effects on global climate change. Further, emissions associated with this project are extremely small in the global atmospheric CO_2 context, making it impossible to measure the incremental cumulative impact on global climate from emission associated with this project.

In summary, the potential for cumulative effects is considered negligible for all alternatives because none of the alternatives would result in measurable direct and indirect effects on air quality or global climatic patterns.

Compliance with the Forest Plan and Other Direction

All standards and guidelines from the Forest Plan related to air quality are met. This approach meets the standards for: Federal, State and local air quality standards; dust abatement; and Class I and Class II wilderness areas.

Based on direction from the Regional Forester, the Forest has tested twenty-seven unauthorized route segments proposed for adoption in the NFTS on the Smith River NRA, which are most likely to contain naturally occurring asbestos. The test results show that the presence or absence of asbestos, and its concentration, is variable in samples taken in relatively close proximity. In addition, there is no method to reliably predict the concentration of asbestos in the air, given the concentration of a known amount of asbestos in the soil (EPA 2008).

In light of these uncertainties, the proposed mitigation for adding routes to the NFTS that may contain naturally occurring asbestos is to inform the public of the potential exposure to asbestos, identify the NFTS roads and trails that may present this risk, and to impose speed limits on such roads and motorized trails to reduce dust generation and the risk associated with inhaling dust. Additionally, such roads will be posted in the field for lower speeds to reduce dust generation, and identified as having the potential to contain asbestos. No new lab testing for asbestos is proposed.

Maps will also be available at each District and Supervisor's office that display the areas of bedrock which are more likely to contain naturally occurring asbestos.

Inventoried Roadless Areas

The 2001 Roadless Conservation Rule (66 FR 3272) defines Inventoried Roadless Areas (IRA) as "areas identified in the Forest Service Roadless Area Conservation Final Environmental Impact Statement, Volume 2 – Maps of Inventoried Roadless Areas." 36 CFR Part 294 Subpart B further describes resources or features that are often present in and characterize inventoried roadless areas, including: (1) High quality or undisturbed soil, water, and air; (2) Sources of public drinking water; (3) Diversity of plant and animal communities; (4) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; (5) Primitive, semiprimitive nonmotorized and semiprimitive motorized classes of dispersed recreation; (6) Reference landscapes; (7) Natural appearing landscapes with high scenic quality; (8) Traditional cultural properties and sacred sites; and (9) Other locally identified unique characteristics.

Classification of IRAs began with the RARE II (Roadless Area Review and Evaluation) study in 1978, which identified 23 areas in the Forest totaling approximately 313,000 acres as roadless study areas subject to evaluation for potential wilderness designation. Of these, approximately 121,000 acres were designated wilderness by the California Wilderness Act of 1984. The 1984 Act released approximately

190,000 acres of roadless areas for non-wilderness uses. In 2006 the Northern California Coastal Wild Heritage Wilderness Act designated another 59,748 acres as wilderness mostly occurring within IRAs.

There are five IRAs within the Smith River National Recreation Area Restoration and Motorized Travel Management project boundary shown in Figure 6; including the following identified by their name and RARE II number: Kelly (05247), North Fork Smith (05707), Ship Mountain, Siskiyou “B” (B5701), and South Kalmiopsis (05709). Table 113 lists the acres in each IRA within the project boundary. The combined acreage of these areas total approximately 55 percent of all IRAs on the National Recreation Area (NRA) District (146,601 acres).

Table 113. Inventoried roadless areas

IRA Name	Acres in Project Boundary
Kelly	5,190
Monkey Creek	9,011
North Fork Smith	37,874
Packsaddle	3,858
Ship Mountain	11,929
Siskiyou “A”	424
Siskiyou “B”	11,754
South Kalmiopsis	321

Analysis Framework: Statute, Regulation, Forest Plan and Other Direction

The historic Wilderness Act passed in 1964 provides for future wilderness additions, of which the California Wilderness Act of 1984 tiers to and allows for non-wilderness, multiple-use management of roadless areas. The Multiple-Use Sustained-Yield Act of 1960 (MUSYA) provides Forest Service authority to manage national forest and grasslands “for outdoor recreation, range, timber, watershed, and wildlife and fish purposes.” The NFMA reaffirmed multiple-use and sustained-yield as the guiding principles for land management planning of the National Forest System lands (16 U.S.C. 1600, 1604). In 1967 the Forest Service began evaluation of Roadless Area Review and Evaluation (RARE). A second attempt (RARE II) was initiated in 1977 and the Final Environmental Impact Statement was completed in 1979. The California Wilderness Bill of 1984 designated wilderness areas in the state, and “released” undesignated IRAs to multiple-use management.

Land allocations in the Smith River NRA were established through the Smith River NRA Act of 1990. The 1995 Six Rivers Land and Resource Management Plan identified and inventoried roadless areas. Roads and trails exist and connect to other management areas. Management areas represent lands that will be managed in a uniform manner, through a set of management area prescriptions unique to that area. Management areas within the eight IRAs include Research Natural Area, Special Habitat, Riparian, Special Interest Area, Retention and Partial Retention Visual Quality Objectives (VQOs), Managed Habitat, and General Forest.

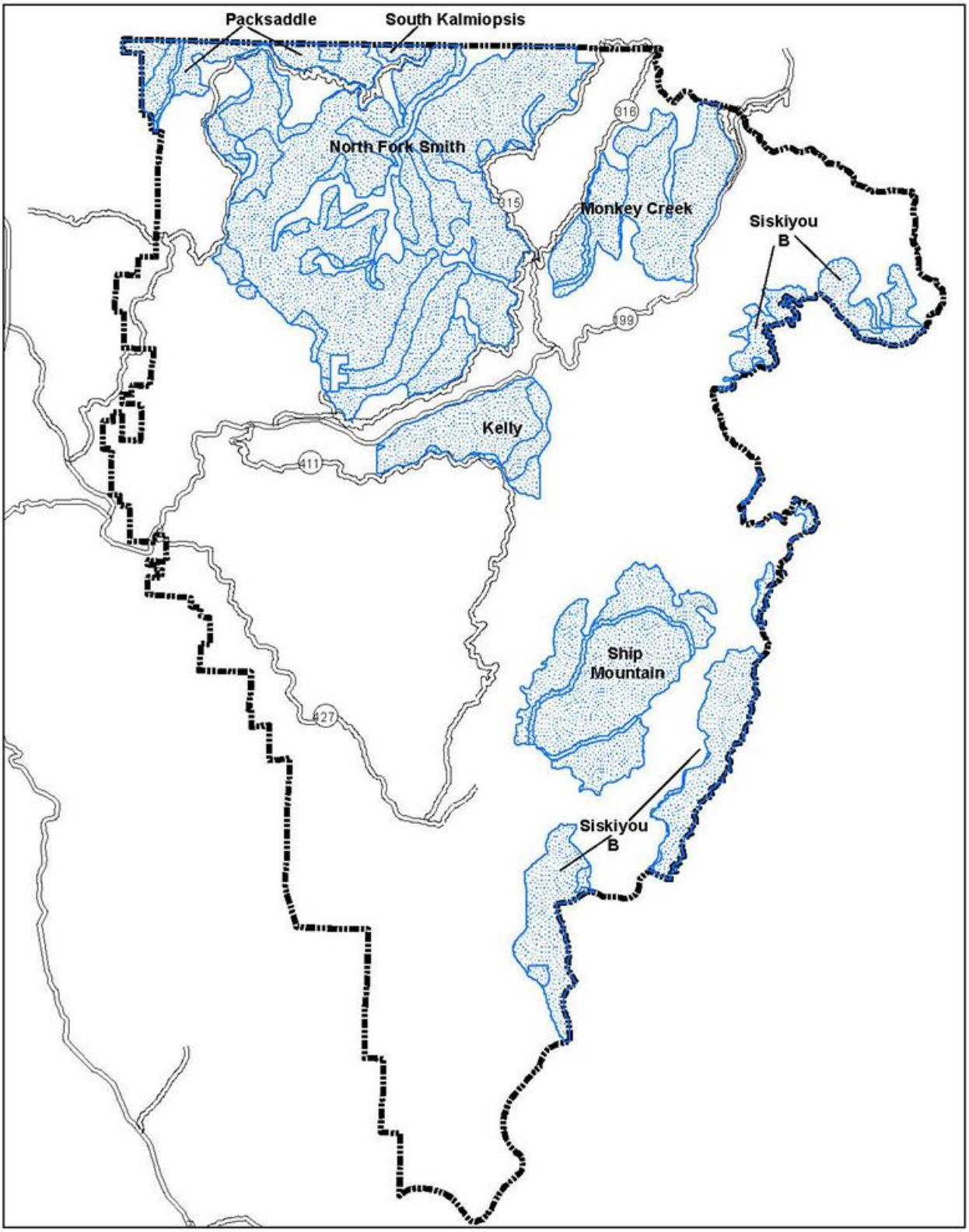

Figure 6. Map displaying location of inventoried roadless areas in the project area

In 2001 the Department of Agriculture adopted the Special Areas; Roadless Area Conservation Rule (66 FR 3244)for the intent to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management (36 CFR Part 294).The 2001 Roadless Rule provided amendments to 36 CFR Part 294 under Subpart B- Protection of IRAs to include the prohibition on road construction and road reconstruction in IRAs (§294.12) and the prohibition on timber cutting, sale, or removal in IRAs (§294.13) with certain exceptions. Exceptions include: Maintenance of classified roads is permissible in IRAs (§294.12(c)); and where [T]he cutting, sale, or removal of timber is incidental to the implementation of a management activity not otherwise prohibited by this subpart (§294.13(b)(2)). The 2001 Roadless Area Conservation Rule (36CFR 294) established prohibitions on road construction, road reconstruction, and timber harvesting in IRAs on National Forest System lands. IRAs are identified in a set of maps contained in the Forest Service Roadless Area Conservation Final Environmental Impact Statement, Volume 2, dated November 2000 (and on any subsequent updated or revision of those maps through the land management planning process) (36 CFR 294.11).

Effects Analysis Methodology

The intent of the Roadless Rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management. For each alternative the analysis tiers to the discussion of effects on values or features characterized as IRA (66 FR 3272).

Table 114. Roadless and wilderness characteristics and descriptions

Characteristic	Description
Roadless	
Soil, Water and Air resources	These three key resources are the foundation upon which other resource values and outputs depend. Healthy watersheds provide clean water for domestic, agricultural, and industrial uses; help maintain abundant and healthy fish and wildlife populations; and are the basis for many forms of outdoor recreation.
Sources of public drinking water	NFS lands contain watersheds that are important sources of public drinking water. Careful management of these watersheds is crucial in maintaining the flow of clean water to a growing population.
Diversity of plant and animal communities	Undeveloped areas are more likely than roaded areas to support greater ecosystem health, including the diversity of native and desired nonnative plant and animal communities, due to the absence of disturbances caused by roads and accompanying activities. Inventoried roadless areas also conserve native biodiversity, by providing areas where nonnative invasive species are rare, uncommon, or absent.
Habitat for threatened, endangered and sensitive species and species dependent on large undisturbed areas of land	Inventoried roadless areas function as biological strongholds and refuges for many species. Of the nation's species currently listed as threatened, endangered, or proposed for listing under the Endangered Species Act, approximately 25% of animal species and 15% of plant species are likely to have habitat within inventoried roadless areas on NFS lands.
Primitive, semiprimitive nonmotorized, and semiprimitive motorized classes of recreation	These areas often provide outstanding recreation opportunities such as hiking, camping, picnicking, wildlife viewing, hunting, fishing, cross-country skiing, and canoeing. While they may have many Wilderness-like attributes unlike Wilderness, the use of mountain bikes and motorized means of travel is allowed.
Reference landscapes for research study or interpretation	The body of knowledge about the effects of management activities over long periods of time and on large landscapes is very limited. Reference landscapes can provide comparison areas for evaluation and monitoring. These areas provide a natural setting that may be useful as a comparison to study the effects of more intensely managed areas.
Landscape character and integrity	High quality scenery, especially scenery with natural-appearing landscapes, is a primary reason that people choose to recreate. In addition, quality scenery contributes directly to real estate values in neighboring communities and residential areas.

Characteristic	Description
Traditional cultural properties and sacred sites	Traditional cultural properties are places, sites, structures, art, or objects that have played an important role in the cultural history of a group. Sacred sites are places that have special religious significance to a group. Traditional cultural properties and sacred sites may be eligible for protection under the National Historic Preservation Act.
Other locally identified unique characteristics	Roadless area may offer other locally identified unique characteristics and values. Examples include uncommon geological formations, valued for their scientific and scenic qualities, or unique wetland complexes.
Wilderness	
Untrammeled	This quality monitors human activities that directly control or manipulate the components or processes of ecological systems.
Natural	This quality monitors both intended and unintended effects of modern people on ecological systems.
Undeveloped	This quality monitors the presence of permanent improvements such as structures, construction, habitations, and other evidence of modern human presence or occupation.
Outstanding opportunities for solitude or a primitive and unconfined type of recreation	This quality monitors conditions that affect the opportunity for people to experience solitude or primitive, unconfined recreation in a wilderness setting, rather than monitoring visitor experiences per se.

Effects on these roadless characteristics are described in the analysis as follows:

- Intensity:
  - **Negligible**: No measurable effects to the characteristic.
  - **Minor**: Effects are detectable, but are not expected to increase or influence the level of development within the IRA.
  - **Moderate**: Effects on the characteristic are detectable, and expected to increase the level of development for short periods of time until effects have recovered.
  - **Major**: Effects on the characteristic are easily detectable and measurably increase the long-term level of development.
- Type:
  - **Improving:** Effects will improve the overall characteristic of roadless areas.
  - **Stable:** Effects to the characteristic are not expected to change.
  - **Degrading:** Effects will degrade the overall characteristic of roadless areas.

Assumptions

The following assumptions are central to the analysis of the effects on IRAs:

1. Off-highway vehicle use is permitted in IRAs. Motorized trails can be added to the NFTS provided roadless characteristics - including semiprimitive motorized classes of recreation – are maintained.
2. Unauthorized routes occurring in IRAs are not designated for motorized travel on the current Motor Vehicle Use Map and are open for motorized travel.

3. The NFTS roads and unauthorized routes considered in the alternatives exist on the landscape therefore provide the baseline of the current condition of the IRAs and do not represent a permanent development of the landscape. Motorized use is currently taking place within the IRAs.
4. Consistent with Forest Service policy, a trail is a route established for travel by foot, stock, or trail vehicle, and can be over, or under 50 inches wide. Roads typically have been developed and used for the purpose of transportation (moving from point to destination); while trails often provide more opportunity for recreational motorized use (travel for the purpose of the motorized recreational experience). Motorized trails may help maintain the semiprimitive motorized characteristics of IRAs.
5. Effects from all vehicle classes on roadless characteristics are assumed to be the same; therefore, changes in vehicle class will not be considered further in this analysis.
6. Motorized road use levels of “Light” (fewer than 25 motor vehicles per week) and “Low” (25-100 motor vehicles per week) are considered to be compatible with the characteristics of IRAs. The current use level of all proposed unauthorized routes for all alternatives is “Light”.
7. Under all action alternatives, 6.3 miles of existing NFTS roads in IRAs within the project boundary will be decommissioned and all unauthorized routes not proposed for addition will be restored. Site-specific proposals are developed and part of this analysis.
8. Routes added to the NFTS as motorized trails would be dedicated to use for recreation. The proposed, decommissioning and restoration would allow recovery of natural-appearing landscapes.
9. Road closures and restoration of unauthorized routes would promote opportunities for primitive and semiprimitive nonmotorized recreational experiences as would opportunities to experience solitude, or the isolation from the sights, sounds, and presence of others.
10. Recreational opportunities for semiprimitive motorized experiences would decrease where road decommissioning is proposed. Fewer miles of routes would be available for motorized exploration in remote, low density areas.
11. Use of motor vehicles in wilderness is prohibited. No alternatives include routes within Wilderness designation or immediately adjacent to wilderness boundaries, therefore are not directly affected or considered further in this analysis.
12. Routes to be added under all action alternatives are beyond the “core”, along the periphery of the IRA boundaries or are short segments of much longer routes bisecting small fragmented portion of an IRA. The density of road networks is low within IRAs and protected from future road construction. The five IRAs within the project area will be combined for analysis purposes.
13. The values used in this analysis are estimates derived primarily from GIS and are expected to be relatively accurate without providing for topography, slope, and existing vegetation. Errors or inaccuracies are not expected to be significant.

Data Sources

- Six Rivers National Forest Land and Resource Management Plan (Forest Plan) (1995)
- GIS layers and associated tabular data sets
- Staff knowledge
- Public input

Measurement Indicators

The environmental consequences described for the alternatives below identify only the individual roadless areas affected by that alternative, using the values or features that often characterize inventoried roadless areas (66 FR 3245) and are described in Table 114:

(1) High quality or undisturbed soil, water, and air

(2) Sources of public drinking water

(3) Diversity of plant and animal communities

(4) Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land

(5) Primitive, semiprimitive nonmotorized and semiprimitive motorized classes of dispersed recreation

(6) Reference landscapes

(7) Natural appearing landscapes with high scenic quality

(8) Traditional cultural properties and sacred sites and,

(9) Other locally identified unique characteristics.

Affected Environment

The Smith River NRA offers a unique landscape with low density of roads within Inventoried Roadless Areas where recreationists may experience technical trail driving and access to remote dispersed recreation opportunities. The terrain and relative accessibility of the IRAs provide good opportunities for visitors to experience semiprimitive motorized conditions with a high degree of challenge and limited developed recreation facilities. The areas provide many opportunities to experience adventure, challenge, and self-reliance due to their mostly high elevation, ruggedness, and remoteness. Recreation in IRAs and surrounding areas includes hunting, fishing, hiking, horseback riding, mountain biking, skiing, backpacking, camping, nature viewing and motorized use. Roads and motorized trails within these IRAs continue to be used by visitors and local community.

Current condition within the project boundary IRAs include:

- 20.6 miles of unauthorized routes (UAR)
- 9.8 miles of Operation Maintenance Level 1 (ML1) closed to public use – custodial road maintenance only
- 12.0 miles of Operation Maintenance Level 2 (ML2) accessible to high clearance vehicles – both licensed and non-licensed
- 2.5 miles of Operation Maintenance Level 3 (ML3) licensed vehicles only
- 6.3 miles of Motorized Trails

Table 115. Miles of NFTS roads and unauthorized routes in inventoried roadless areas in the project area

NFTS Roads by Maintenance Level[a] and Motorized Trails					Unauthorized Routes Total
1	2	3	Motorized Trails	Total	
9.8	12.0	2.5	6.3	30.6	20.6

a - Roads: ML1 = closed to public use – custodial maintenance only; ML2 = high clearance vehicles – both licensed and non-licensed; ML3 and 4 = licensed vehicles only

Within the project area there are five IRAs: Kelly (05247), North Fork Smith (05707), Ship Mountain, Siskiyou "B" (B5701) and South Kalmiopsis (05709). A short narrative description of each IRA, including a description of each IRA's unique capability and features, can be found in the SR Forest Plan FEIS Appendix C-1-11. Changes to the NFTS and, or unauthorized route additions are proposed within these IRAs.

Kelly IRA: The entire IRA occurs within the project boundary (5,100 acres). The area extends from east of French Hill Road to Hwy 199 and the Middle fork of the Smith River on the north, to Kelly Peak on the east. Recreation opportunities are limited to fishing in the Middle Fork along Hwy 199. Existing recreation use is low. There are no trails in this area and cross-country travel is difficult and challenging because of the rocky nature of the surface and heavy brush. The area appears to have retained its natural integrity affected primarily by the forces of nature and apparent naturalness is high. Highway 199 can be seen and heard from the area; consequently, opportunities for solitude are low. Opportunities for primitive recreation are limited.

North Fork Smith IRA: The entire IRA occurs within the project boundary (29,851 acres). The western portion has been altered by roads and mining activities. Recreation opportunities are limited due to the steep, rocky gorges. Recreation consists of aquatic opportunities, rafting, kayaking and fishing. Recreation use is moderate. Opportunities for solitude are good. Several historic mine sites and abandoned roads can be seen from certain vantage points, the opportunity for primitive recreation is best in the river canyons, which screen most human activity.

Ship Mountain IRA: The entire IRA occurs within the project boundary (9,971 acres). The area extends from Ship Mountain Road (FS 16N02) on the south and east and the Fox Ridge to Hurdygurdy Butte Road (FS 16N03) on the north and west. Current recreation use consists of hunting and small-stream fishing. There are no maintained trails and cross-country travel is difficult. Natural integrity is intact and the area remains natural appearing. Vegetation and topography restrict movement through the area, providing good opportunity for solitude and primitive recreation.

Siskiyou "B" IRA: Of the Six Rivers portion of this IRA 62 percent occurs within the project boundary (10,159 acres). This IRA is adjacent and contiguous to the Siskiyou Wilderness. The northern parcel extends from Broken Rib Mountain and Wounded Knee Mountain. Another portion has the drainages of the South Siskiyou Fork and Siskiyou Fork of the Smith River. Another portion consists primarily of the east slopes of the South Fork of the Smith, east slopes of Buck Mountain, Buck Creek, and Muslatt Mountain. The area contains outstanding scenery allowing a view of a large part of the Siskiyou Crest. An approximately 230 acre track has been noticeably altered by roads and timber harvests. The naturalness of the remaining areas has been modified very little. Minor impacts result from the presence of old trails. The opportunity for solitude and primitive recreation are high due to the area being adjacent to wilderness. In some locations access roads are very close to the outer boundaries of these units, but use is very light on these roads. Recreation opportunities are diverse and tend to be concentrated in few areas.

South Kalmiopsis IRA: The entire IRA occurs within the project boundary (278 acres). The Six Rivers portion is in the Fall Creek and Wimer Creek drainage. Recreation use is low to none. The area retains its natural integrity and generally appears natural. A road bisects the area. Few opportunities for solitude or primitive recreation in itself and must be evaluated in conjunction with the majority of the unit that occurs on the Siskiyou National Forest accessed through Oregon.

Table 116. Inventoried roadless areas within the project area affected by this analysis[a]

Inventoried Roadless Area (IRA)					
Proposed Actions	**Alternative 1**	**Alternative 3**	**Alternative 4**	**Alternative 5**	**Alternative 6**
Add Unauthorized Routes as Motorized Trail	0	3.1 miles/ 5 routes	9.4 miles/ 10 routes	0	3.1 miles/ 5 routes
Restoration of Unauthorized Routes	0	15 miles/ 34 routes	10.6 miles/ 32 routes	20.6 miles/ 43 routes	17.4 miles/ 40 routes
Decommission of National Forest Transportation System roads	0	6.4 miles/ 25 routes	6.4 miles/ 25 routes	6.4 miles/ 25 routes	6.4 miles/ 25 routes
Changes to existing NFTS from ML 2 to ML 1 (closed)	0	0.5 miles/ 3 routes	0.54 miles/2 routes	2.3 miles/ 9 routes	0.5 miles/ 3 routes

a - Routes and miles pertain to IRAs and are approximate due to fragments, estimate, and topographic errors with GIS any differences between draft and final documents are expected to be negligible and non-significant to these determinations.

Environmental Consequences

This section describes how the alternatives affect IRAs using the Roadless Area Characteristics. See resource sections in Chapter 3 for more detail information of effects by alternatives on natural and cultural resources.

This analysis focuses on how each alternative would affect the combined areas of five Inventoried Roadless Areas within the project area and their characteristics due to proposed changes to the NFTS and/or unauthorized route additions. There would be negligible to minor effects to the roadless characteristics associated with these IRAs, which are discussed in the following paragraphs.

Under Alternative 1, the no action alternative, no unauthorized routes would be designated for use within IRAs and no changes to the current NFTS would occur. Semiprimitive motorized recreation opportunities would not change. These activities may affect watershed values and ecosystem health in the short and long term within IRAs. Primitive and semiprimitive nonmotorized recreation; reference landscapes; and the principle wilderness characteristic of natural would continue to be subject to disturbance by motorized recreational vehicles.

Under all action alternatives motorized travel in inventoried roadless areas is proposed with associated mitigation measures to reduce risk to resources and protect roadless character, species habitat, recreation, and other values associated with roadless areas. All action alternatives include restoration of drainage patterns on unauthorized routes currently in IRAs and would have a beneficial result to decreased amounts of disturbance. Stormproofing and decommissioning of NFTS roads, proposed in all action alternatives on existing roads these portions of the IRA, are expected to recover and support greater ecosystem health. With reduced disturbance caused by roads and unauthorized routes stream channels are more likely to function naturally, species richness and native biodiversity are more likely to be effectively conserved in larger undisturbed landscapes. Roads result in fragmentation of ecosystems but over time restoration and decommissioning within IRAs will result in the natural-appearing landscapes.

Alternative 3 is the modified proposed action, and includes the following actions within IRAs in the project area: the addition of 3.1 miles of unauthorized routes as motorized trails; downgrading 0.5 miles of ML 2 to ML 1 roads; decommissioning 6.4 miles of NFTS roads; and restoring 15 miles of drainage patterns on unauthorized routes.

Alternative 4 responds to issues concerning impacts to motorized recreation opportunity and dispersed recreation opportunity. Alternative 4 includes the following actions within IRAs in the project area: the addition of 9.4 miles of unauthorized routes as motorized trails; downgrading 0.5 miles of ML 2 to ML 1 roads; decommissioning 6.4 miles of NFTS roads; and restoring 10.6 miles of drainage patterns on unauthorized routes.

Alternative 5 responds to issues concerning impacts to forest resources and Inventoried Roadless Areas. The alternative was developed with specific attention given to protecting botanical resources and protecting nonmotorized recreation opportunities in IRAs. Unlike Wilderness designation, the use of mountain bikes and other mechanized means of travel are permissible in IRAs. With the least amount of miles added to the NFTS and the greatest amount of restoration (20.6 miles) and decommissioning (6.4 miles) this alternative has the greatest beneficial effect to nonmotorized recreation opportunities and natural resources within IRAs.

Alternative 6 is similar to Alternative 3; however, it makes limited changes to address key issues identified through public scoping related to dispersed recreation, and restoration of drainage patterns. Alternative 6 includes the following actions within IRAs in the project area: the addition of 3.1 miles of unauthorized routes as motorized trails; downgrading 0.5 miles of ML 2 to ML 1 roads; decommissioning 6.4 miles of NFTS roads; and restoring 17.4 miles of drainage patterns on unauthorized routes.

The tables below provide detail about the potential effects of the alternatives on roadless characteristics of all combined IRAs in the project area. Effects for all action alternatives are compared to the existing condition as represented by Alternative 1.

Table 117. Direct and indirect effects of project activities on roadless area characteristics of inventoried roadless areas

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
Soil, Water and Air Resources	Alternative 1 Minor degrading effect to Soil and Water Stable Effect to Air	Of the approximately 80,000 acres of IRA in the project area, there are 20.6 miles of unauthorized routes that occur at the boundary of IRAs and cross through different management designations. No restoration of unauthorized routes would occur resulting in a minor degrading effect to soil and water resources. No measurable change of air resources are expected because the roads and routes already exist on the ground. Due to the predominantly light use levels and seasonal road closures that restricts wheeled vehicle access in some areas during the winter months, this alternative would have a stable effect on air resource conditions (e.g., particulate matter and ozone generating emissions). There would be no reduction in fugitive dust as motorized use on NFTS roads would continue.
	Alternative 3 Minor improving effect to soil and water Stable Effect to Air	Adds 3.1 miles of six unauthorized routes to the NFTS as motorized trails. Downgrades 0.5 miles of ML 2 (high clearance vehicles) roads to ML 1 (vehicles prohibited); 15 miles of routes would be restored; and 6.4 miles would be decommissioned. Given the amount of decommissioning and restoration this alternative would result in minor improving effects to the soil and water resources in the area as erosion is reduced and the area is gradually re-vegetated. Due to the predominantly light use levels and seasonal road closures that restrict motorized vehicle access in some areas during the winter months, this alternative would have a stable effect on air resource conditions (e.g., particulate matter and ozone generating emissions). There would be no reduction in fugitive dust as motorized use would continue.
	Alternative 4 Minor improving effect to soil and water Stable effect to air	Adds 9.4 miles of unauthorized routes to the NFTS as motorized trails; downgrades 0.54 miles of ML 2 (high clearance vehicles) roads to Level 1 (vehicles prohibited); restore 10.6 miles of unauthorized routes; and decommissions 6.4 miles of NFTS roads. Given the amount of decommissioning and restoration this alternative would result in minor improving effects to the soil and water resources in the area as erosion is reduced and the area is gradually re-vegetated. Due to the predominantly light use levels and seasonal road closures that restrict motorized travel on the most roads during the winter months, this alternative would result in stable air resource conditions (e.g., particulate matter and ozone generating emissions). There would be no reduction in fugitive dust as motorized use would continue.
	Alternative 5 Moderate improving effect	Alternative 5 restores 20.6 miles of unauthorized routes, downgrades 2.3 miles of ML2 to ML1, and decommissions 6.4 miles of NFTS roads. These actions would result in moderate beneficial impacts to the soil, water and air resources in the area as erosion is reduced and the area is gradually revegetated. Decommissioning and restoration would occur on the greatest number of miles in the IRA and are expected to have the greatest benefit to soil, water, and air resources (e.g., particulate matter and ozone generating emissions) and reduction in fugitive dust, compared to the no action and other action alternatives.

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
Soil, Water and Air Resources	Alternative 6 Minor improving effect to soil and water Stable effect to air	Adds 3.1 miles of unauthorized routes to the NFTS as a motorized trail, downgrades 0.5 miles of ML 2 (high clearance vehicles) roads to ML 1 (vehicles prohibited); restores 17.4 miles of routes; and decommissions 6.4 miles of NFTS roads. These actions would result in minor improving effects to soil and water resources in the area as erosion is reduced and the area is gradually re-vegetated. Due to the predominantly light use levels and seasonal road closures that restrict motorized travel on the most roads during the winter months, this alternative would result in stable air resource conditions (e.g., particulate matter and ozone generating emissions). There would be no reduction in fugitive dust as motorized use would continue.
Sources of public drinking water	Stable for all alternatives	No watershed-level effects with the potential to impact sources of public drinking water are expected because there are so few routes in each watershed.
Diversity of plant and animal communities	Alternative 1 Minor degrading effect – Plant communities Stable effect – Animal communities	There are 30.6 miles of roads and trails on the NFTS in IRAs, 20.8 miles of which are open to motorized use. In addition there are 20.6 miles of unauthorized routes that occur at the boundary of IRAs and cross through different management designations. No restoration of unauthorized routes would occur, no new motorized trails would be added, no decommissioning, and no barricading would occur. The lack of active management of motorized trails within IRAs under this alternative would have a minor degrading effect on diversity of plant communities compared to the other alternatives with active management, specifically the barricading of routes. No suitable habitat for Management Indicator, Survey and Manage, and Neotropical Migratory birds occur within a quarter mile of unauthorized routes and the NFTS occurring within IRAs within the project area. Therefore the effects to diversity of animal communities would be stable.
	Alternative 3 and 6 Minor degrading effect– Plant Communities Stable effect – Animal communities	Alternatives 3 and 6 would overall increase miles available to motorized use in IRAs by 1.7 miles. This would result in vehicle presence, the potential for degrading effects to plant species is increased, resulting in minor degrading effects to plant communities in the area. No suitable habitat for Management Indicator, Survey and Manage, and Neotropical Migratory birds occur within a quarter mile of unauthorized routes and the NFTS occurring within IRAs within the project area. Therefore the effects to diversity of animal communities would be stable.
	Alternative 4 Minor degrading effect – Plant communities Stable effect – Animal communities	Alternative 4 would increase the miles of available for motorized use in IRAs by 7.9 miles. This would result in vehicle presence, the potential for degrading effects to species in increased, resulting in minor degrading effects to plant communities in the area. No suitable habitat for Management Indicator, Survey and Manage, and Neotropical Migratory birds occur within a quarter mile of unauthorized routes and the NFTS occurring within IRAs within the project area. Therefore the effects to diversity of animal communities would be stable.

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
Diversity of plant and animal communities	Alternative 5 Minor improving effect – Plant Communities Stable effect – Animal communities	Alternative 5 would decrease amount of roads available for motorized use in IRAs by 3.2 miles. This would result in a reduction in vehicle presence, the potential for degrading effects to plant species is decreased. Alternative 5 would also decommission of 3.2 miles of closed roads. Native vegetation would gradually colonize. These actions would result in minor improving effects to plant communities in the area. No suitable habitat for Management Indicator, Survey and Manage, and Neotropical Migratory birds occur within a quarter mile of unauthorized routes and the NFTS occurring within IRAs within the project area. Therefore the effects to diversity of animal communities would be stable.
Habitat for threatened, endangered and sensitive species and species dependent on large undisturbed areas of land	Alternative 1 Stable – Threatened and Endangered, Forest Service Sensitive Biological Resources Moderate degrading effect – Threatened and Endangered, Forest Service Sensitive Botanical Resources	There are 30.6 miles of roads and trails on the NFTS in IRAs, 20.8 miles of which are open to motorized use. In addition, there are 20.6 miles of unauthorized routes that occur at the boundary of IRAs and cross through different management designations. No restoration of unauthorized routes would occur, no new motorized trails would be added, and no decommissioning would occur. Unauthorized routes and NFTS roads and motorized trails occurring within IRAs within the project area were found to have 1) No suitable terrestrial threatened, endangered and sensitive species wildlife habitat exists within ¼ mi of any proposed route; and 2) No suitable threatened, endangered and sensitive species aquatic habitat exists adjacent to or at any low water crossings on any of the proposed routes. Therefore the effects to threatened, endangered and sensitive species aquatic and terrestrial wildlife habitat would be stable. Pertaining to threatened, endangered and sensitive plant species, McDonald's rock cress, a Federally Listed Endangered plant, occurs within the IRA. Additionally, four Forest Service Sensitive (FSS) plant species, the Mendocino gentian, the Waldo jewelflower, the opposite-leaved lewisia and the serpentine catchfly occur within the IRA. The lack of active management of the trails associated with the IRA under this alternative would have a moderate degrading effect on diversity of plant communities compared to the other alternatives with active management, specifically the barricading of routes. See the Wildlife and the Botanical Resources sections for detailed information on effects to Threatened, Endangered, and Forest Service Sensitive species.
	Alternative 3 Stable – Threatened and Endangered, Forest Service Sensitive Biological Resources Minor Improving – Threatened and Endangered	Adds 3.1 miles of unauthorized routes to the NFTS as motorized trails; downgrades 0.5 miles of ML 2 (high clearance vehicles) roads to ML 1 (vehicles prohibited); restores 15 miles of unauthorized routes; and decommissions 6.4 miles of NFTS roads, of which 3.2 miles are designated as open to motorized use in the no action alternative. Overall these alternatives would increase the amount of motorized recreation opportunities in IRAs by 1.7 miles. Unauthorized routes and NFTS roads and motorized trails occurring within IRAs within the project area were found to have 1)No suitable terrestrial threatened, endangered and sensitive wildlife habitat exists within ¼ mi of any proposed route; and 2) No suitable threatened, endangered and sensitive aquatic habitat exists adjacent to or at any low water crossings on any of the proposed routes. Therefore the effects to threatened, endangered and sensitive aquatic and terrestrial wildlife habitat would be stable. No Threatened or Endangered botanical species occur on routes proposed for addition to the NFTS.

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
	Botanical Resources Minor Degrading – Forest Service Sensitive Botanical Resources	However, one Federally Listed Endangered plant species will experience a minor improving effect because it occurs adjacent to a route proposed for barricading. Four Forest Service Sensitive plant species, the Mendocino gentian, the Waldo jewelflower, the opposite-leaved lewisia and the serpentine catchfly occur within the IRA on routes proposed for addition to the NFTS which would have a minor degrading effect. A minor improving effect would result from the barricading of routes not added to the NFTS. Barricading these routes would protect 26 occurrences of Sensitive plants under alternative 3 but the overall effect would be minor degrading to Forest Service sensitive plant species. See the Wildlife and the Botanical Resources sections for detailed information on effects to Threatened, Endangered, and Forest Service Sensitive species.
	Alternative 4 Stable – Threatened and Endangered, Forest Service Sensitive Biological Resources Minor Improving Threatened and Endangered Botanical Resources Minor Degrading – Forest Service Sensitive Botanical Resources	Adds 9.4 miles of unauthorized routes to the NFTS as motorized trails; downgrades 0.54 miles of ML 2 (high clearance vehicles) roads to Level 1 (vehicles prohibited); restore 10.6 miles of unauthorized routes; and decommissions 6.4 miles of NFTS roads of which 0.9 miles is currently designated for motorized use. This alternative would result in a net increase of 8 miles of motorized recreation opportunities. Unauthorized routes and NFTS roads and motorized trails occurring within IRAs within the project area were found to have 1)No suitable terrestrial threatened, endangered and sensitive wildlife habitat exists within ¼ mi of any proposed route; and 2) No suitable threatened, endangered and sensitive aquatic habitat exists adjacent to or at any low water crossings on any of the proposed routes. Therefore the effects to threatened, endangered and sensitive aquatic and terrestrial wildlife habitat would be stable. No Threatened or Endangered botanical species occur on routes proposed for addition to the NFTS. However, one Federally Listed Endangered plant species will experience a minor improving effect because it occurs adjacent to a route proposed for barricading. Therefore there is a minor benefiting effect for this species. Four Forest Service Sensitive plant species, the Mendocino gentian, the Waldo jewelflower, the opposite-leaved lewisia and the serpentine catchfly occur within the IRA on routes proposed for addition to the NFTS which would have a moderate degrading effect. A minor improving effect would result from the barricading of routes not added to the NFTS. Barricading these routes would protect 13 occurrences of Sensitive plants under alternative 4 but the overall effect would be minor degrading to Forest Service sensitive plant species. See the Wildlife and the Botanical Resources sections for detailed information on effects to Threatened, Endangered, and Forest Service Sensitive species.

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
Habitat for threatened, endangered and sensitive species and species dependent on large undisturbed areas of land	Alternative 5 Stable – Threatened and Endangered, Forest Service Sensitive Biological Resources Minor improving – Threatened and Endangered Botanical Resources Moderate Improving – Forest Service Sensitive Botanical Resources	This alternative has a does not add additional motorized trails and decommissions 0.91 miles of ML 2, and downgrades 2.3 miles of ML 2 road to ML 1. This would reduce the number of miles available for motorized use in IRAs by 3.2 miles. The decrease in miles of roads on the NFTS and the restoration of unauthorized routes will have a minor improving effect on Threatened, Endangered, and Forest Service Sensitive plant species. Unauthorized routes and NFTS roads and motorized trails occurring within IRAs within the project area were found to have 1)No suitable terrestrial threatened, endangered and sensitive wildlife habitat exists within ¼ mi of any proposed route; and 2) No suitable threatened, endangered and sensitive aquatic habitat exists adjacent to or at any low water crossings on any of the proposed routes. Therefore the effects to threatened, endangered and sensitive aquatic and terrestrial wildlife habitat would be stable. No Threatened or Endangered botanical species occur on routes proposed for addition to the NFTS. However, one Federally Listed Endangered plant species will experience a minor improving effect because it occurs adjacent to a route proposed for barricading. Therefore there is a minor benefiting effect for this species. No Forest Service Sensitive plants occur within the IRA on routes proposed for addition to the NFTS. A moderate improving effect would result from the barricading of these routes not added to the NFTS. Barricading these routes would protect 44 occurrences of Sensitive plants under alternative 5 and the overall effect would be moderate beneficial for Forest Service sensitive plant species. See the Wildlife and the Botanical Resources sections for detailed information on effects to Threatened, Endangered, and Forest Service Sensitive species.
	Alternative 6 Stable – Threatened and Endangered, Forest Service Sensitive Biological Resources Minor improving – Threatened and Endangered Botanical Resources Minor Degrading – Forest Service Sensitive Botanical Resources	Adds 3.1 miles of unauthorized routes to the NFTS as motorized trails; downgrades 0.5 miles of ML 2 (high clearance vehicles) roads to ML 1 (vehicles prohibited); restores 15 miles of unauthorized routes; and decommissions 6.4 miles of NFTS roads, of which 3.2 miles are designated as open to motorized use in the no action alternative. Overall these alternatives would increase the amount of motorized recreation opportunities in IRAs by 1.7 miles. Unauthorized routes and NFTS roads and motorized trails occurring within IRAs within the project area were found to have 1)No suitable terrestrial threatened, endangered and sensitive wildlife habitat exists within ¼ mi of any proposed route; and 2) No suitable threatened, endangered and sensitive aquatic habitat exists adjacent to or at any low water crossings on any of the proposed routes. Therefore the effects to threatened, endangered and sensitive aquatic and terrestrial wildlife habitat would be stable. No Threatened or Endangered botanical species occur on routes proposed for addition to the NFTS. However, one Federally Listed Endangered plant species will experience a minor improving effect because it occurs adjacent to a route proposed for barricading. Therefore there is a minor benefiting effect for this species. Four Forest Service Sensitive plant species, the Mendocino gentian, the Waldo jewelflower, the opposite-leaved lewisia and the serpentine catchfly occur within the IRA on routes proposed for addition to the NFTS which would have a moderate degrading effect. A minor improving effect would result from the barricading of routes not added to the NFTS. Barricading these routes would protect 28 occurrences of Sensitive plants under alternative 6 but the overall effect would be minor degrading to Forest Service

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
		sensitive plant species. See the Wildlife and the Botanical Resources sections for detailed information on effects to Threatened, Endangered, and Forest Service Sensitive species.
Primitive and semiprimitive nonmotorized, and semiprimitive motorized classes of recreation	Alternative 1 Stable effect on semiprimitive motorized and primitive/semiprimitive nonmotorized	The no action alternative does not provide additional opportunities for motorized recreation or nonmotorized recreation. The effects of no action would be stable for semiprimitive nonmotorized and for primitive/semiprimitive motorized recreation. The majority of these IRAs current condition provide good to moderate isolation from the sights, sounds, and presence of others. This is due to overall “light” use level.
	Alternative 4 Minor improving effect on primitive/semiprimitive motorized Minor degrading effect on semiprimitive nonmotorized	Of all the action alternatives, this alternative provides for the greatest opportunity for semiprimitive motorized recreation, as it designates the most new motorized trails (9.4 miles) on the NFTS within IRAs resulting in a minor improving effect on semiprimitive motorized recreation. When considered in conjunction with the decommissioning and downgrading, there is a total addition of 8 miles of motorized recreation opportunities. This alternative reduces the opportunity to experience solitude (a measure of primitive and semiprimitive nonmotorized experiences), or the isolation from the sights, sounds, and presence of others resulting in a minor degrading effect to semiprimitive nonmotorized recreation, due to the likelihood of encounters with other recreationists.
	Alternative 3 and 6 Negligible improving effect on semiprimitive motorized Negligible degrading effect on primitive/semiprimitive nonmotorized	Both alternatives add approximately 3 miles of motorized trail to the NFTS and decommission 0.91 miles of ML 2, and downgrading 0.5 miles of ML 2 road to ML 1. The result of these actions is an additional 1.7 miles of the NFTS open to motorized use, which is a negligible improving effect to semiprimitive motorized recreation, and negligible degrading effect to primitive/semiprimitive nonmotorized. These ratings are not significant compared to current condition which provides good to moderate isolation from the sights, sounds, and presence of others. This is due overall low use level of recreationists as well as use in concentrated areas.
	Alternative 5 Negligible degrading effect on semiprimitive motorized Negligible improving effect on primitive/semiprimitive nonmotorized	This alternative has a does not add additional motorized trails and decommissions 0.91 miles of ML 2, and downgrades 2.3 miles of ML 2 road to ML 1. This would reduce the number of miles available for motorized use in IRAs by 3.2 miles compared to the no action alternative, resulting in negligible degrading effect to semiprimitive motorized recreation, and negligible improving effect to primitive/semiprimitive nonmotorized. These ratings are not significant compared to current condition which provides good to moderate isolation from the sights, sounds, and presence of others. This effect is negligible due to the overall low use level of recreationists.
Reference landscapes for research study or interpretation	All Alternatives Stable effect	Research Natural Area are managed to maintain the ecological integrity of target vegetation types with an emphasis on research, study, and observation. None of the alternatives are proposing to add any additional routes to the NFTS in these areas. Routes to be added are either along the periphery of the IRAs or within a small remaining fragmented portion of other management allocations. Consequently, none of the alternatives would cause an effect to these unique landscapes.

Roadless Characteristics and Values	Intensity of Effect (Negligible, Minor, Moderate, Major) and type (Improving, Stable or Degrading)	Description of Effect within Project Inventoried Roadless Areas
Landscape character and integrity	All Alternatives Stable effect	None of the alternatives are anticipated to detract from the landscape character and integrity of the IRAs, as rugged terrain masks the visibility of existing routes and use levels are “light” (0 -25 vehicles/week) compared to roads outside of IRAs. Motorized trails added to the NFTS are low standard, primitive, native surface routes that remain visually subordinate to the landscape by following natural terrain and contour. They repeat form, line, color, and texture of the characteristic landscape, any change will not be evident.
Traditional cultural properties and sacred sites	All Alternatives Not Applicable	There are no Traditional Cultural Properties within the project area, therefore this indicator is not applicable.
Other locally unique characteristics	All Alternatives Stable effect	See the Reference Landscapes discussion above.

Table 118. NFTS inventoried roadless areas by alternative

	Alternative 1	Alternative 3	Alternative 4	Alternative 5	Alternative 6
	The No Action alternative provides a baseline for comparing the other alternatives. This alternative maintains the status quo. Under the No Action alternative, current management plans would continue to guide management of the project area. No changes would be made to the current NFTS. The agency would take no affirmative action on any unauthorized routes.	Alternative 3, also referred to as the Modified Proposed Action, includes the addition of routes as roads and motorized trails; restoration of unauthorized routes, decommissioning of NFTS roads, stormproofing, road and motorized trail maintenance, and mitigations to reduce risk to resources.	Alternative 4 responds to issues concerning impacts on motorized recreation opportunities. This alternative was developed to provide increased opportunities for motorized recreation and access to dispersed sites. Specifically, this alternative adds more motorized trails and level 2 roads; adds more motorized trails and roads accessing dispersed recreation sites (including short inventoried unauthorized routes); maintains more level 2 roads; and designates parking along 17N49.	Alternative 5 responds to issues concerning impacts to forest resources and IRAs. Developed to reduce the number and miles of roads and motorized trail open for motorized travel w/specific attention given to protecting nonmotorized recreation and increased level of protection for POC, and botanical resources. This alternative does not add motorized trails in IRAs.	Alternative 6 is similar to Alternative 3; however, it makes limited changes to address key issues identified through public scoping related to dispersed recreation and restoration of hydrologic function. Alternative 6 adds short inventoried UARs to popular dispersed recreation sites to the NFTS; restores hydrologic function on short inventoried UARs to dispersed recreation sites not added to the NFTS; barricades inventoried UARs not added to the NFTS; and designate parking along road 17N49
NFTS Facility	**Miles**	**Miles**	**Miles**	**Miles**	**Miles**
ML 3 Road -Open to Hwy legal vehicles	2.46	2.46	2.46	2.46	2.46
ML 2 Road - Open to licensed and non-licensed high clearance vehicles	12	10.6	10.6	8.8	10.6
ML 1 Road - Closed to motorized use	9.8	4.8	4.8	6.6	4.8
Motorized Trails	6.3	9.4	15.7	6.3	9.4
Total NFTS in IRAs	30.6	27.2	33.5	24.1	27.2
Total NFTS miles in IRAs open for motorized use	20.8	22.5	28.7	17.6	22.5

Cumulative Effects

The greatest potential threats to maintaining roadless characteristics are road construction, reconstruction, and timber harvesting. These activities pose disproportionately greater risks of altering and fragmenting natural landscapes at regional and national scales (66 FR 3244). Therefore, consideration of cumulative effects resulting from present and foreseeable future activities was limited to proposals to construct or reconstruct roads or harvest timber within IRAs. None are currently proposed or under implementation.

Motorized use has historically taken place in IRAs, resulting in the existing network of 20.6 miles of unauthorized routes. Use was occurring at the time IRA boundaries were established during the RARE II evaluations in 1978. Off-highway vehicle use is permitted in IRAs provided roadless characteristics – including semiprimitive motorized classes of recreation are maintained. For all alternatives, including Alternative 4, which allows for the greatest level of motorized use of all the alternatives, the level of development would not increase within IRAs because the routes under consideration are part of the existing condition and do not represent a permanent development of the landscape. The majority of unauthorized routes are primitive wheel tracks that follow natural terrain. They have native surfacing and lack constructed features such as culverts, water bars, and bridges. For these reasons, adding existing unauthorized routes to the NFTS as motorized trials would have no cumulative effect on the level of development within IRAs.

Summary of Effects

Direct and indirect effects of the alternatives on roadless characteristics are summarized in the table below. As shown, the alternatives result in varying degrees of effects to roadless characteristics.

Effects Common to All Alternatives

Effects would be stable for public water drinking sources, reference landscapes, landscape character and integrity, and other locally unique characteristics.

Alternative 1

There are 30.6 miles of roads and trails on the NFTS in IRAs, 20.8 miles of which are open to motorized use. In addition, there are 20.6 miles of unauthorized routes that occur at the boundary of IRAs and cross through different management designations. No restoration of unauthorized routes would occur, no new motorized trails would be added, and no decommissioning would occur.

The no action alternative has the greatest degrading impact on IRA characteristics than all other action alternatives. Specifically soil and water resources, and threatened and endangered, Forest Service sensitive botanical resources, and diversity of plant and animal communities are degraded by the no action alternative.

Effects to all other IRA characteristics would be stable.

Alternatives 3 and 6

The balance of decommissioning roads and adding motorized trails in this alternative results in an additional 3.2 miles of motorized recreation opportunity in IRAs, while also reducing the total number of NFTS miles in IRAs by 3.4 miles and restoring drainage patterns on approximately 15 miles of unauthorized routes.

Compared to the no action alternative soil and water resources would be benefited. Alternative 3 would have no effect on biological resources within IRAs, and result in minor improving effects to threatened and endangered botanical resources and minor degrading effects to Forest Service sensitive botanical

resources. Compared to the no action, threatened and endangered and Forest Service sensitive botanical resources would be improved.

This alternative would favor semiprimitive motorized recreation opportunities over nonmotorized recreation opportunities. The improvements and degradations of each resource respectively are expected to be minor in their intensity. Given that alternative 3 increases miles of motorized recreation opportunity available in IRA, it is expected that outstanding opportunities for solitude or a primitive and unconfined type of recreation may be degraded but the effects are expected to be negligible given that the new routes exist on the periphery of the IRAs and do not transect the core areas of the IRAs.

Alternative 4

The balance of decommissioning roads and adding motorized trails in this alternative results in an additional 8 miles of motorized recreation opportunity in IRAs. Alternative 4 increases the total number of NFTS miles in IRAs by 2.9 miles and restores drainage patterns on approximately 10.6 miles of unauthorized routes.

Compared to the no action alternative soil, and water would be benefited. Alternative 4 would not affect threatened, endangered, and Forest Service Sensitive biological species. Forest Service sensitive botanical resources may be degraded on a minor level, however, threatened and endangered botanical species may be improved on a minor level. Compared to the no action, threatened and endangered and Forest Service sensitive botanical resources would be improved.

This alternative would favor semiprimitive motorized recreation opportunities over nonmotorized recreation opportunities. The improvements and degradations of each resource respectively are expected to be minor in their intensity. This alternative has the largest impact on primitive nonmotorized recreation opportunity compared to all the other alternatives. Given that alternative 4 increases miles of motorized recreation opportunity available in IRA, it is expected that outstanding opportunities for solitude or a primitive and unconfined type of recreation may be degraded on a minor level.

Alternative 5

Decommissioning roads in Alternative 5 results in 17.6 miles of motorized recreation opportunity available in IRAs, a reduction of 3.2 miles from the no action alternative. Alternative 5 also decreases the total number of NFTS miles in IRAs by 6.5 miles and restores drainage patterns on approximately 20.6 miles of unauthorized routes.

This alternative provides the most benefit to soil, water, air; and threatened, endangered and Forest Service sensitive botanical species than all other alternatives, including the no action alternative.

This alternative has the largest impact on primitive nonmotorized recreation opportunity compared to all the other alternatives. This alternative would favor semiprimitive nonmotorized recreation opportunities over motorized recreation opportunities. The improvements and degradation of each recreation opportunity respectively are expected to be minor in their intensity given that motorized use in the no action is limited to the boundary areas and does not transect core areas of IRAs. Given that alternative 5 decreases miles of motorized recreation opportunity available in IRA, it is expected that the natural and undeveloped characteristics, and outstanding opportunities for solitude or a primitive and unconfined type of recreation may be improved on a minor level.

Table 119. Summary of direct and indirect effects on roadless characteristics

Roadless Characteristics	Alternative 1 Effect	Alternative 3 Effect	Alternative 4 Effect	Alternative 5 Effect	Alternative 6 Effect
Soil, Water and Air Resources	Minor Degrading - Soil and Water; Stable - Air	Minor Improving Soil and Water; Stable Air	Minor Improving Soil and Water; Stable Air	Moderate Improving All Resources	Minor Improving Soil and Water; Stable Air
Sources of public drinking water	Stable	Stable	Stable	Stable	Stable
Diversity of plant and animal communities	Minor Degrading – Plant Communities; Stable-Animal Communities	Minor Degrading – Plant Communities; Stable-Animal Communities	Minor Degrading – Plant Communities; Stable-Animal Communities	Minor Improving – Plant Communities; Stable – Animal Communities	Minor Degrading – Plant Communities; Stable-Animal Communities
Habitat for threatened, endangered and sensitive species and species dependent on large undisturbed areas of land	Stable – Threatened, Endangered, Forest Service Sensitive Biological Resources Moderate Degrading – Threatened, Endangered, Forest Service Sensitive Botanical Resources	Stable – Threatened, Endangered, Forest Service Sensitive Biological Resources; Minor Improving – Threatened, Endangered Botanical Resources; Minor Degrading - Forest Service Sensitive Botanical Resources;	Stable – Threatened, Endangered, Forest Service Sensitive Biological Resources; Minor Improving – Threatened and Endangered Botanical Resources; Minor Degrading - Forest Service Sensitive Botanical Resources;	Stable – Threatened, Endangered, Forest Service Sensitive Biological Resources; Minor Improving – Threatened and Endangered Botanical Resources; Moderate Improving - Forest Service Sensitive Botanical Resources;	Stable – Threatened, Endangered, Forest Service Sensitive Biological Resources; Minor Improving – Threatened and Endangered Botanical Resources; Minor Degrading - Forest Service Sensitive Botanical Resources;
Primitive and semiprimitive nonmotorized, and semiprimitive motorized	Stable primitive/ semiprimitive nonmotorized and semiprimitive motorized	Minor Improving primitive/ semiprimitive motorized; Minor Degrading semiprimitive nonmotorized	Minor Improving primitive/ semiprimitive motorized; Minor Degrading semiprimitive nonmotorized	Negligible Degrading primitive/ semiprimitive motorized; Negligible Improving semiprimitive motorized	Minor Improving primitive/ semiprimitive motorized; Minor Degrading semiprimitive nonmotorized
Reference landscapes for research study or interpretation	Stable	Stable	Stable	Stable	Stable
Landscape character and integrity	Stable	Stable	Stable	Stable	Stable
Traditional cultural properties and sacred sites	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Other locally unique Characteristics	Stable	Stable	Stable	Stable	Stable

Table 120. Summary of effects: roadless

Indicators – Roadless Areas	Rankings of Alternatives for Each Indicator[a]				
	Alt 1	Alt 3	Alt 4	Alt 5	Alt 6
Inventoried Roadless Area Characteristics (rank)	1 (1)	3.8 (3)	3.4 (2)	5 (5)	3.8 (3)

a - A score of 5 indicates the alternative has the most beneficial impact on this IRA characteristics; a score of 1 indicates the alternative has the least impact.

Current recreation opportunities in the IRAs have not changed significantly since their designation and are not expected to due to the remoteness, limited seasonal access, steep topography, thick vegetation and overall low recreational use. The Roadless Area Conservation rule, unlike the establishment of wilderness areas, will allow a multitude of activities including motorized uses, grazing, and oil and gas development that does not require new roads to continue in inventoried roadless areas. Roadless Area designation in itself insures management in a manner that sustains IRA values now and for future generations.

Compliance with the Forest Plan and Other Direction

Roadless areas will be managed according to the management area in which they occur.

Heritage Resources

Introduction

The Congress in 1966 declared it to be our national policy that the Federal government “administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the inspiration and benefit of present and future generations” (National Historic Preservation Act (NHPA) (16 U.S.C. 470-1(3)). This need was made more explicit when the National Historic Preservation Act was amended in 1980 and Section 110 was added to expand and underscore Federal agency responsibility for identifying and protecting historic properties and avoiding unnecessary damage to them. Many historic properties are fragile and once damaged or destroyed they cannot be repaired or replaced.

Section 106 of the NHPA compels federal agencies to take into account the effect of its undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places (36 CFR 60) (Historic Properties). The Travel Management rule requires that the effects on cultural resources be considered, with the objective of minimizing damage, when designating roads, trails, and areas for motor vehicle use on National Forest lands (36 CFR 212.55(a), 212.55(b)(1)).

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant and specific to the proposed action as it affects cultural resources includes:

The Forest Service is directed to identify, evaluate, treat, protect, and manage historic properties by several laws. However, the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.) (NHPA), provides comprehensive direction to federal agencies about their historic preservation responsibilities. Executive Order 11593, entitled Protection and Enhancement of the Cultural Environment, also includes direction about the identification and consideration of historic properties in Federal land management decisions.

The National Historic Preservation Act of 1966 extends the policy in the Historic Sites Act of 1935 (49 Stat. 666; 16 U.S.C. 461-467) to include resources that are of State and local significance, expands the National Register of Historic Places (NRHP), and establishes the Advisory Council on Historic Preservation and State Historic Preservation Officers. NHPA Section 106 directs all Federal agencies to take into account effects of their undertakings (actions, financial support, and authorizations) on properties included in or eligible for the National Register. The Advisory Council on Historic Preservation's (ACHP) regulations (36 CFR 800) implements NHPA Section 106. NHPA Section 110 sets inventory, nomination, protection, and preservation responsibilities for Federally-owned historic properties.

The Forest Service's policy for compliance with Section 106 of the NHPA in travel management with respect to route designation for motor vehicle use was issued in 2005: USDA Forest Service Policy for Section 106 of the NHPA Compliance in Travel Management: Designated Routes for Motor Vehicle Use (2005). This policy was developed in consultation with the Advisory Council on Historic Preservation. It outlines minimal requirements for considering possible effects to historic properties that may be associated with designating routes and areas as part of a national forest's transportation system. This policy statement recognizes that forests with programmatic agreements for compliance with Section 106 of the NHPA will follow the terms of those agreements. Section 106 of the NHPA and the ACHPs implementing regulations, Protection of Historic Properties (36 CFR Part 800), require that federal agencies take into account the effect of their undertakings on historic properties, and that agencies provide the ACHP with an opportunity to comment on those undertakings. Programmatic agreements (36 CFR 800.14(b)) provide alternative procedures for complying with 36 CFR 800. Region 5 has such an agreement: Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region, U.S.D.A. Forest Service, Intermountain Region's Humboldt-Toiyabe National Forest, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Designating Motor Vehicle Routes and Managing Motorized Recreation on the National Forests in California (2006) (Motorized Recreation PA).

This agreement defines the area of potential effects (APE) (36 CFR 800.4(a)(1) as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking". (36 CFR §800.16(d). It includes a strategy outlining the requirements for cultural resource inventory, evaluation of historic properties, and effect determinations; it also includes protection and resource management measures that may be used where effects may occur.

Executive Order 11593: Protection and Enhancement of the Cultural Environment, issued May 13, 1971, directs Federal agencies to inventory cultural resources under their jurisdiction, to nominate to the National Register of Historic Places all Federally owned properties that meet the criteria, to use due caution until the inventory and nomination processes are completed, and to assure that Federal plans and programs contribute to preservation and enhancement of non-Federally owned properties.

In the Six Rivers National Forest Summary of Direction for Off Highway Vehicles and Travel Management (McCray and Schultz 2008) the heritage resource management direction derives from the Forest Plan (IV-114). It states: "The heritage resource program will be fully integrated with other resource management activities. Cultural resource inventories will precede all activities with the potential to affect heritage resources. All sites located during these inventories will be documented in accordance with Regional standards. The Forest management impact to all significant cultural resources will be mitigated, as set forth in the National Historic Preservation Act of 1966".

The Forest Plan cultural resource specific Standards and Guidelines are outlined below.

- A cultural resources inventory will be completed for any proposed activity that could affect cultural resources. Results of these inventories will be documented in a project specific Cultural Resources Inventory Report (CRIR). A certified archaeological surveyor, archaeologist, or historian will conduct the cultural resource inventory.
- The significance of and effects on inventoried sites will be evaluated by an archaeologist or historian. Consultation with the California State Historic Preservation Officer and the Advisory Council on Historic Preservation will take place as required
- Identified cultural resources will be protected from disturbance and artifact theft through the implementation procedures outlined for the National Preservation Act and the Archaeological Resources Protection Act.
- Proposed projects with potential to affect local Native American cultural values or contemporary uses, or in location known as traditional Native American spiritual use area, will be discussed with a cross section if the local Indian population and Tribal Governments. These discussions will take place in the early stages of planning and environmental analysis to identify possible mitigation opportunities or alternatives.

Framework for Cultural Resources Effects Analysis[7]

1. The project area of potential effect is defined as the road/trail or area corridor and a 30 meter wide corridor centered on linear motor vehicle features (Motorized Recreation PA Stipulation III (C). The focus of analysis was those roads, trails, and areas (dispersed recreation sites) that are either proposed as additions to the National Forest Transportation System (NFTS) or where proposed actions have the potential to impact previously recorded sites.

2. All cultural resources within the area of potential effect both formally evaluated and determined eligible for inclusion into the National Register of Historic Places (NRHP) and unevaluated cultural resources are considered in this analysis. Cultural resources that have been formally determined not eligible for the NRHP in consultation with the State Historic Preservation Officer (SHPO) through regulatory procedures (36 CFR §60.4; 36 CFR §800) were not analyzed for effects.

3. 157 routes (includes roads, trails and dispersed recreation sites) were surveyed using intensive strategies in accordance with the Motorized Recreation PA Appendix C (Heritage Resources Strategy) because they are routes that are being considered for additions to the National Forest road or trail system or where proposed actions have the potential to impact previously recorded sites. Eight new archaeological sites were recorded during this survey and twenty-five previously recorded sites were monitored or re-recorded.

4. 370 routes were not inventoried for cultural resources because they were considered exempt undertakings in accordance with the Motorized Recreation PA Appendix A. They are considered Screened Exemptions under one of three stipulations:

- (A) “Activities whose area of potential effect is entirely within obviously disturbed contexts, and the disturbance is such that the presence of historic properties is considered highly unlikely.” Roads that

[7] See Cultural Resource Inventory Report (CRIR) #R2014051011033, Smith River NRA Motorized Travel Management, Addendum 1.

are being proposed for decommissioning and restoration meet this stipulation and the proposed methods of closure will be within existing road prisms.

- (F) “Routine road maintenance and resurfacing where work is confined to previously maintained surfaces, ditches, and culverts where historic properties are not affected because proposed work is clearly within disturbed contexts, and cut and fill slopes where there are no known historic properties.” Roads that are proposed for mixed-use or changes to Maintenance Levels (ML) meet this stipulation.
- (J) “Temporary or long-term closure of roads or trails involving no new ground disturbance.” Roads with proposed barricades involving no new ground disturbance meet this stipulation.

Effects Analysis Methodology

Assumptions Specific to Cultural Resources Analysis

1. Unauthorized, user-created routes and areas have already affected historic properties within route/area prisms.
2. Under the action alternatives, use will continue at current levels or increase over time on the designated system.
3. No distinction was made during the analysis between routes described as “roads or as “trails” or between motorized vehicle classes, as the effects to historic properties were considered to be similar in scope, extent, and overall impact.
4. The Motorized Recreation PA allows for the addition of unauthorized routes (roads, trails, and areas) to the NFTS and their use by the public within historic properties provided such use is recommended by a professional archaeologist (i.e., there is no additional impact to the property expected through managed use of the route or area).

Data Sources

1. Cultural resource inventories from the Smith River NRA. CRIR #05-10-1033, Motorized Travel Management Plan for the Smith Rivers National Recreation Area was completed in 2008 (McCovey 2009) with additions in 2009 (Keter 2009). This cultural resource report addressed routes that were identified during a previous planning effort. 50 routes were surveyed.
2. Existing information from archaeological records, historic archives, maps, and GIS spatial layers.

Cultural Resources Indicators

- Degree to which the integrity of historic property values are diminished.
- Number of historic properties within unauthorized routes at risk from ongoing use.
- Average number of historic properties per acre at risk if new routes or areas are created.

1. Spatial: The location of the historic property is the unit of spatial analysis when considering effects in action alternatives. For some historic properties, the setting beyond the historic property’s location must also be considered when determining whether an adverse effect will occur.
2. Effects Timeframes:
   - Short-term effects occur within one year.

- Long-term effects occur up to 20 years.
- Cumulative effects should be analyzed at a 20-year interval.

3. Measurement Indicator and Rationale: When assessing direct, indirect, and cumulative effects, base assessments on a historic property possessing at least one of the following NRHP values (36 CFR 60.4(a – d)) unless specific information already exists:

- Prehistoric archaeological site: Criterion D
- Historic archaeological sites: Criterion D
- Historic structures: Criterion C

Methodology

When assessing effects under Section 106 of the NHPA, an undertaking can have no effect, no adverse effect, or an adverse effect. Table 121 cross references the NEPA effects terminology with Section 106 effects terminology. In Section 106, an adverse effect to a historic property can occur when an undertaking directly or indirectly causes alterations in its character or use. An adverse effect on a historic property occurs when an undertaking alters its important characteristics and is measured by the degree to which it diminishes its location, design, setting, materials, workmanship, feeling or association (Integrity Measures) (36 CFR 800.5(a)(1)). These integrity measures can also be used to characterize the nature of any potential effects, whether they are direct, indirect or cumulative effects; and their severity, whether they are negligible, minor, moderate, or major. The degree to which historic property values are diminished will be used to measure the direct, indirect and cumulative effects of motorized vehicle use on the NFTS.

Table 121. Comparison of effect categories under NEPA and the National Historic Preservation Act

NEPA	National Historic Preservation Act	Severity
None	No Effect	None – Negligible
Direct Effect	No Adverse Effect	Minor – Moderate – Major
	Adverse Effect	Minor – Moderate – Major
Indirect Effect	No Adverse Effect	Minor – Moderate – Major
	Adverse Effect	Minor – Moderate – Major
Cumulative Effect	No Adverse Effect	Minor – Moderate – Major
	Adverse Effect	Minor – Moderate – Major

Effects were analyzed against the project alternatives using the following three categories: 1) Type of effect; 2) nature of effect; and 3) severity of effect. The severity of the effect will generally prescribe the type of mitigation measure needed. In accordance with the Motorized Recreation PA there are two possible options for lessening effects to “no adverse effect”: 1) Monitoring (Stipulation IV (C) or 2) The installation of physical barriers (Appendix B (II) (A) (3). Where there is uncertainty about possible direct or indirect effects to properties within or in proximity to the area of potential effect, including at risk properties described in the Motorized Recreation PA, monitoring may be prescribed. If cumulative effects are identified, consultation with the SHPO under 36 CFR 800 is required to identify any required mitigation measures.

Each of the effect categories are defined in more detail below:

1) **Type of Effect**: A direct effect is/will be caused by motorized vehicle uses/or the consequences of such use, including physical damage resulting in or from erosion, down-cutting, rutting, or displacement or damage to cultural features. Indirect effects are associated with motorized vehicle uses but occur outside designated routes and areas, such as adjacent dispersed camping areas or areas where motorized travel off of designated routes or areas may occur. The proximity of sensitive cultural resources, such as rock art, rock shelters, historic structures, and Traditional Cultural Properties, to designated routes or areas is important when determining where resources could be susceptible to greater threats or risks. Indirect effects could include those listed for direct effects, but also include destructive actions like vandalism and looting. Examples of site disturbance from direct and indirect effects are displayed on Table 122.

2) **Nature of Effect**: These include observations of site disturbance from erosion, down-cutting, rutting, displacement, disturbance, damage, deteriorate, vandalism, looting, removal/alteration of historic structure, visual/audible/atmospheric to historic setting or cultural landscape/Traditional Cultural Property.

3) **Severity of Effect**: (Keter 2010): This includes categories of negligible, minor, moderate and major. A negligible effect is determined when there is no measurable effect on the cultural resource though the route bisects or closely passes by some portions of a cultural resource. A minor effect is determined if the integrity of the cultural resource is effected by certain activities such as camping. Most minor problems are indirect effects. Either signs or monitoring is prescribed to ensure that the minor degree of disturbance (or potential for disturbance) initially noted does not increase in severity over time. A moderate effect is determined if site constituents exhibit some degree of damage or alteration. Site integrity can be retained or improved if the detrimental activity is curtailed. The preferred method to curtail a moderate effect is to erect a barrier. A major effect is determined if the effect on a cultural resource is severe and direct. This is considered an adverse effect to cultural resources and further SHPO consultation under 36 CFR 800 is required. In most cases, the only viable option may be re-routing the road/trail or closing the dispersed camp. Other mitigation measures may necessitate scientific data recovery.

Table 122. Examples of indirect and direct effects to cultural resources

Indirect	Direct
• Driving off-established routes within archaeological site boundaries. • Adding trail systems to NFTS that are within site boundaries - future potential to effect sites • Ground disturbance activities associated with motor vehicle camping within archaeological site boundaries that contain significant cultural features. • Motor vehicle camping on an archaeological site where campers looted or otherwise disturbed the site. • Vandalism to historic mine sites accessed by motor vehicle, e.g., bullet holes, theft, and structural damage. • Evidence of vandalism or illicit digging activity	• Routes cross or ruts have been created that disturb artifacts and features within a prehistoric or historic archaeological site. This results in ground disturbance, erosion and the displacement of artifacts and features

Cultural Resources Methodology by Action

Direct and indirect effects of adding facilities (presently unauthorized routes) to the NFTS, including identifying seasons of use and vehicle class

Short-term timeframe: 1 year

Long-term timeframe: 20 years.

Spatial boundary: Location of historic property.

Indicator(s): Degree to which the integrity of historic property values are diminished, related to: location, design, setting, materials, workmanship, feeling, or association.

Methodology: Information obtained from completed archaeological survey of the proposed added routes, proposed decommissioning of routes, or restoration of routes or previous archaeological survey. In addition, use of existing data from cultural resource site atlas, site record files, archival files, maps and GIS spatial layers, to identify cultural resources in the area of potential effect that may have direct or indirect effects.

Rationale: Motorized Recreation PA.

Changes to the existing NFTS (including changing maintenance levels)

None of these actions are considered an undertaking subject to NHPA Section 106 compliance (USDA Forest Service Policy for Section 106 of the NHPA Compliance in Travel Management: Designated Routes for Motor Vehicle Use (2005). Motorized vehicles can already use NFTS roads. Allowing or prohibiting use of those roads by different types of vehicles will have no direct, indirect, or cumulative effect on cultural resources.

Decommissioning of facilities on the NFTS

None of these actions are considered an undertaking subject to NHPA Section 106 compliance (USDA Forest Service Policy for Section 106 of the NHPA Compliance in Travel Management: Designated Routes for Motor Vehicle Use (2005). Motorized vehicles can already use NFTS roads. Allowing or prohibiting use of those roads by different types of vehicles will have no direct, indirect, or cumulative effect on cultural resources.

Restoration of drainage patterns on unauthorized routes.

Short-term timeframe: 1 year

Long-term timeframe: 20 years.

Spatial boundary: Location of historic property.

Indicator(s): Degree to which the integrity of historic property values are diminished, related to: location, design, setting, materials, workmanship, feeling, or association.

Methodology: Information obtained from completed archaeological survey of the proposed restoration of routes or previous archaeological survey. In addition, use of existing data from cultural resource site atlas, site record files, archival files, maps and GIS spatial layers, to identify cultural resources in the area of potential effect that may have direct or indirect effects.

Rationale: Motorized Recreation PA.

Cumulative Effects

Short-term timeframe: not applicable; cumulative effects analysis will be done only for the long-term time frame.

Long-term timeframe: 20 years

Spatial boundary: Forest administrative boundary (outside of designated wilderness).

Indicator(s): Cumulative effects are not anticipated under any action alternative because cross-country travel is prohibited and mitigation measures will be prescribed to eliminate the potential for an adverse effect to NRHP values.

Methodology: Use existing data from cultural resource site atlas, historic archives, maps, site record files, and GIS spatial layers, and information obtained from archaeological inventories of unauthorized routes, to identify cultural resources in the area of potential effect that may have cumulative effects.

Rationale: Motorized Recreation PA.

Affected Environment

There are approximately 226 cultural resources recorded within the Smith River NRA administrative boundaries. Approximately thirty (30) sites are prehistoric, 158 are historic and 38 are multi-component. Prehistoric Native American activities and ethnographic land use was seasonally based with major villages located along the coast. In the interior, there are recorded seasonal villages or temporary camps along the river corridors, and sensitive religious and cultural locations including areas used for the collection of traditional botanical resources. Today, Native Americans from a number of Indian tribes including the Tolowa, Takelma and Tutuni still actively use the Smith River NRA for gathering traditional food and medicinal plants, basket weaving materials, for hunting, and conducting ceremonies. The Tolowa are represented by the federally recognized Smith River Rancheria and Elk Valley Rancheria.

The footprint of prehistoric archaeological sites within the project area of potential effect is sparse. These sites, especially at the dispersed recreation locations may be masked and are not visible on the surface from periodic river flooding, and the overburden from mining, such as mine tailings. The few examples of this site type usually correlate with springs or large river terraces, which there are few within the project.

The vast majority of these recorded sites represent non-native historic lands use activities which date from circa 1852 to the present. The principal historic land use within the project is related to the exploration for and mining of gold and copper beginning circa 1852 (Keter 1995:20). The mining for chromite came to the project area a decade later in the 1860s (Heffner 1984:43). Mining continued its boom and bust cycle into the 1980s. Some of the roads or trails now in the project were originally built to reach these mines. Clusters of mines around Coon Mountain, the High Divide/Low Divide area, Rattlesnake Mountain, Big Flat, French Hill, Diamond Creek, Myrtle Creek, and the Monumental area seem to correspond to the clusters of roads in these areas.

Other historic archaeological sites within the project include the remnants of trails, historic cabins, roads, bridges, lumber camps, ditches, homesteads, and Forest Service administrative buildings and compounds. In the 1930s, with the creation of the Civilian Conservation Corps, the pace of development and road building for recreation and Forest Service administrative uses increased. Old roads and trails were improved and new ones constructed in order to build lookouts, administrative buildings, and campgrounds; some of these roads were strung with phone lines for Forest Service administration. The archaeological remnants of the CCC era are on the fringes of the project area of potential effect.

Site integrity at many of the district's sites has been degraded by environmental forces such as fire, erosion, and flooding. Successive land uses can also compromise site integrity through abandonment, removal, modern mining, dispersed recreation, and administrative decisions. Employee and public safety have long been established administrative issues that have resulted in the closures of abandoned mines and the burning or demolition of condemned structures determined not eligible for the NRHP. Some original trails have also been converted to be more conducive for travel or to satisfy project needs related to accessibility. Since the 1930's, the Forest Service has been creating many of the main road arteries in current use today. These roads were built in support of the timber industry and exist today as part of the National Forest road system. Prior to the NHPA Act of 1966, some of the roads used old trails. The Ship Mountain Road (16N02), The G-O Road (15N01) and countless other spurs were built on the design first laid out by pre-contact and historic trail systems.

Increasing amounts of recreational use on forest lands has also had a moderate effect on cultural resources. Recreational locations desired for their natural features are often the same locations that have been in use for countless generations. This can lead to looting, vandalism, and unanticipated impacts that can negatively affect a site's integrity. A number of the dispersed recreation areas considered for this project will need to have these types of effects mitigated and actively managed upon implementation.

Environmental Consequences

- Alternative 1 = No action
- Alternative 2 = Proposed action, dropped from detailed analysis
- Alternative 3 = The modified proposed action
- Alternative 4 = provides increased opportunities for motorized recreation and access to dispersed recreation sites.
- Alternative 5 = reduces the number and miles of roads and motorized trails open for motorized travel
- Alternative 6 = maintains the collaborative group recommendations of 2010 and makes limited changes to address key issues identified through public scoping related to dispersed recreation, and restoration of drainage patterns on unauthorized routes

There are twenty-five (25) cultural resources within the area of potential effect, which represents the maximum footprint of the project (Alternative 4). Twenty-one (21) are historic archaeological sites, three (3) are multi-component archaeological sites, and one is Native American contemporary traditional gathering area which may have an historic component. A route by route assessment was completed to determine the effects to cultural resources from the proposed alternatives (Confidential Tables in CRIR #R2014051011033). This detailed assessment looked at the type of effect, nature of effects, severity of effect, and Standard Resource Protection Measures prescribed under Appendix B of the Motorized PA to determine no adverse effects.

The cultural resources that have been determined susceptible to effects based on the actions proposed in alternatives are called an "At Risk" historic property defined in the Motorized Recreation PA Part (I) (J) as: "…a property that the Forest Heritage Resources Manager (HRM) identifies as susceptible to being adversely affected as a result of designating a motor vehicle OHV route or specifically defined area, or using or maintaining the designated motorized recreation OHV system. An "At–Risk" historic property is identified based on property characteristics and proximity to designated OHV routes or specifically defined areas (e.g., trail corridor, trail head, vista point)." Table 123 displays the number of "At-Risk" cultural resources for each alternative. Alternatives 4 and 6 contain the highest number of "At-Risk" cultural resources. The environmental consequences of each alternative are described below:

Table 123. Risk assessment of cultural resources associated with Alternatives 3 through 6

Risk Factor	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Not At Risk	12	15	22	17
Total No. of Sites at Risk	3	10	3	8
Total No. of Sites	15	25	25	25

Alternative 1 – No action

Alternative 1 would cause unmitigated impacts to cultural resources and the loss of NRHP values because there would be no mitigation measures in place for protecting the identified "At-Risk" historic properties. The no action alternative is the only alternative where adverse effects to cultural resources would continue without prescribing and implementing mitigation measures. At present, the potential for ongoing effects to eight cultural resources would continue if no management action is taken.

Direct and indirect Effects:

There would be no direct or indirect effects from the proposed actions, but there are five direct and three indirect to cultural resources from current use patterns.

Cumulative Effects:

Additional cultural resources located adjacent to a number of the unauthorized routes not analyzed for this project would also be at risk for adverse effects.

Alternative 2 – Proposed Action, dropped from Detailed Analysis

Alternative 2 was dropped from detailed analysis and therefore the loss of NRHP values was not further quantified.

Alternative 3 – Modified Proposed Action

Alternative 3 was developed without the analysis of dispersed recreation routes and sites.

Direct and indirect Effects:

Confidential CRIR Report No. R2014051011033 displays the effects to three (3) cultural resources from this alternative. The effects are described below:

(1) Direct and indirect Effects of adding facilities (presently unauthorized routes) to the NFTS, including identifying seasons of use and vehicle class; one cultural resource is indirectly affected by adding an existing road to the road system.

(2) Direct and indirect effects of changes to the existing NFTS (including changing maintenance levels); one cultural resource is directly affected from the proposed changed to an existing road system.

(3) Direct and indirect effects of decommissioning; there are no cultural resources affected.

(4) Direct and indirect effects of restoration of drainage patterns on unauthorized routes; one cultural resource is indirectly affected by proposed restoration of the road.

Cumulative Effects:

Cumulative effects are not anticipated under this alternative because standard resource protection measures, defined in Appendix B of the Motorized Recreation PA, will be applied. Table 126 displays the

proposed standard resource protection measure, based on the proposed action in the alternative and the nature of the effect. In brief, monitoring is proposed for one cultural resource, a barrier to block access is proposed for one cultural resource, and removing a barrier is proposed for the remaining cultural resource.

Alternative 4.

Alternative 4 provides increased opportunities for motorized recreation and access to dispersed recreation sites

Direct and indirect Effects:

Confidential CRIR Report No. R2014051011033 displays the effects to ten (10) cultural resources from this alternative. The effects are described below:

(1) Direct and indirect effects of adding facilities (presently unauthorized routes) to the NFTS, including identifying seasons of use and vehicle class; eight (8) cultural resources are indirectly or directly affected by adding roads and trails to the road system.

(2) Direct and indirect effects of changes to the existing NFTS; one cultural resource is directly affected from the un-inventoried UAR.

(3) Direct and indirect effects of decommissioning; there are no cultural resources affected.

(4) Direct and indirect effects of restoration of drainage patterns on unauthorized routes; one cultural resource will have a beneficial effect from removal of existing barrier.

Cumulative Effects:

Cumulative effects are not anticipated under this alternative because standard resource protection measures, defined in Appendix B of the Motorized Recreation PA, will be applied. Table 126 displays the proposed standard resource protection measure, based on the proposed action in the alternative and the nature of the effect. In brief, monitoring is proposed for six (6) cultural resources and a barrier is proposed for two (2) cultural resources to block access to sites, removing a barrier is proposed for one (1) cultural resource, and no standard resource protection measure is recommended for the remaining cultural resource where the effect is considered negligible.

Alternative 5.

Alternative 5 reduces the number and miles of roads and motorized trails open for motorized travel.

Direct and indirect Effects:

Confidential CRIR Report No. R2014051011033 displays the effects to three (3) cultural resources from this alternative. The effects are described below:

(1) Direct and indirect effects of adding facilities (presently unauthorized routes) to the NFTS, including identifying seasons of use and vehicle class: one cultural resource is indirectly affected by adding roads and trails to the road system.

(2) Direct and indirect effects of changes to the existing NFTS; one cultural resource is directly affected from the un-inventoried UAR.

(3) Direct and indirect effects of decommissioning: there are no cultural resources affected.

(4) Direct and indirect effects of restoration of drainage patterns of unauthorized routes: one cultural resource is indirectly affected by proposed restoration of the road.

Cumulative Effects:

Cumulative effects are not anticipated under this alternative because standard resource protection measures, defined in Appendix B of the Motorized Recreation PA, will be applied. Table 126 displays the proposed standard resource protection measure, based on the proposed action in the alternative and the nature of the effect. In brief, barriers are proposed for two (2) cultural resources to block access, and removing a barrier is proposed for the remaining cultural resource.

Alternative 6.

Alternative 6 maintains the collaborative group recommendations of 2010 and makes limited changes to address key issues identified through public scoping related to dispersed recreation, and restoration of drainage patterns on unauthorized routes.

Direct and indirect Effects:

Confidential CRIR Report No. R2014051011033 displays the effects to eight (8) cultural resources from this alternative. The effects are described below:

(1) Direct and indirect effects of adding facilities (presently unauthorized routes) to the NFTS, including identifying seasons of use and vehicle class: six (6) cultural resources are directly or indirectly affected by adding roads and trails to the road system.

(2) Direct and indirect effects of changes to the existing NFTS: one cultural resource is directly affected from the un-inventoried UAR.

(3) Direct and indirect effects of decommissioning: there are no cultural resources affected.

(4) Direct and indirect effects of restoration of drainage patterns on unauthorized routes: one cultural resource is indirectly affected by proposed restoration of the road.

Cumulative Effects:

Cumulative effects are not anticipated under this alternative because standard resource protection measures, defined in Appendix B of the Motorized Recreation PA, will be applied. Table 126 displays the proposed standard resource protection measure, based on the proposed action in the alternative and the nature of the effect. In brief, monitoring is proposed for four (4) cultural resources, a barrier is proposed for two (2) cultural resources to block access to sites, removing a barrier is proposed for one (1) cultural resource, and no standard resource protection measure is recommended for the remaining cultural resource where the effect is considered negligible.

Summary of Effects Analysis across All Alternatives

Table 124 ranks the alternatives by three indicators to determine which alternative may have the greatest effect on cultural resources. According to this Table, Alternative 5 will have the least effect on cultural resources. Actions taken under this alternative would generally reduce the frequency of ongoing unauthorized motor vehicle use thereby mitigating the degree to which NRHP values are currently being diminished. Furthermore, Alternative 5 proposes the least amount of newly created routes, which provides additional protection to sites not currently considered legally accessible. Because Alternative 6 does propose to create a number of new routes from those unauthorized routes that presently access historic properties, it is not considered the alternative that is best for retaining cultural resource values. However,

through the implementation of standard resource protection measures, these values can still be protected and mitigated from continuing adverse impacts.

Table 124. Comparison of effects to cultural resources

Indicators – Cultural Resources	Rankings of Alternatives for each Indicator*				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Degree to which the integrity of historic property values are diminished	1	4	2	5	4
Number of historic properties within unauthorized routes at risk from ongoing use	1	2	2	5	4
Average number of historic properties per acre protected from creation of new routes	5	3	1	5	4
Average for Cultural Resources (Rank)	2.5 (2)	3 (3)	1.5 (1)	5 (5)	4 (4)

a - A score of 5 indicates the alternative is the best for cultural resources related to the indicator; A score of 1 indicates the alternative is the worst for cultural resources related to the indicator

Another measure of effect is to analyze the alternatives against three other indicators: 1) the type of effect, 2) the severity of effect, and 3) the application of Standard Resource Protection Measures. Table 125 summarizes the results of the analysis and Table 126 displays each site individually, how each alternative may affect that site, and the proposed standard resource protection measures that will result in a determination of “no adverse effect”.

Table 125. Summary of effects from all alternatives

			Alt. 1	Alt.3	Alt.4	Alt.5	Alt.6
Sites in the Area of Potential Effect			25	15	25	25	25
Sites Not At Risk			15	12	15	22	17
Sites at Risk	Type of Effect	Direct	1	1	1	1	1
		Indirect	7	2	7	2	5
		Direct/Indirect	2	0	2	0	2
		Total	10	3	10	3	8
	Severity of Effect	Negligible	1	0	1	0	1
		Minor	7	1	7	1	5
		Moderate	2	2	2	2	2
		Severe	0	0	0	0	0
		Total	10	3	10	3	8
	SRPM[a]	Signage	0	0	0	0	0
		Monitor	0	1	6	0	4
		Barriers	0	2	2	2	2
		Remove Barrier	0	0	1	1	1
		Total[b]	0	3	9	3	7

a - SRPM = Standard Resource Protection Measure defined in Appendix B of The Programmatic Agreement for Designating Motor Vehicle Routes and Managing Motorized Recreation on the National Forests in California.

b - Alternative 1 does not constitute as an undertaking and therefore requires no standard resource protection measures. Negligible effects also do not require standard resource protection measures.

Table 126. Site effects and standard resource protection measures by alternative

Count	FS Site #	Type of Effect	Severity of Effect	standard resource protection measures[a] Required by Alternative				
				Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
1	05-10-51-2	None	N/A	No	No	No	No	No
2	05-10-51-10	Indirect	Minor	No	No	Monitor	No	Monitor
3	05-10-51-11	None	N/A	No	No	No	No	No
4	05-10-51-18	Indirect	Moderate	No	Barrier	Barrier	Barrier	Barrier
5	05-10-51-26	Direct	Moderate	No	Barrier	Barrier	Barrier	Barrier
6	05-10-51-27	Direct / Indirect	Minor	No	No	Monitor	No	Monitor
7	05-10-51-33	None	N/A	No	No	No	No	No
8	05-10-51-34	None	N/A	No	No	No	No	No
9	05-10-51-37	None	N/A	No	No	No	No	No
10	05-10-51-39	None	N/A	No	No	No	No	No
11	05-10-51-49	Direct / Indirect	Minor	No	No	Monitor	No	Monitor
12	05-10-51-55	Indirect	Minor	No	No	Monitor	No	Monitor
13	05-10-51-68	None	N/A	No	No	No	No	No
14	05-10-51-133	Indirect	Minor	No	No	Monitor	No	No
15	05-10-51-143	None	N/A	No	No	No	No	No
16	05-10-51-144	None	N/A	No	No	No	No	No
17	05-10-51-178	Indirect	Minor	No	No	Monitor	No	No
18	05-10-51-204	None	N/A	No	No	No	No	No
19	05-10-51-207	None	N/A	No	No	No	No	No
20	05-10-51-310	Indirect	Negligible	No	No	No	No	No
21	05-10-51-315	None	N/A	No	No	No	No	No
22	05-10-51-318	None	N/A	No	No	No	No	No
23	05-10-51-320	None	N/A	No	No	No	No	No
24	05-10-51-321	Indirect	Moderate	No	Remove Barrier	Remove Barrier	Remove Barrier	Remove Barrier
25	05-10-51-322	None	N/A	No	No	No	No	No

a - SRPM refers to the Standard Resource Protection Measure defined in Appendix B of The Programmatic Agreement for Designating Motor Vehicle Routes and Managing Motorized Recreation on the National Forests in California.

When measured against the specific type of effects and severity Alternative 1 again poses the greatest threat to cultural resources because no management actions would be taken to curb threats or current effects to NRHP values. In contrast, Alternatives 3 and 5 affect the smallest number of sites. Alternative 3 affects a smaller number of sites because it does not analyze routes that access dispersed recreation areas, thereby eliminating many cultural resources from consideration. Alternative 5 affects a smaller number of sites by reducing the number of routes through the recommendation of barricades or restoration which also bars access to many cultural resources, reducing the footprint of the area of potential effect and eliminating effects.

Alternatives 4 and 6 affect a similar number of cultural resources in that they both consider trails and access routes leading to dispersed recreation, as well as the recreation areas themselves, which provide a

larger area of potential effect than Alternatives 1, 3, and 5. Alternatives 4 and 6 differ in the degree to which the effects to cultural resources need to be mitigated through the application of standard resource protection measures. By proposing the maximum number of created motorized trails, Alternative 4 would impact the greatest number of cultural resources and require considerable resource protection. Alternative 6 requires a fewer number of mitigation measures because some of those routes considered for addition to the NFTS in Alternative 4 would alternately be barricaded in this alternative.

Compliance with the Forest Plan and Other Direction

The Forest Plan outlines the conditions to be retained throughout the Forest in order to ensure resource protection and enhancement. The Forest Plan standards and guidelines that govern management of cultural resources on the Forest are listed in the form of four bullet statements in the Analysis Framework section above. In this section five alternatives are analyzed in the context of the Forest Plan to determine whether and how they comply with Forest Plan standards and guidelines.

For alternatives 3 through 6 the standards and guidelines in the Forest Plan for cultural resources would be met by addressing effects and identifying measures to determine “no adverse effects”. Alternative 1 is the only alternative that would deviate from Forest Plan direction and applicable cultural resource laws and implementing regulations because it does not identify measures to reduce effects to cultural resources from motorized travel.

Society, Culture and Economy

The Smith River National Recreation Area (NRA) Restoration and Motorized Travel Management Project area includes the Gasquet Ranger District and the Smith River NRA, exclusive of lands within congressionally designated Wilderness Areas, and is referred to collectively as the Smith River NRA. The District includes Del Norte County. Natural resources contribute to the quality of life of local residents by providing employment and career opportunities through recreation-related tourism and timber production, income through resource-related jobs and sales of special forest projects, food, and materials for personal and ceremonial uses through subsistence activities, and personal recreation opportunities through access to hiking trails, hunting areas, boating areas, and fishery resources.

Fishing and hunting are significant elements of these communities’ lifestyles and adds to their yearly food supply.

Fishing, hunting, whitewater rafting, swimming, camping, wildlife photography, bird watching, and OHV driving are the recreational draws to the area.

The communities’ design of its desired future condition includes recreation as a major component of its economy.

The lifestyle is rural with many families with generational roots in the community attached to a land resource value. A number of people have been attracted to this area by the natural beauty and its environmental features. Family and social values are more important than services and conveniences that are more readily available in highly populated areas.

Recreation and tourism are seen as the primary areas with the potential to provide for economic stimulus. Infrastructure is needed to support this effort. Recreational facilities, which include trails and safe road systems, are needed.

The communities’ values and lifestyles as it relates to this project proposal have a unique history and composition.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Multiple statues, regulations and executive orders identify the general requirement for the application of economic and social evaluation in support of Forest Service planning and decision making. These include, but are not limited to, the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215: 16 USC 528-531), National Environmental Policy Act of 1969 (83 Stat. 852; 42 USC 4321, 4331-4335, 4341-4347), and the Planning Act of 1974. In addition, the following guidance also applies:

Executive Order 12898, issued in 1994 orders Federal agencies to identify and address any adverse human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. The Order also directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife.

The Civil Rights Act of 1964 provides for nondiscrimination in voting, public accommodations, public facilities, public education, Federally-assisted programs, and equal employment opportunity. Title VI of the Act, Nondiscrimination in Federally-assisted Programs, as amended (42 U.S. C. 2000d through 2000d-6) prohibits discrimination based on race, color, or national origin.

Analysis Methodology

Study Area

The Six Rivers National Forest study area is defined as Del Norte County.

Assumptions Specific to the Socioeconomic Analysis

Nonmotorized activities are enhanced by improvements in ecological conditions.

Data Sources

1. Center for Economic Development. 2013. Del Norte County Economic Profile. California State University Chico. Chico.

2. Economic Profile System – Human Dimensions Toolkit, EPS-HDT. 2013. Crescent City CCD, Del Norte Co., CA. www.headwaterseconomic.org/eps-hdt

3. Bureau of Indian Affairs. 2005. American Indian Population and Labor Force Report.

4. Yurok Forest History. 1994. Department of Environmental Science, Policy, and Management, University of California at Berkeley.

Affected Environment

The Del Norte Communities

In the Smith River NRA most of the populations is located in the community of Crescent City, located on Highway 101. Historic economic activities occurring in this area over the past 150 years include mining (e.g., gold and copper), homesteading and ranching, logging, commercial fishing and recreation-related tourism. The area provides diverse opportunities for outdoor enthusiasts and travelers, including fishing, hunting, hiking, rafting, and wildlife-viewing. Currently, the main industries are services, recreation-related tourism, gaming, agriculture, forest products, local branches of Federal, state, and county government agencies, and the Smith River and Elk Valley Rancherias and the Yurok Tribe’s Tribal governments.

The largest community in the area is Crescent City, with a 2012 population totaling 7,429. Crescent City has numerous small businesses, major bank branches, service businesses, forest products industry and government agencies. As the largest community in the area, Crescent City serves as a regional trade and service center.

Smith River and Klamath are small communities located in Del Norte County on Highway 101. Smith River is located 12 miles north of Crescent City with a 2010 population of 866. The Smith River Rancheria Tribal offices are located here. Klamath is situated at the mouth of the Klamath River, south of Crescent City. The population was 779 at the 2010 census. The Yurok Tribal offices are located in Klamath. Key economic sectors include retail trade, tourism, recreation, gaming, agriculture, forestry, commercial and sport fishing, and hunting.

Gasquet and Hiouchi are small communities located in Del Norte County east of Crescent City on Highway 199. The area population is approximately 900. Key economic sectors include tourism, recreation, retail trade, agriculture, forestry, fishing, hunting, and mining.

Four Federally Recognized Indian Tribes are located in Del Norte County, the Smith River Rancheria, Elk Valley Rancheria, Resighini Rancheria and the Yurok Tribe. The Smith River Rancheria, located in the community of Smith River has an enrolled population of 1,008. The Elk Valley Rancheria has an enrolled population of 98. Both Rancherias have casinos and tourism related facilities. The Resighini Rancheria has an enrolled population of 111.

The Yurok Reservation with an enrolled population of 4,912 has tribal offices in Klamath and Weitchpec. Yurok Reservation lands currently extend from the mouth of the Klamath River for one mile on each side of the river for a distance of 44 miles upriver to the confluence with the Trinity River at Weitchpec. The majority of this land is now privately held in non-Indian ownership. All told, less than 5,000 acres of reservation land remain in trust status, either as tribal trust, village reserve, or trust allotments. The Tribe is in the process of acquiring approximately another 47,000 acres of ancestral lands from the Green Diamond Timber Company. The Yurok Tribe currently has a gas station and convenience store at Klamath and is planning on opening a hotel and casino in 2014.

The community information comes in part from the Center for Economic Development, 2013, Del Norte County Economic Profile, Economic Profile System – Human Dimensions Toolkit, Crescent City CCD, Del Norte Co., CA., American Indian Population and Labor Force Report, BIA, 2005, and Yurok Forest History 1994.

Population and Demographics

Population, age and racial distributions of counties are important socioeconomic consideration in land management planning. The following sections highlight demographic trends in the Six Rivers National Forest study area. Population forecasts provide a projection of future population levels, which may help to indicate the potential for increased pressures for uses and recreation opportunities on the Six Rivers National Forest. Age distributions provide insights into the socioeconomic dynamic in the local area in terms of assessing the proportion of individuals in the working age group versus retirees and minors who typically use local services in different ways. Similarly, the racial and ethnic composition of the local area may affect the cultural uses of public lands.

Current Population and Growth Trends

Del Norte County is currently home to over 25,000 people. Population increase has been steady for the last ten years, with an annual average increase of 126 people (0.5 percent). Between 2001 and 2011, population grew by 5.2 percent. In Del Norte County between 2000 and 2009 there tended to be more

population change from net migration (596) than natural increase (488). However, during 2009, there was a net in-migration of only 2 people and a natural increase of 73 people in the county.

Table 127. County population

Year	Del Norte County	1 year change	CA 1 year change
2000	24,127	n/a	n/a
2001	24,110	- 0.1 %	1.6 %
2002	24,257	0.6 %	1.4 %
2003	24,416	0.7 %	1.3 %
2004	24,686	1.1 %	1.2 %
2005	24,824	0.6 %	0.8 %
2006	24,837	0.1 %	0.7 %
2007	24,858	0.1 %	0.8 %
2008	25,092	0.9 %	0.8 %
2009	25,136	0.2 %	0.7 %
2010	25,211	0.3 %	0.7 %
2011	25,372	0.6 %	0.8 %

Source: California Department of Finance, Demographic Research Unit

Race and Ethnicity

Approximately 70 percent of residents in Del Norte County classified themselves as White in 2010, compared to 40 percent of Californians. Hispanics represented the next largest group, with 19 percent of the population, compared to 38 percent in California. American Indians and African Americans were the next largest groups. Over the past ten years, the Asian population percent of increase has increased the fastest at 52 percent. The African American population percent of increase decreased the most at -17 percent.

Table 128. Del Norte county population by race/ethnicity compared to California

			Percent of Total in 2010		2000 to 2010 10 year Change	
	2000	2010	County	California	County	California
White	19,294	18,513	64.7 %	40.1 %	- 4.0 %	- 5.4 %
Hispanic or Latino	3,829	5,093	17.8 %	37.6 %	33.0 %	27.8 %
American Indian	1,593	1,935	6.8 %	0.4 %	21.5 %	- 9.3 %
Black or African American	1,167	967	3.4 %	5.8 %	- 17.1 %	- 0.8 %
Asian	619	938	3.3 %	12.8 %	51.5 %	30.9 %
Native Hawaiian and Pacific Islander	18	26	0.1%	0.3%	44.4%	23.9%

Source: U.S. Census Bureau, Census 2000 and Census 2010

Age Distribution of the Population

The county housed more people ages 55 to 74 in 2010 than in 2000. Some groups are growing faster than in the state, including small children under 5 and persons 55 to 74. The largest age group in Del Norte County in 2010 was the 40-54 year-old group, with 6,345 people. This number represents approximately 22.2 percent of Del Norte County's population, which is 1 percent higher than the statewide average. Since 2000, the number of people between the ages of 55-64 increased 58.1 percent, while those 25-39 decreased 7 percent. These trends may indicate that the number of jobs for those between the ages of 25-39 has declined, while people looking towards retirement are migrating into the area. Residents between the ages of 55-64 make up a higher percentage of the population in Del Norte County than the state average. See the following figures for more details on age distribution in Del Norte County since 2000.

Table 129. County population by age

Age Range	2000	2010
Under 5 years	1,525	1,703
5 to 17 years	5,371	4,435
18 to 24 years	2,196	2,519
25 to 39 years	6,471	6,018
40 to 54 years	6,145	6,345
55 to 64 years	2,351	3,717
65 to 74 years	1,850	2,153
75 to 84 years	1,223	1,263
85 years and over	375	457

Source: U.S. Census Bureau, Census 2000 and Census 2010

Table 130. Population by age compared to California, Del Norte

	Percent of Total in 2010		2000 to 2010 10 year Change	
Age Range	County	California	County	California
Under 5 years	6.0 %	6.8 %	11.7 %	1.8 %
5 to 17 years	15.5 %	18.2 %	- 17.4 %	0.0 %
18 to 24 years	8.8 %	10.5 %	14.7 %	16.5 %
25 to 39 years	21.0 %	21.2 %	- 7.0 %	- 1.9 %
40 to 54 years	22.2 %	21.1 %	3.3 %	12.3 %
55 to 64 years	13.0 %	10.8 %	58.1 %	54.4 %
65 to 74 years	7.5 %	6.1 %	16.4 %	20.5 %
75 to 84 years	4.4 %	3.7 %	3.3 %	6.9 %
85 years and over	1.6 %	1.6 %	21.9 %	41.2 %

Source: U.S. Census Bureau, Census 2000 and Census 2010

The population and demographics information comes from the 2000-12 Del Norte County Economic and Demographic report.

Economic Overview

From 2000 to 2007 Del Norte County experienced steady economic growth. The recession of 2007 did impact Del Norte County but not as severely as it did the rest of California. The county experienced a rise

in unemployment, a drop in income, and an increase in the poverty rate. Del Norte County is currently showing some signs of recovery.

Del Norte County's available labor force grew steadily through 2009 then in 2010 the labor force plateaued. The county's labor force shrank at a much faster rate than California's after the recession. The county's unemployment rate has also been considerably higher following the recession. Del Norte County's labor force is influenced by seasonal employment with the largest labor force in the summer and fall. Government enterprises, health care, and social assistance are the industries which employ the most people in the county. Government enterprises provide 34.9 percent, health care and social assistance 13.4 percent, and retail trade provides 11 percent of all jobs in the county. Small businesses make up the majority of businesses in the county. Establishments with one to four employees make up 58.7 percent of businesses.

Employment and Income

Forest land management activities affect the economic well-being of communities close to and within the Forest boundaries. The Forest zone of influence includes Del Norte County in northwestern California. Del Norte County is predominantly rural and to some extent depends upon the Forest's natural resources - timber, fish, wildlife, recreation, air and water quality, visual quality, and biodiversity. Forest outputs provide raw materials for local industries and influence expenditures by the population.

Employment

There were approximately 9,316 people 16 years or older in civilian employment in Del Norte County in 2011. Of these jobs 2,727 were in management, professional and related sectors. There were 2,817 jobs in the service sector and 2,232 in sales and office employment. Only 126 people were employed in farming, fishing, and forestry and 655 were employed in construction, extraction, maintenance and repair work. Employment in production, transportation, and material moving resulted in 759 jobs.

Service providing jobs account for approximately 30 percent of total employment. Employment within management, professional and related sectors was at approximately 29 percent. Sales and office employment was 24 percent of the total. Goods producing jobs, such as farming, forestry, and fishing, account for approximately 1.4 percent of total employment. Construction, extraction, maintenance and repair account for approximately 7 percent of total employment while production, transportation, and material moving account for approximately 8.1 percent of total employment. Government and government enterprises (Federal, state, and local) account for 34.9 percent of total employment.

Unemployment rates within the county are typically higher than the average annual unemployment rates for California. Between 2000 and 2011, the average annual unemployment rate for California ranged from 4.9 percent-12.4 percent. Unemployment rates during the period for Del Norte County, however, were consistently higher than the state, ranging from 5.7 percent -14 percent.

Unemployment

Unemployment is the estimated number of people actively seeking work, not working at least one hour per week for pay and not self-employed. The data is estimated at the place of residence and reported by the California Employment Development Department (EDD) primarily from data collected by the U.S. Current Population Survey (CPS).

Through the Current Population Survey, the government has a difficult time determining exactly how many people meet the technical definition of "unemployed" at the county level. That makes this indicator an inexact measure of the unemployed.

Table 131. Total unemployment, Del Norte County

	County	Unemployment	Rate	1-year	change
Year	Unemployed	County	State	County	State
2000	760	5.7 %	4.9 %	n/a	n/a
2001	820	5.6 %	5.4 %	7.9 %	11.9 %
2002	900	6.4 %	6.7 %	9.8 %	24.8 %
2003	890	7.0 %	6.8 %	- 1.1 %	2.4 %
2004	860	6.6 %	6.2 %	- 3.4 %	- 8.5 %
2005	800	6.2 %	5.4 %	- 7.0 %	- 12.6 %
2006	740	5.7 %	4.9 %	- 7.5 %	- 9.2 %
2007	830	6.1 %	5.3 %	12.2 %	10.8 %
2008	990	8.0 %	7.2 %	19.3 %	36.4 %
2009	1,410	12.4 %	11.3 %	42.4 %	57.7 %
2010	1,560	14.0 %	12.4 %	10.6 %	9.6 %
2011	1,530	13.3 %	11.7 %	- 1.9 %	- 4.5 %

Source: California Employment Development, Labor Market Information Division

Income

Personal income is income that is received by all persons from all sources including wages, salaries, proprietor's income, rents, interest, and dividends. Personal income in 2010 within Del Norte County, adjusted for inflation, totaled approximately $784 million. Labor income, which includes wage and salary disbursements to employees and proprietors income, totaled approximately 65.6 percent of household earnings. Other sources of household income included Social Security, retirement income, Supplemental Security Income (SSI), cash public assistance, and Food Stamp/SNAP. Approximately 36.4 percent of household income came from Social Security, 24.5 percent came from retirement income, 12.1 percent came from SSI, 8.2 percent from cash public assistance, and 12.1 percent from Food Stamp/SNAP.

Table 132. Del Norte County median household income (nominal)

Year	Del Norte County	California
2000	$ 39,544	$ 46,836
2001	$ 38,607	$ 47,064
2002	$ 39,597	$ 47,323
2003	$ 40,368	$ 48,440
2004	$ 42,952	$ 49,894
2005	$ 45,454	$ 53,627
2006	$ 47,342	$ 56,646
2007	$ 48,144	$ 59,928
2008	$ 49,938	$ 61,017
2009	$ 48,444	$ 58,925
2010	$ 46,295	$ 57,664

Source: U.S. Department of Commerce, Bureau of the Census, Small Area Income and Poverty Estimates

Per capita income is one of the primary economic indicators of a community. Income influences buying power and affects local retail sales. The 2010 Del Norte County inflation adjusted per capita income was approximately $26,937 compared to California's per capita income of $42,514.

Median household income, the income midpoint, is the income level at which half of the area's households earn more and the other half earn less. The U.S. Census Bureau annually estimates median household income for counties. When evaluating income growth among all economic classes Median household income is a better measure of average income than per capita income. Changes in per capita income can be driven by growth increases in the high income ranges only. Growth in median household income usually indicates expansion across the full range of incomes. In 2010 Del Norte Counties' Median household income was $ 46,295, California's was $ 57,664.

Lifestyles, Attitudes, Beliefs and Values

Forest held several workshops designed to help the public better understand the project, gather information, and learn how to provide input that could be used to help create alternatives to the proposed action. A mutual perspective was the desire to see the Forest managed for motor vehicle use and ensure protection of the resources. During these workshops and from the scoping letters received on the proposed action various perspectives came from how to manage for motorized use and to what degree. Comments ranged from adding all unauthorized routes to the system to providing maximum protection of resources.

Following are comments that reflect some of these perspectives:

- Driving is part of the recreational experience which provides opportunities to enjoy the scenery and explore remote areas.
- Most people like to use the Forest with their families and friends. Here are examples of what was expressed, "I hope that the continued use of off road motor vehicles within . . . the Six Rivers will be considered and maintained . . . Our family is very involved in off road motorcycle riding and we certainly hope that there will continue to be access to our Six Rivers National Forest lands to enjoy off road motorcycle riding." ". . . We want our children and grandchildren to maintain our cultural traditions . . . access to the forests is extremely important to our way of life."
- They are concerned that eliminating trails will limit their areas of enjoyment.
- The value of most OHV enthusiasts is to have a continuity of trails. OHV enthusiasts want existing trail systems to continue and be enhanced. This is an example of what was expressed, "trails are getting cut down to a point where there are no loops; meaning you have to drive back the same way you go in rather than loop around."
- They are concerned that seasonal closures will adversely impact the prime use recreation times.
- There was a trend among the motorcycles users desiring trails designated for single track routes in order to increase their enjoyment of the experience.
- The trend among local residences is the desire to have trails they can ride near their home.
- Concern was raised from hunters that the quality of the experience would decline with the closure of trails.
- We especially value and appreciate the roadless, salmon refuge, and botanical diversity qualities of the Smith R. NRA.
- We highly value the NRA's unique roadless and botanical areas and feel they warrant a high level of protection for present and future generations to enjoy.

- It is undisputed that the existing network of user created routes, in addition to a number of poorly-designed system roads, are a major cause of chronic sedimentation problems in streams, damage to rare and endemic plant populations, loss of roadless wildland recreational opportunities, and spread of *Phytophthora lateralis*.
- I object strongly to any further designation of ORV routes in the Smith NRA. ORVs are destructive to plants, reptiles, amphibians, and the peaceful enjoyment of nature by humans.
- There should be places in the Smith River National Recreation Area where hikers, anglers and other quiet recreationists can go to get away from the noise and pollution from dirt bikes, ATVs, and other off-road vehicles (ORV)… Please ensure that you take into consideration the experiences sought by…those of us who participate in quiet, nonmotorized forms of recreation, as you decide where ORVs can drive.

Summary of Attitudes, Values and Beliefs

Parties with a variety of interests have a stake in this travel management plan. There are many cases of conflicting interests. Just as attitudes, beliefs and values differ across stakeholders, so do their uses of the forest and their desired direction for travel management. A common belief by those who favor motorized recreation was that motorized access would be greatly reduced. In contrast, for those who valued quiet recreation and reference landscapes, it is common belief that the proposed action greatly increased opportunities for motorized access. How an individual believes an action will affect something they value affects their attitude toward that action. Four common issues emerged through the travel management planning process on the Smith River NRA. These issues arose among public stakeholders as a result of how they believe this project will affect the values on National Forest land they care deeply about.

One issue concerns the availability of motorized recreation opportunities. The concern is that removing NFTS roads and not designating all unauthorized routes for motorized travel would adversely affect the quality of motorized recreation opportunities. This is a shared concern among many OHV enthusiasts, who believe all NFTS roads should be kept open and additional motorized recreation opportunities should be developed. Specific activities of concern that were identified include: dispersed camping, OHV use, big game retrieval, and nonmotorized forms of recreation. Hunters could experience trouble retrieving downed big game if they were not allowed motorized access off of designated roads and trails. This is of particular importance to the elderly and those with physical handicaps with limited ability to walk long distance to retrieve downed game. These user groups value motorized recreation opportunities on the Forest, and any perceived loss of those opportunities would negatively impact their quality of life.

Another issue of concern identified is that the project will limit motorized access to dispersed recreation sites. The fear is that such restrictions in travel would limit access for activities such as dispersed camping, hunting, fishing, sightseeing, and other recreational opportunities. The loss of dispersed recreational opportunities would result in a loss of tradition for individuals and families who have accessed the same sites over many years.

Other segments of the public are concerned with the negative effects motorized activities have on nonmotorized recreation. Noise pollution and visual impacts to landscapes are a concern for those who value quiet recreation, solitude, and viewing undisturbed landscapes. The creation of any additional motorized recreation is believed to be a threat to the recreational experiences and aesthetic values observed by visitors who enjoy quiet recreation.

Some people are concerned that maintaining existing NFTS roads, and, or adding roads and motorized trails will impact natural resources values. Resource damage such as sedimentation, erosion, spread of noxious weeds, impacts to botanical species, along with concerns about insufficient enforcement,

monitoring and funding for maintenance of the NFTS are some of the key concerns identified by the public. It is believed that the addition of new motorized recreation opportunities or the maintenance of the existing NFTS would contribute to resource degradation, and in some instances the loss of irreplaceable natural resource values.

These concerns reflect difference in the attitudes, beliefs and values among interested parties. Those characteristics shared among advocates of motorized recreation differ from those common to supporters of natural resource and environmental issues. While all parties value the Forest and the recreational opportunities offered therein, there is a marked difference in how people believe those values will be protected depending on the type of recreation they prefer.

Impacts on People with Disabilities and the Elderly

Concerns have been raised about the impact of travel management on people with disabilities and the elderly. These groups are more dependent on motor vehicles to access and enjoy National Forests. Many dispersed recreation and forest product gathering sites are detached from NFTS roads and trails; it is not possible to develop a route system that would fulfill every stakeholders need. Permitted activities may be addressed under separate analyses.

Implementation of the Travel Management Rule, Subpart B is forest wide and applies to all forest users equally. There is no legal requirement to allow people with disabilities to use motor vehicles on roads, on trails, and in areas that are closed to motor vehicle use. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. Generally, granting an exemption from designations for people with disabilities would not be consistent with the resource protection and other management objectives of travel management and would fundamentally alter the nature of the Forest Service travel management program (29 U.S.C. 794; 7 CFR 15e.103).

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. Consistent with 36 CFR 212.1, FSM 2353.05, and Title V, Section 507(c), of the Americans With Disabilities Act, wheelchairs and mobility devices, including those that are battery-powered, that are designed solely for use by a mobility-impaired person for locomotion and that are suitable for use in an indoor pedestrian area, are allowed on all NFS lands that are open to foot travel.

Environmental Justice

Environmental justice speaks to concerns that costs of Federal decisions could fall disproportionately on people of a particular ethnic or cultural heritage group, or on people with low incomes. Environmental Justice is an executive order (EO 12898) that requires, in brief, that each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations.

The Council on Environmental Quality (CEQ) (1997) provides the following definitions in order to provide guidance for compliance with environmental justice requirements in NEPA:

"…Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis…"

"…Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect."

Potentially affected tribes have been consulted and effects have been considered on their rights and concerns within the analysis of alternatives. American Indian populations will not be disproportionately impacted under any alternative with avoidance of heritages resources, consideration of traditional values, and reasonable access allowed through agreements, permits and recognition of their sovereignty and legal rights. None of the alternatives would have a disproportionate economic impact on any minority or low-income community as the motorized use decisions are spread through the project area and do not cause any adverse effect on any particular minority population. Nonmotorized access may be a burden to some individuals, particular those with mobility related disabilities, young children, or heavy objects that would be difficult to transport.

The Forest held several workshops designed to help the public better understand the project, gather information, and learn how to provide input that could be used to help create alternatives to the proposed action. These meetings were well attended by stakeholders with a variety of interests. All people were encouraged to provide comments.

At this time, no evidence suggests that actions being considered have disproportionately high and adverse impact on minority and low-income populations.

Recreation

Introduction

Nearly all forest visitors, regardless of the purpose for their visit, use the motorized transportation system to reach their destination. Making changes to the NFTS (e.g. adding facilities, prohibiting or allowing motor vehicle use by vehicle type or season of use) changes the diversity of motorized and nonmotorized opportunities on the forest. These visitors may be participating in motorized recreation, or utilizing motor vehicles to access trailheads, facilities, destinations, or geographic areas that are utilized for nonmotorized recreational activities. This section of the Travel Management DEIS examines the extent to which the diversity of recreation opportunities are affected by the proposed action and alternatives and the extent to which alternatives are consistent with direction established in the 1995 Six Rivers National Forest Land and Resource Management Plan (Forest Plan) and the Travel Management (TM) Rule.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Regulatory Direction relevant and specific to the proposed action as it affects recreation resources includes:

National Forest Management Act (NFMA). The NFMA sets forth requirements for development of Forest Plans. The Six Rivers National Forest Land and Resource Management Plan includes standards and guidelines for management of recreation including use of Off-Highway Vehicles.

Smith River National Recreation Area (NRA) Act (PL 101-612; 104 Stat. 3209). The Smith River NRA Act established the Smith River NRA, designated the various Wild and Scenic River segments within the NRA, and permits the use of off-road vehicles only on designated routes.

Travel Management Rule, Subpart B (36 CFR 212.50-57)

(Criteria that incorporated E.O. 11644 and E.O. 11989).

The responsible official shall consider the effects of designated roads, trails and areas on the provision of recreational opportunities, access needs, and conflicts among uses of National Forest System lands. 36 CFR 212.55(a)

The responsible official shall consider effects on the following, with the objective of minimizing: Conflicts between motor vehicle use and existing or proposed recreational uses of National Forest System lands or neighboring federal lands; conflicts among different classes of motor vehicle uses on National Forest System lands or neighboring federal lands; and the compatibility of motor vehicle uses with existing conditions in populated areas, taking into account sound, emissions, and other factors. 36 CFR 212.55(b).

1995 Six Rivers National Forest Plan

The Forest Plan provides goals for the recreation resource and requires a broad range of developed and dispersed recreation opportunities in balance with existing and future demand. For management and conceptual convenience, possible mixes or combinations of activities, settings, and probable experience opportunities have been arranged along a spectrum, or continuum. This continuum is called the Recreation Opportunity Spectrum (ROS), and planning for recreation opportunities using the ROS is conducted as part of land and resource management planning. The ROS provides a framework for defining the types of outdoor recreation the public might desire, and identifies that portion of the spectrum a given National Forest might be able to provide. The ROS is divided into six classes: Primitive, Semiprimitive Nonmotorized, Semiprimitive Motorized, Roaded Natural, Rural and Urban. Each class is defined in terms of its combination of activity, setting, and experience opportunities (USDA Forest Service, 1982). The intent is to use ROS and its associated settings to provide recreation input into Forest Plans which in turn may inform Forest Plan management prescriptions and/or project level planning beyond the programmatic planning used to develop the Forest Plan. For the purposes of travel management actions, the term ‘off-highway vehicles’ is applied to public motor vehicle use (highway legal and non-highway legal). How ROS applies to the Forest Plan depends on how it was integrated into the management prescriptions and associated standards and guidelines in the forest Plan. On Six Rivers National Forest, the ROS is incorporated into the Forest Plan direction as well as standards and guidelines. The Forest standards and guidelines are incorporated into 17 Management Areas reflecting the capability and suitability of the land to support various activities.

Goals

The Six Rivers National Forest Plan (p. IV-122) states several goals for recreation, including:

- Provide a wide range of quality outdoor recreation opportunities, emphasizing the unique character of the Six Rivers by providing access, facilities, and information necessary to meet public demand.
- Incorporate universal design into all developed recreation settings to ensure accessibility and usability for a diversity of visitors.
- Emphasize the national recreation strategy primarily through implementation of the Smith River National Recreation Area Management Plan.
- Establish partnerships to develop recreation resources involving the three northern California counties (Del Norte, Humboldt, and Trinity), the State of California Department of Parks and Recreation, and the National Park Service and other partners.

- Provide quality wild, scenic, and recreational river opportunities along designated rivers, based on the values for which they were designated under the Wild and Scenic Rivers Act.
- Develop designated motorized recreation routes on existing roads and trails, and expand opportunities by creating partnerships with user groups and other agencies

The Smith River NRA Management Plan is in Appendix A of the Six Rivers National Forest Plan. It addresses recreational off-highway vehicle use as follows (Forest Plan Appendix A, p. 8):

- Off-highway vehicle use will be permitted on “designated routes” only.
- Access to these routes is limited to the dry season only (normally from May through October).

Direction

The Six Rivers National Forest Plan (pp. IV-122 to IV-123) provides the following direction applicable to the recreation resource for this project:

General Direction. The “Recreation Opportunity Spectrum Users Guide” will be used to determine the applicable activities, social settings, and recreational experiences for each ROS class.

Dispersed Recreation. Continue to encourage semiprimitive nonmotorized, semiprimitive motorized, and roaded recreation. Emphasize dispersed recreation along the river corridors and existing trails and roads that provide access to the interior of the Forest. Provide opportunities for nonmotorized and motorized recreation through management of semiprimitive, nonmotorized motorized areas.

Motorized recreation. Provide a range of recreational opportunities to meet the needs of motorized recreationists. Manage motorized recreation to provide for public safety and resource protection, and to reduce user conflicts. Develop a cooperative effort with state, local, and other agencies, Indian Tribes, and user groups to identify potential motorized recreation facilities and interpretive opportunities, where appropriate. Specific routes would be designated at the project level through the NEPA process.

Trails. Develop trail management objectives for all trails included in the Forest trail system. These management objectives will be used to identify the standard for each of the Forest's system trails.

The Smith River NRA Management Plan includes the following management direction specific to recreation, for all areas within the NRA (USDA Forest Service 1995, Appendix A, pp. 18).

(1) Provide for a broad range of recreational uses and provide recreational and interpretive services and facilities (including trails and campgrounds) for the public.

(2) Provide and maintain adequate public access, including vehicular roads for general recreational activities such as camping, hiking, hunting and fishing.

(4) Permit the use of off-highway vehicles only on designated routes.

Additionally, from Forest Plan Appendix A, p. 8:

- Off-Highway Vehicle Use: Off-highway vehicle use will be permitted on “designated routes” only. Access to these routes is limited to the dry season only (normally from May through October).

Standards and Guidelines

Table 133. Recreation standards and guidelines applicable to travel management analysis on the Smith River National Recreation Area

Reference[a]	Standard and Guideline
General Recreation	
IV-123, 18-2	Manage recreation according to the recreation opportunity spectrum (ROS) classes described in the ROS User's Guide, as specified in the management prescriptions.
IV-123, 18-8	Work in partnership with local communities, universities, and other agencies to expand recreational facilities, programs, and trails on both public and private lands.
IV-123, 18-9	Remove hazard trees in developed recreation sites, and along roads and trails.
IV-123, 18-10	Provide adequate off-road parking at trailheads to accommodate acceptable levels of use.
IV-123, 18-11	Maintain trailhead information sites that provide safety and effective recreation information.
Dispersed Recreation	
IV-123, 18-15	Manage the trail system to provide for a range of recreational opportunities.
IV-124, 18-16	Manage most trails for multiple uses. Sign to indicate the preferred or desired use type. Restrict specific types of trail use only for reasons of resource protection or user conflicts.
IV-124, 18-17	Provide trailheads at road intersections as needed. Facilities at trailheads will be provided for health and safety or resource protection.
IV-124, 18-18	Trail maintenance will be performed in the following order of priority: 1) Correct trail hazards that endanger public health and safety, 2) prevent resource damage, 3) protect the trail resource, 4) repair, replace, or remove signs or markers, and 5) for the comfort and convenience of the user.
IV-124, 18-19	Depending on ROS class designation, facilities will be installed at areas of concentrated public use to protect the resource and for public health and safety rather than for user convenience.
Motorized Recreation	
IV-124, 18-21	Non-street-legal OHV use is restricted to designated routes.
IV-124, 18-22	Level 2 roads are open to motorized recreation vehicles (including Non-street-legal OHVs), unless otherwise designated closed.
IV-124, 18-23	Roads and trails emphasized for motorized recreation will be signed.
IV-124, 18-24	Road, trail, or area use may be further restricted or prohibited by order of the Forest Supervisor if necessary to provide for public safety, prevent resource damage, or otherwise serve the public interest.
IV-124, 18-25	Closed routes will be evaluated for obliteration, restoration, or rehabilitation.
IV-124, 18-27	In order to reduce the spread of Port-Orford-cedar root disease, a risk analysis will be completed for all projects in watersheds containing Port-Orford-cedar (see Port-Orford-Cedar section).
Interpretive Services and visitor Information	
IV-124, 18-31	Provide recreation information to users on a 24-hour basis through after-hours kiosks, bulletin boards, or other similar means.
IV-124, 18-32	Use the TREAD LIGHTLY and 'Pack it in, Pack it out' programs to inform recreationists and other users about responsible land use ethics.

a - Page, Standard and Guideline
(Forest Plan, pp. IV-123 to IV-124)

Effects Analysis Methodology

The Effects Analysis Methodology focuses on the assumptions, methodology, and indicators for addressing the direct and indirect effects of all of the five actions described in Chapter 2 that affect the motorized recreation resource, and the cumulative effects of implementing the alternative as a whole. The five actions common to all action alternatives affecting recreation are: (1) The addition of new facilities (e.g., unauthorized roads added as motorized trails or roads) to the National Forest Transportation System (NFTS), including identifying seasons of use and vehicle class; and (2) Changes to the existing NFTS (e.g., changing the vehicle class by changing the maintenance or designation of mixed-use, and the season of use); (3) Changes to the NFTS by decommissioning roads; (4) Restoration of drainage patterns on unauthorized routes, and (5) changing the ROS designation from Semiprimitive Nonmotorized to Semiprimitive Motorized near Blackhawk Bar through a non-significant plan amendment.

Impacts Relevant to Recreation Include:

- The compatibility of proposed changes to the NFTS with Forest Plan management prescriptions for recreation, OHV use, and ROS.
- The impact of proposed changes to the NFTS on nonmotorized (i. e., quiet) recreation (dust, noise, use conflicts).
- The amount and diversity of motorized recreation opportunity by alternative.
- The amount of motorized access to dispersed recreation by alternative.
- The impact of proposed changes to the NFTS on neighboring private and federal lands (dust, noise, use conflicts).

Assumptions Specific to Recreation Analysis:

- No cross country travel is permitted within Smith River NRA according to law. There are no open OHV areas designated under any alternatives for this project.
- Unauthorized routes are not included on the current MVUM, and the public does not currently have legal access over them. Any future MVUM will clarify that vehicles are only allowed to park within one car length of designated routes.
- Proposed additions to the NFTS will have a beneficial effect on dispersed recreation by providing legal access to dispersed recreation sites.
- Proposed additions to the NFTS will have a beneficial effect on motorized recreation opportunities by providing a variety of motorized trail riding experiences and increasing the amount of motorized recreation opportunities (loops, connectors).
- Proposed changes and additions to the NFTS will have a beneficial effect on the amount of motorized access to dispersed recreation opportunities available.
- The Forest's National Visitor Use Monitoring report accurately expresses the most popular motorized and nonmotorized recreation activities for use in this analysis.
- Overall changes in the NFTS that require non-significant plan amendment(s) will result in corresponding changes in the net Semiprimitive Nonmotorized ROS class acres available on the Forest.
- The area of influence (dust, noise) on 'quiet recreation' opportunities (including in general Forest areas, wilderness, Research Natural Areas, etc.) from motorized use is ½ mile from motorized routes.

- The population density in population centers within the Smith River NRA is very low; therefore the area of influence (dust, noise) on 'quiet recreation' opportunities is up to the private property boundaries.
- There has never been any use analysis of the unauthorized routes and no data exists (traffic counts, etc.). As a result, it would be highly speculative to make assumptions of use levels on the unauthorized routes.
- The majority of the motorized public use occurring on NFS land is occurring within the existing NFTS based on observation and National Visitor Use Monitoring data.
- For each unauthorized route added to the NFTS as a road or motorized trail for the purpose of accessing dispersed recreation, a minimum of one site is accessed. In many instances, multiple sites may be accessed through the addition of these routes to the system, but this number acts as a surrogate to determine how many dispersed areas are accessed under each alternative.
- Where a route had multiple segments within an alternative, each segment was analyzed separately, and was counted as separate routes within that alternative.
- No motorized trails will be added to the NFTS within wilderness or research natural areas.
- Changes to nonmotorized system trails are not considered in this analysis.
- Maintenance Level 2 Roads (ML2, roads maintained for high-clearance vehicles) are already open to OHV use.
- The analysis does not include Over-the-Snow Vehicle (OSV) use.

Data Sources:

- Six Rivers National Forest Land and Resource Management Plan (USDA Forest Service 1995).
- GIS layers and associated tabular data sets.
- Six Rivers National Forest National Visitor Use Monitoring Results Report FY 2008.
- In-house knowledge (e.g. Forest Protection Officers, Recreation Officers, and Resource Specialists), as documented in the project file record, including but not limited to responses to comments on this project.
- Public input from two meetings, 2011 to present, and public comments contributed during scoping.

Recreation Indicator Measures:

Indicator measures are intended to address how each alternative as the sum total of its proposed actions addresses significant issues identified in scoping, and the Travel Management Rule: whether the motorized recreation opportunity has the potential to conflict with other recreation opportunities, specifically nonmotorized opportunities; the proximity of motor vehicle use to populated areas or neighboring private and federal lands; the quality of the motorized recreation experience; and the quality of motorized access to dispersed areas for both motorized and nonmotorized uses. It also responds to the amount of motorized access available on the unit. Conflicts with other resources (including air quality) are examined in other resource sections. The Transportation Section addresses Public Safety.

For analyzing the effects of changes to the NFTS by vehicle class and season of use, as well as the addition of unauthorized routes to the NFTS as roads or motorized trails, indicator measures were used. Mileage available for each class of vehicle is useful in analyzing the ability of Forest users not only to travel around the Forest and enjoy motorized recreation opportunities but also to access nonmotorized recreation opportunities, such as trailheads, hunting, and dispersed recreation sites for activities such as

fishing and camping, which the forest has determined are important based on both National Visitor Use Monitoring data and public scoping for this project. Mileage for motorized recreation is an indicator of the number and types of experiences available for motorcycles, ATVs, and 4WDs in each alternative. The changes to motorized mileages can be used to interpret the level of change in opportunities for motorized and nonmotorized users. The details of the proposed seasonal closures (season of use) relate to both the months that motorized recreation will not be allowed to use designated roads, or motorized trails and, conversely, the time of year that conflicts between motorized and nonmotorized uses will be minimized. Also, the effect on nonmotorized recreation activities that are accessed by proposed routes is considered. Number of acres located ½ mile away from roads, trails and boundaries serve to analyze the opportunity for nonmotorized and 'quiet' recreation on the Forest in the dry and wet seasons. Finally, to determine the amount of dispersed recreation access provided under each alternative, a method was applied that a minimum of one site is accessed by each route (in many instances multiple sites are accessed, but one site per route is used as a proxy).

The short-term and long-term timeframes, and the spatial boundary for analysis are common to all action alternatives.

- Short-term timeframe: 1 year.
- Long-term timeframe: 20 years.

Spatial boundary: The project area boundary, as described in the Scope of the Analysis in Chapter 1 of this document, is the unit of spatial analysis when considering effects associated with the addition of facilities and changes to the existing NFTS.

Rationale: The effects measurement indicators are based on NFMA and Travel Management Rule requirements as well as significant issues raised during internal and public scoping.

Measurement Indicator 1:

Nonmotorized recreation opportunity-Number of Acres outside ½ mile of an area where motorized use is allowed

Description:

This measurement indicator looks at the impact of proposed changes to the NFTS on nonmotorized recreation (dust, noise, use conflicts). It also addresses the "Quiet Recreation" issue. This measurement indicator identifies the acreage available for quiet recreation and nonmotorized activities without the potential for use conflicts with motorized vehicles for both the dry and wet seasons.

Method:

Number of Acres outside ½ mile of an area where motorized use is allowed: designated roads, motorized trails in the NFTS for the dry season; and, designated roads on the NFTS open in the wet season. This method was determined through a literature review of sound studies and reports listed in the references section.

Table 134. Acreage outside ½ mile of proposed roads (ML 2-5) and motorized trails by alternative

	1	3	4	5	6
	Acres				
Total Nonmotorized Area in Alternative (Dry Season)	84,781	81,180	75,578	100,928	81,076
Net Change in Nonmotorized Area (Dry Season)	0	– 3,601	– 9,203	16,147	– 3,705
Total Nonmotorized Area in Alternative (Wet Season)	89,138	91,140	98,208	111,324	103,472
Net Change in Nonmotorized Area (Wet Season)	0	2,002	9,070	22,186	14,334

Measurement Indicator 2:

Impact of proposed changes to the NFTS on neighboring private and federal lands (dust, noise, use conflicts).

Change in the number of miles of roads and motorized trails with public access proposed within ½ mile of populated areas, neighboring state and federal land boundaries, wilderness boundaries, and private land boundaries.

Description:

This measurement indicator looks at the impact of proposed changes to the NFTS on wilderness, and neighboring private, state and federal lands (dust, noise, use conflicts) by alternative.

Method:

This includes UARs added to the NFTS as ML 2, ML 3, or motorized trails, and ML 1 roads upgraded to ML 2 roads or converted to motorized trails. This indicator acts as a proxy on how much conflict off of the NFTS may occur by alternative. This method was determined through a literature review of sound studies and reports listed in the References Cited section.

Table 135. Miles of routes proposed for addition to the NFTS and upgraded roads within 1/2 mile of wilderness boundaries and neighboring private, state and federal lands by alternative

	1 Mileage	3 Mileage	4 Mileage	5 Mileage	6 Mileage
Road or Trail Additions (Actual Lengths) Within 1/2 Mile of Wilderness or Neighboring Lands	0	10.1	26.7	2.7	7.1
Decommissioned ML 2 Roads (Actual Lengths) Within 1/2 Mile of Wilderness or Neighboring Lands	0	1.19	1.19	1.19	1.19
Downgraded Roads (Actual Lengths) Within 1/2 Mile of Wilderness or Neighboring Lands	0	1.35	0.39	24.04	0.66
Net Change Within 1/2 Mile of Wilderness or Neighboring Lands	0	7.56	25.12	– 22.53	5.25

Measurement Indicator 3:

Motorized recreation opportunity.

Roads: Change in road miles by vehicle class (Table 136).

Motorized Trails: Miles of trails available by vehicle class (Table 137).

Miles by vehicle class and degree of difficulty (Table 138).

Miles accessed from each parking area designated along Road 17N49 (Table 139).

Description:

These measurement indicators looks at the impact of proposed changes to the NFTS to motorized recreation opportunities by alternative.

Method:

The change in roads open for motorized use figures are the result of summing the proposed changes to the NFTS regarding roads. The following equation shows the elements considered to produce the figures in Table 136.

Change in road miles open to motorized use by Highway Legal Vehicles =((addition of UAR as ML 2 + addition of UAR as ML3 + Upgrade ML1 to ML 2) – (Downgrade ML 2 to ML 1 + Decommission ML2 Roads))

Change in road miles open to motorized use by Non-Highway Legal Vehicles =((addition of UAR as ML 2 + Upgrade ML1 to ML 2 + Mixed-use Designation on ML3 Roads) – (Downgrade ML 2 to ML 1 + Decommission ML2 Roads))

Table 136. Change in road mileage open to motorized use within the project area by alternative (class of vehicle)

Class of Vehicle	1	3	4	5	6
	Change in Mileage				
Highway-legal Motorcycle, 4WD, Passenger Car	0	-28.3	-7.1	-105.1	-26.8
Non-Highway Legal 4WD, ATV, Motorcycle	0	-24.8	-7.1	-105.5	-26.8

Table 137. Miles of motorized trails[b] by alternative (class of vehicle)

Class of Vehicle	1 Miles	3 Miles	4 Miles	5 Miles	6 Miles
Passenger vehicles[a]	0	44.0	58.9	11.00	42.5
Highway-legal High- Clearance 4WD (≥ 50 in. wide and < 50 in. wide) and Dual Sport Highway Legal Motorcycle	12.4	56.4	78.3	23.4	55.2
Non-Highway Legal 4WD (≥ 50 in. wide), Motorcycle, ATV	12.4	56.4	78.3	23.4	55.2
Additional Miles of Motorized Trails	0.0	44.0	58.9	11.0	42.5

a - Highway licensed vehicles, non-highway licensed vehicles, and passenger cars may legally access most ML 2 roads and Motorized Trails with the “All Vehicles” classification; however, high-clearance vehicles are generally recommended. Where motorized trails provide dispersed recreation access, vehicle clearance is less of an issue.

b - In accordance with Forest Plan guidance specific to recreation (Forest Plan Appendix A, p. 8), access to off-highway vehicle routes (motorized trails) is limited to the dry season only (normally May through October); therefore, zero (0) miles of motorized trails are available for public use during the wet season.

Table 138. Trail mileage open to the public within the project area by alternative by degree of difficulty

Class of Vehicle	Degree of Difficulty	1 Total Mileage	3 Total Mileage	4 Total Mileage	5 Total Mileage	6 Total Mileage
Highway-legal High- Clearance 4WD (>= 50 in. wide)	Easy	0	14.9	23.4	1.2	14.2
	More difficult	0	29.1	42.5	9.8	28.7
Highway-legal High- Clearance 4WD (< 50 in. wide)	Easy	0	14.9	23.4	1.2	14.2
	More difficult	0	29.1	42.5	9.8	28.7
Dual Sport Highway-legal Motorcycle	Easy	8.4	23.3	31.8	9.6	22.6
	More difficult	4.0	33.1	46.5	13.8	32.7
Non-Highway Legal 4WD (>= 50 in. wide)	Easy	0	14.9	23.4	1.2	14.2
	More difficult	0	29.1	42.5	9.8	28.7
Non-Highway Legal ATV	Easy	0	14.9	23.4	1.2	14.2
	More difficult	0	29.1	42.5	9.8	28.7
Non-Highway Legal Motorcycle	Easy	8.4	23.3	31.8	9.6	22.6
	More difficult	4.0	33.1	46.5	13.8	32.7
Total Mileage in Alternative	Easy	8.4	23.3	31.8	9.6	22.6
	More difficult	4.0	33.1	46.5	13.8	32.7

Table 139. Description of parking additions by alternative to provide for public safety associated with motorized recreation opportunity trails

Parking Area Identifier	Parking Area Size (acres)	Action Alternative(s)			Proposed Season of Use	Proposed Vehicle Class[a]	
		Alt. 4	Alt. 5	Alt. 6			Miles of Motorized Trail Accessed – Dry Season, In Addition To Year-Round Routes (With Routes Listed)
Site 4: 17N49.102 C Parking	0.03	4	5	6	Dry season only	All Vehicles	**Alt 4**: 25.44 mi. total (Routes: 17N49.100 to emp 3.78, 17N49.101, 17N49.102, 17N49.102A, 17N49.102B, 17N49.102C, 17N49.104 mp 0 to 4.68, 17N49.104A, 17N49.104B, 17N49.107, 17N49.108, 17N49.11 to emp 4.49, 17N49.11M, 17N49.11N, 17N49.11P to emp 0.18, 17N49.14, 17N49.15, 17N49.15A, 17N49.4 to emp 2.04, 17N49.7 to emp 3.06, 17N49.7A, 17N49.8) **Alt 5**: 3.24 mi. total (Routes: 17N49.102, 17N49.102A, 17N49.102B, 17N49.102C, 17N49.4 to emp 1.29) **Alt 6**: 20.47 mi. total (Routes: 17N49.100 to emp 0.12, 17N49.101, 17N49.102, 17N49.102A, 17N49.102B, 17N49.102C, 17N49.104 mp 0 to 3.82, 17N49. 104B, 17N49.107, 17N49.108, 17N49.11 to emp 4.49, 17N49.11P to emp 0.18, 17N49.14, 17N49.15, 17N49.15A, 17N49.4 mp 0 to 2.04, 17N49.7 to emp 3.06, 17N49.7A, 17N49.8)
Site 5: 17N49.8 Parking	0.01	4		6	Dry season only	All Vehicles	**Alt 4**: 25.44 mi. total (Same routes as can be accessed by all parking areas under Alt. 4) **Alt 6**: 20.47 mi. total (Same routes as can be accessed by all parking areas under Alt. 6)
Site 1: 17N49.11 North Parking	0.23	4		6	Dry season only	All Vehicles	**Alt 4**: 25.44 mi. total (Same routes as can be accessed by all parking areas under Alt. 4) **Alt 6**: 20.47 mi. total (Same routes as can be accessed by all parking areas under Alt. 6)
Site 3: 17N49.11 South Parking	0.05	4		6	Dry season only	All Vehicles	**Alt 4**: 25.44 mi. total (Same routes as can be accessed by all parking areas under Alt. 4) **Alt 6**: 20.47 mi. total (Same routes as can be accessed by all parking areas under Alt. 6)
Site 2: 17N49.100 Parking	0.05	4			Dry season only	All Vehicles	**Alt 4**: 25.44 mi. total (Same routes as can be accessed by all parking areas under Alt. 4)

a - All Vehicles" classification permits use by Highway Licensed Vehicles and Non-highway Licensed Vehicles

Measurement Indicator 4:

Motorized access to dispersed recreation.

Change in the Number of Dispersed Sites Accessible by Road or Motorized Trails

- Number of UARs added as roads that provide dispersed recreation access.
- Number of UARs added as motorized trails that provide dispersed recreation access.
- Number of downgraded or decommissioned roads where motorized access to dispersed sites is removed.

Description:

This measurement indicator looks at the impact of proposed changes to the NFTS on motorized access to dispersed recreation opportunities by alternative.

Method:

Routes proposed for addition to the NFTS as ML 2 roads or motorized trails that are currently unauthorized routes are analyzed. No ML 1 roads being added or ML 1 roads being upgraded lead to dispersed recreation sites. Changes to the existing NFTS roads, such as upgrading, downgrading, and decommissioning as they affect access to dispersed recreation access are analyzed. The number of road or trail facilities serves as a surrogate for the number of dispersed sites accessed. One site per route addition is a proxy for evaluating access to dispersed recreation (although in some instances, multiple sites are accessed via a single route addition).

Table 140. Number of dispersed recreation sites accessed by alternative

	Number of Dispersed Roads or Trails to Dispersed Recreation Sites				
Alternative	**Alt. 1**	**Alt. 3**	**Alt. 4**	**Alt. 5**	**Alt. 6**
Additions to NFTS as ML 2 Roads to Access Dispersed Recreation	0	13	16	10	15
Additions to NFTS as Motorized Trail[a] to Access Dispersed Recreation	0	0	38	2	35
Changes to existing NFTS accessing dispersed recreation sites	0	-1	0	-2	0
Total Number of dispersed recreation sites accessible by Motorized Vehicles	0	13	54	12	50

a - Motorized trails on the NRA are only open during the dry season.

Cumulative Effects

Discussion and analysis framework

Regarding cumulative effects analysis generally, fully implemented past projects are part of the existing condition – their effects are considered part of the existing condition. The following ongoing, or reasonably foreseeable future projects, along with the Smith River NRA Travel Management Project are considered for potential cumulative effects on various aspects of the recreation resource. Projects with

cumulative effects are discussed under the specific Alternative and actions to which they pertain. The details of these ongoing and future projects are discussed in detail in the Smith River NRA Restoration and Motorized Travel Management Cumulative Effects Project Summary dated 9/1/2013 located in the Project Record and available upon request.

Affected Environment

Historic Recreation Use

Travel has been occurring on the land within the administrative boundary project area for thousands of years with much of this use occurring adjacent to modern travel routes, especially along rivers and ridges.

Historically, a network of trails developed through aboriginal use, miners traveling and hauling supplies to mines (starting in the 1850s), and cattle and sheep that were herded on trailways to grazing lands of the high country. Settlement within the area occurred mostly between the 1890s and the 1920s (Master Title Plats, BLM; and Forest Service Status Atlas, Six Rivers National Forest). Trails were the principal means of travel and transportation in this remote region of northwestern California. Inland communities and homesteaders used trails as commerce routes with the coast. Users actively maintained the trail system, probably as part of a transportation system used for controlling wildfire, getting to fire lookouts and to local homesteads. In 1947, Congress created the Six Rivers National Forest from portions of the Klamath, Siskiyou, and Trinity National Forests. The Gasquet Ranger District was included within its boundaries. The principal recreation activities on National Forest System lands within the area were hunting, hiking and associated dispersed camping. Developed facilities in the area were minimal. In the early 1960s, small developed camping areas began to be developed; facilities consisted of a few vault toilets, picnic tables, and fire rings. These developed facilities were normally found along a state highway or county road located at the lower elevations of the districts.

Logging of private lands within the boundaries of the District was practiced in the 1950s and 1960s, following improvements to the state highway system and development of local lumber mills. On federal lands, timber harvesting peaked during the 1970s and 1980s (USDA Forest Service, 1995; FEIS p. III-160). The road transportation system, consisting of arterial (primary) and collector (secondary) routes mainly along ridges, primarily accessed timber harvest units and consequently further opened access for recreationists.

This road construction, logging, and other land disturbing activities destroyed much of the historical trail network. However, portions of some of the original trails are included in the current network of recreation trails. Most of the existing system of motorized trails in the Forest is located within this watershed and cobbled from portions of some of these original trails used by miners and homesteaders. The rest of the system consists of county roads and Forest System roads, many of which were built over the rest of the original trail system, along with portions of Forest Highway 199, which bisects the Smith River NRA and follows the Middle Fork Smith River.

Current Recreation Use

According to the National Visitor Use Monitoring survey conducted on Six Rivers National Forest in fiscal year 2008 (USDA 2008b), just over 70 percent of the estimated 224,000 recreational visitors to the Six Rivers National Forest came from the north coast of California (Humboldt and Siskiyou Counties); Siskiyou County, California; and southern Oregon (Curry, Josephine, Jackson, and Klamath Counties). It is notable that in 2008, the United States entered a deep economic recession and it was widely observed that travel and tourism were diminished nationwide that year, and that when people did recreate, they stayed closer to home that year. Accordingly, the Six Rivers National Forest 2008 National Visitor Use

Monitoring survey indicated that around 60 percent of recreational visitors that year were from those same northwestern California and southwestern Oregon counties.

Common recreation activities during the summer months include relaxing, hiking, nature viewing and studying, other nonmotorized activities, wildlife viewing, driving for pleasure, picnicking, camping, visiting historic sites, fishing, hunting, and other uses as shown in Table 141. The NRA manages five developed fee campgrounds including Panther Flat, Grassy Flat, Patricks Creek, North Fork and Big Flat, which provide 98 developed campsites for public use. Winter recreational activities include fishing, kayaking/rafting, hiking, snow play. The primary season of general recreational use is May through September and nearly all forest visitors, regardless of the purpose for their visit, use the motorized transportation system.

Table 141. Six Rivers National Forest visitor activity participation and primary activity

Activity	Percent Participating	Percent as Main Activity
Relaxing	59.9	15.7
Hiking / Walking	47.5	11.5
Viewing Natural Features	47.1	16.8
Other Nonmotorized	34.6	18.1
Viewing Wildlife	33.7	1.7
Driving for Pleasure	24.9	3.8
Picnicking	19.9	3.2
Developed Camping	15.3	3.3
Nature Study	14.3	1.0
Visiting Historic Sites	10.6	0.1
Fishing	10.4	7.0
Hunting	7.9	7.2
Nature Center Activities	5.5	0.0
Gathering Forest Products	5.4	1.8
Some Other Activity	5.1	2.4
Primitive Camping	4.6	2.3
Nonmotorized Water	3.5	1.6
OHV Use	1.6	1.1
Bicycling	1.5	0.2
Resort Use	1.4	0.2
Backpacking	1.0	0.1
Other Motorized Activity	0.9	0.1
Cross-country Skiing	0.8	0.0
Motorized Trail Activity	0.3	0.0
Horseback Riding	0.2	0.0
Motorized Water Activities	0.1	0.0
Snowmobiling	0.0	0.0
Downhill Skiing	0.0	0.0
No Activity Reported	0.0	0.8

National Visitor Use Monitoring results (FY2008, p. 20)

The 2008 National Visitor Use Monitoring survey reported that on the Six Rivers National Forest, an estimated 24.9 percent of visitors participated in driving for pleasure, while 1.9 percent of visitors participated in OHV Use or Motorized Trail Activity during their visit. Only 1.1 percent of visitors reported their primary activity to be either OHV Use or Motorized Trail Activity (USDA Forest Service 2008b), as shown in Table 141.

Based on the reported 224,000 visits to National Forest System lands on the Six Rivers National Forest during fiscal year 2008, approximately 55,776 visitors spent some time driving for pleasure, 4,256 used off-highway vehicles during their visit (including motorized trail activities), and the primary activity for around 2,464 visitors was off-highway vehicle use (including motorized trail activities). Based on the fiscal year 2008 visits, when the 'percent as main activity' column values are combined for primary motorized uses (e.g., OHV use, motorized trail activity, driving for pleasure and other motorized activities), approximate visitor numbers equal 11,200 compared to 212,800 for primary nonmotorized uses combined, including: backpacking, fishing, hiking/walking, horseback riding, bicycling and other nonmotorized activities (Table 141). Motorized access is the primary form of access to nonmotorized recreation activities on the forest.

More information about the National Visitor Use Monitoring program can be found at the National Visitor Use Monitoring program website: http://www.fs.fed.us/recreation/programs/nvum/.

Proposed Modifications to Motorized Recreation Use

A description of the unauthorized route additions and changes to the current NFTS on a route or road specific basis by alternative are located in the project record and are available upon request.

Environmental Consequences

Alternative 1, No Action Alternative

In the No Action Alternative the status quo would continue. The current Motor Vehicle Use Map (MVUM) published in 2009 would remain in effect. Vehicles could park within one car length of a currently designated road or motorized trail, and this would be required on the MVUM. Many popular dispersed recreation sites would be without designated routes.

1. Direct and indirect effects of adding, decommissioning, and making changes to the NFTS, including changes in maintenance levels and identifying seasons of use.

No facilities will be added, decommissioned, maintenance levels changed, or season of use changed on the NFTS under this alternative.

Nonmotorized recreation:

Alternative 1 provides 84,781 acres available for quiet recreation and nonmotorized activities in the dry season and 75,451 acres in the wet season at least ½ mile from motorized roads and trails. Alternative 1 would have no observable effect on nonmotorized, quiet recreation that is further than ½ mile from motorized routes (and not involving or near dispersed recreation areas, trailheads, or river access sites accessed by UARs), because no additional routes would be added, and the area available for quiet recreation would be what it is now.

Wilderness and adjacent ownership:

Alternative 1 will not result in changes to effects on wilderness and adjacent ownership because no changes are proposed. The existing condition would continue.

Motorized recreation:

Alternative 1 would have no effect on legal motorized recreation. It proposes no changes to the NFTS. None of the miles of existing unauthorized routes would be added to the NFTS, and would not be available to motorized recreation. While existing roads and motorized trails shown on the current MVUM would remain available for motorized recreation, the quality and diversity of the District's motorized recreation opportunity would not change, as Alternative 1 does not add any motorized trails.

Dispersed recreation:

Alternative 1 would not add UARs to the NFTS that access dispersed recreation sites, which would negatively affect dispersed recreation, as many popular dispersed recreation sites do not have designated facilities to access them. Vehicular access is limited to designated routes per the Smith River NRA Act and illustrated in the current MVUM. Future updates to the MVUM will clarify the legal parking limit requirements as being within one car length of a designated road, and many popular dispersed recreation sites are currently not accessible by motorized travel on the NFTS. Access to some developed and undeveloped trailheads and river access sites would also be prohibited. Sites lacking current NFTS motorized access include but are not limited to, some on County Road 427, and many along Highway 199 and County Road 316. Some of these sites provide vault toilet facilities, yet they are currently not accessible via the NFTS roads or motorized trails.

Cumulative Effects:

The no action alternative would negatively affect dispersed recreation opportunities, as many popular dispersed sites are not afforded motorized access. Given that much of the north, middle, and south fork of the Smith River and their tributaries are accessed through Forest lands, this would leave little opportunity for people interested in dispersed camping near to do so within the area. The lack of access to popular dispersed recreation sites may also result in increased use and pressure on existing facilities where routes are designated. This may have a negative effect on dispersed and developed recreation sites, as the concentration of use at designated facilities may exceed the optimum use levels.

Effects Common to All Action Alternatives

Direct and indirect effects of Restoration of Drainage Patterns on Unauthorized Routes.

Nonmotorized recreation:

Restoring UARs should not have any direct effects on nonmotorized recreation, especially on the longer routes. And although public awareness of the existing Smith River NRA MVUM can be low and travel may have continued to occur on UARs since its issuance, this use is already prohibited and the MVUM has been freely available to forest visitors. If UARs are not added to the NFTS as either an ML 2 road or motorized trail, then they will not be available for public use, regardless of whether they are restored to nature. Therefore, restoring UARs under Alternative 3 will have no direct effect to the acres available for nonmotorized recreation. There may be an indirect effect of reducing noise, dust, physical presence, possible use conflicts and displacement by physically preventing illegal use of remote unauthorized routes where quiet nonmotorized recreation may be had.

Wilderness and adjacent ownership:

Restoring UARs should not have any direct or indirect effects on wilderness/neighbors, especially on the longer routes. And although public awareness of the existing Smith River NRA MVUM can be low and travel may have continued to occur on UARs since its issuance, this use is already prohibited. If UARs are not added to the NFTS as either an ML 2 road or motorized trail, then they will not be available for public use, regardless of whether they are restored. Therefore, restoring UARs under any alternative will

have no direct effect to adjacent wilderness and private, state, or other federal lands. There may be an indirect effect of reducing noise, dust, physical presence, possible use conflicts and displacement by physically preventing illegal use of longer unauthorized routes within ½ mile of neighboring wilderness or private, state, or federal lands.

Motorized recreation:

Restoring UARs should not have any direct or indirect effects on legal motorized access according to the existing MVUM, especially on the longer routes. And although public awareness of the existing Smith River NRA MVUM can be low and travel may have continued to occur on UARs since its issuance, this use is already prohibited and the MVUM has been freely available to forest visitors. If UARs are not added to the NFTS as either an ML 2 road or motorized trail, then they will not be available for public use, regardless of whether drainage patterns are restored. Therefore, restoring UARs will have no effect on the miles available for motorized recreation.

Dispersed recreation:

For dispersed recreation routes, restoration actions do not prevent or have any effect on recreation access. If UARs are not added to the NFTS as either an ML 2 road or motorized trail, then they will not be available for public use, regardless of whether they are restored. Therefore, the actual restoring of UARs under any alternative will have no direct or indirect effect on the number of routes available for dispersed recreation. The effects of adding more or fewer routes which provide access to dispersed recreation sites are discussed within each alternative.

Cumulative Effects

Since the restoration of drainage patterns unauthorized routes does not in itself have any direct or indirect effects on the recreation resource, then ongoing and reasonably foreseeable future actions will not have any cumulative effects in conjunction with this action.

Alternative 3

Direct and indirect effects of adding, decommissioning, and making changes to the NFTS, including changes in maintenance levels and identifying seasons of use.

Summary of Additions to the NFTS under Alternative 3:

- Approximately 44 miles of new motorized trails
- Approximately 7 miles of ML 2
- Approximately 0.5 mile of ML 3
- Upgrades three ML 1 roads to ML 2 (2.6 miles)
- Downgrades 18 ML 2 roads to ML 1 (18.5 miles)
- Designates 3.89 miles of 17N49 as ML 3 with mixed use
- Establishes season of use on one NFTS road: 14N38 to ending mile point 0.60.
- Decommissions 69 ML 1 road segments (34.85 miles)
- Decommissions 44 ML 2 road segments (20.41 miles)

Nonmotorized recreation:

As a result of adding facilities, and downgrading and decommissioning existing facilities, Alternative 3 would provide 81,180 acres available for quiet recreation and nonmotorized activities in the dry season,

which is 3,601 less than the no action alternative, and 89,138 acres available for quiet recreation and nonmotorized activities in the wet season, which is 2,002 acres more than the no action alternative. On balance acreage available for motorized recreation would decrease compared to the no action alternative when considered in the context of a full year (wet and dry seasons). Overall, Alternative 3 would result in a negative effect to nonmotorized quiet recreation in the undeveloped, more remote areas of the Smith River NRA.

Wilderness and adjacent ownership:

Overall, roads and motorized trails within ½ a mile of neighboring Wilderness and adjacent lands under non-federal ownership will increase by approximately seven and a half miles under Alternative 3. Alternative 3 will provide new motorized access on 10.1 miles, decommission 1.2 miles of road, and downgrade 1.4 miles of road to ML 1 resulting in a total increase of 7.6 miles of NFTS roads or motorized trails within ½ mile of wilderness or neighboring lands Table 135. Compared to the no action alternative, Alternative 3 would have a negative effect on neighboring Wilderness and adjacent ownership.

Motorized recreation:

Alternative 3 would result in a positive effect to motorized recreation opportunities with the addition of road and motorized trail facilities when compared to the no action alternative. Alternative 3 would provide new motorized recreation opportunities for non-highway legal and highway-legal vehicles. While there would be an overall reduction in road miles by 28.3 miles, this alternative also includes the designation of 44 miles of new motorized trails available in the dry season, resulting in an overall increase in motorized recreation opportunities by 15.3 miles. Alternative 3 designates a broad network of motorized trails (21.2 miles) along Road 17N49, and proposes 3.52 miles of mixed-use access on Road 17N49, which during the dry season will provide for extensive loop opportunities on those proposed motorized trails. However, Alternative 3 does not designate any parking areas along 17N49, which could limit access to motorized trails in that area if demand were to increase in response to the newly designated motorized trail network.

Dispersed recreation:

Adding facilities to the NFTS in Alternative 3 would result in a beneficial effect on dispersed recreation, relative to the no action Alternative. It provides motorized to 12 dispersed recreation sites, including campsites, river access sites and trailheads. Upgrades, downgrades, and designation of mixed-use on the NFTS within Alternative 3 would have no effect to dispersed recreation. Of the six current NFTS roads that access dispersed recreation, one road, 18N01, would be decommissioned. This road accesses the site labelled North Shelly Ck. Dispersed Camp for this planning process, which is a popular dispersed site that includes a Forest Service vault toilet amenity. This action would negatively affect dispersed recreation opportunities, in addition there are popular river access sites that would not be designated under this alternative. While overall Alternative 3 would positively affect the dispersed recreation opportunities compared to the no action alternative, access to some of the most popular dispersed recreation sites on the Smith River NRA would not be provided.

Cumulative Effects

The Hurdygurdy Recreation Improvement Project (in implementation, Forest Service project) will have a positive cumulative effect on dispersed recreation access available to the public, especially in the lower Hurdygurdy Creek area. Because the routes accessing these recreation sites are already designated and are thus part of the existing condition, there would be no additional negative cumulative effect to nonmotorized quiet recreation from this action.

The Hurdygurdy Bridge Replacement (in implementation, a Non-Forest Service project), which is new two-lane bridge on County Road 405. The bridge will be an improvement over the single span structure now in place. In the long term, this project will cumulatively affect public safety, which will have a beneficial effect on dispersed recreation, by providing safe passage to and between the various dispersed recreation sites in the lower Hurdygurdy Creek area. In the short term (during construction), the Hurdygurdy Bridge Replacement project may have a local, small negative effect on dispersed recreation access by any delays caused by construction or negotiating the detour, especially to access recreation sites north of the bridge. This project would not substantially affect motorized recreation access, because the number of miles available for motorized recreation would not be affected.

The Major Bridge Seismic Retrofit Project at five bridges (US 101 and US 199, various locations) (Planned, Non-Forest Service), considered together with the CalTrans STAA Hwy 199 Project (Planned, Non-Forest Service) may negatively affect motorized recreation opportunities, by potentially delaying forest visitors on their way to recreating on NFTS roads in the short-term, however in the long-term the seismic retrofit would positively affect motorized recreation opportunities by enhancing the safety and durability of the bridge to withstand seismic events.

The Hurdygurdy Land Acquisition, Phases 3 and 4 (Planned, Forest Service), considered together with the future possible phases of this purchase (Reasonably Foreseeable, Forest Service) will have a beneficial cumulative effect on the number of acres available for nonmotorized quiet recreation that is farther than ½ mile from motorized roads and trails. This purchase will also have a positive cumulative effect of reducing potential conflicts with neighboring private lands, by reducing both the area and boundary length of the private lands in upper Hurdygurdy Creek. Additionally, several of these tracts have easements where NFTS roads cross the private lands; the Purchase project will put the land under roads into Forest Service management and this will further reduce potential conflicts with neighboring private lands. The potential future Hurdygurdy Purchase areas, if acquired, will provide more of the same cumulative benefits as were described for Phases 3 and 4.

The Steven Memorial Bridge Replacement (In implementation, Non-Forest Service) has similar cumulative effects as the Hurdygurdy Creek Bridge Replacement project, the two-lane replacement to the existing one-lane Steven Memorial Bridge will have a beneficial cumulative effect on public safety and dispersed recreation access; in this case the recreation use centers around the whitewater boating put-in. The Steven Bridge project will also improve the parking and other amenities, which will further benefit dispersed recreation.

There are no cumulative effects of past, ongoing, or reasonably foreseeable projects, when considered with decommissioning roads under Alternative 3.

Alternative 4

1. Direct and indirect effects of adding, decommissioning, and making changes to the NFTS, including changes in maintenance levels and identifying seasons of use.

Summary of changes to the NFTS under Alternative 4 affecting recreation:

- Adds 57.98 miles of motorized trails
- Adds 12.04 miles of ML 2 roads
- Adds 0.42 miles of ML 3 roads
- Upgrades ten ML 1 roads to ML 2 (11.1 miles)
- Converts seven ML 1 roads to motorized trails (7.4 miles)

- Converts one ML 2 road to motorized trail (0.5 miles)
- Downgrades 16 ML 2 roads to ML 1 (15.6 miles)
- Designates 0.44 miles of 17N49 as ML 3 with mixed-use
- Establishes season of use on 17 current NFTS roads, with or without upgrading from ML 1 (33.4 miles).
- Decommissions 78 ML 1 road segments (41.71 miles)
- Decommissions 36 ML 2 road segments (15.02 miles)

Nonmotorized recreation:

As a result of adding facilities, and downgrading and decommissioning existing facilities, Alternative 4 would provide 75,578 acres available for quiet recreation and nonmotorized activities in the dry season, which is 9,203 less than the no action alternative, and 98,208 acres available for quiet recreation and nonmotorized activities in the wet season, which is 9,070 acres more than the no action alternative. On balance acreage available for motorized recreation would increase compared to the no action alternative when considered in the context of a full year (wet and dry seasons). Overall, Alternative 4 would not affect nonmotorized quiet recreation in the undeveloped, more remote areas of the Smith River NRA.

Alternative 4 provides 75,578 acres available for quiet recreation and nonmotorized activities, at least ½ mile from motorized roads and trails; this is 9,203 acres less than under the No Action Alternative, because of the effect of adding many more miles of roads and trails, relative to the miles of roads to be downgraded or decommissioned. Thus, Alternative 4 would have the largest negative effect on nonmotorized quiet recreation in the undeveloped, more remote areas of the Smith River NRA when compared to all other alternatives during the dry season. The reduction in NFTS roads by 7.1 miles and the seasonal use on 58.9 miles of new motorized trails will increase acreage available for quiet recreation during the wet season resulting in a positive effect.

Wilderness and adjacent ownership:

Overall, roads and motorized trails within ½ a mile of neighboring Wilderness and adjacent lands under non-federal ownership will increase by approximately 25 miles under Alternative 4. Alternative 4 will provide new motorized access on 26.7 miles, decommission 1.2 miles of road, and downgrade 0.4 miles of road to ML 1 resulting in a total increase of 25.1 miles of NFTS roads or motorized trails within ½ mile of wilderness or neighboring lands Table 135. Compared to the no action and other action alternatives, Alternative 4 has the greatest negative effect on neighboring Wilderness and adjacent ownership.

Motorized recreation:

Alternative 4 would have the greatest positive effect on motorized recreation opportunities when compared to all other alternatives. While the NFTS road network would be reduced by 7.1 miles, Alternative 4 designates 58.9 miles of motorized trails, resulting in an increase of approximately 51 miles of motorized recreation opportunity. The motorized trail network (27.8 miles long) along Road 17N49 under Alternative 4 is similar to and larger than what was proposed under Alternative 3. Alternative 4 proposes to designate 0.44 miles of mixed-use on Road 17N49 to provide loop connectivity adequate to provide for numerous loop opportunities on those motorized trails. Alternative 4 designates five parking areas along 17N49 to provide safe staging areas in various locations on the new proposed trail network. Overall, Alternative 4 provides the greatest positive effects to motorized recreation opportunity when compared to the other action alternatives by providing the most miles available for motorized recreation, providing loop opportunities, and also providing adequate staging areas to safely access the motorized trail network stemming from forest road 17N49.

Dispersed recreation:

Alternative 4 would result a positive effect on dispersed recreation compared to the no action alternative, by providing motorized access to 54 dispersed recreation sites, including campsites, river access sites and trailheads. Of the six NFTS roads that access dispersed recreation sites, one would have a seasonal closure. This route, 18N09, accesses the Diamond Creek area. This road is remote and is not accessed by high standard roads, so although it does get use, that use is less than on other areas of the Smith River NRA, and even lower in the wet season. There are no decommissioning changes to NFTS roads that access dispersed recreation sites under Alternative 4. Overall alternative 4 provides more access to dispersed recreation sites than any of the other action alternatives.

Cumulative Effects

The cumulative effects are the same as described under Alternative 3.

Alternative 5

Direct and indirect effects of adding, decommissioning, and making changes to the NFTS, including changes in maintenance levels and identifying seasons of use.

- Adds 10.97 miles of motorized trails
- Adds 2.43 miles of ML 2 roads
- Adds 0.42 miles of ML 3 roads
- Upgrades five ML 1 roads to ML 2 (4.2 miles)
- Converts no roads to motorized trails
- Downgrades 64 ML 2 roads to ML 1 (97.1 miles)
- Designates no ML 3 mixed-use segments
- Establishes season of use for two NFTS roads: 18N09 (5.1 miles long) and the southern 0.85 miles of 18N02
- Decommissions 76 ML 1 road segments (39.41 miles)
- Decommissions 36 ML 2 road segments (15.02 miles)

Nonmotorized recreation:

As a result of adding facilities, and downgrading and decommissioning existing facilities, Alternative 5 would provide 100,928 acres available for quiet recreation and nonmotorized activities in the dry season, which is 16,147 more than the no action alternative, and 111,324 acres available for quiet recreation and nonmotorized activities in the wet season, which is 22,186 acres more than the no action alternative. Alternative 5 provides a positive effect for nonmotorized quiet recreation throughout the year (dry and wet seasons). When compared to other action alternatives Alternative 5 provides the greatest positive effect to nonmotorized quiet recreation opportunities.

Wilderness and adjacent ownership:

Overall, roads and motorized trails within ½ a mile of neighboring Wilderness and adjacent lands under non-federal ownership will decrease by approximately 22.5 miles under Alternative 5. Alternative 5 will provide new motorized access on 2.7 miles, decommission 1.2 miles of road, and downgrade 24 miles of road to ML 1 resulting in a total decrease of 22.5 miles of NFTS roads or motorized trails within ½ mile of wilderness or neighboring lands Table 135. Compared to the no action and other action alternatives, Alternative 5 has the greatest positive effect on neighboring Wilderness and adjacent ownership.

Motorized recreation:

Alternative 5 would result in a negative effect on motorized recreation, relative to the No Action Alternative. Roads open to motorized use would be reduced by approximately 105 miles, while there would be 11 miles of motorized trails added to the NFTS, resulting in an overall reduction in motorized recreation opportunities by approximately 94 miles. Alternative 5 provides a 5.7-mile long motorized trail network along Road 17N49, which contains no complete riding loops. These trails do not connect to the 0.44-mile mixed-use segment proposed under other alternatives, so Alternative 5 includes no mixed-use designation. Alternative 5 designates one parking area on 17N49 that connects to this trail network to provide a safe staging area. Overall, Alternative 5 would provide the greatest negative effect to motorized recreation opportunities compared to all other alternatives.

Dispersed recreation:

Adding facilities to the NFTS in Alternative 5 would result in a positive effect to dispersed recreation, relative to the no action Alternative. It provides motorized access to 10 dispersed recreation sites, including campsites, river access sites and trailheads. Alternative 5 provides a similar level of dispersed recreation access as Alternative 3. The effects of adding 12 facilities to dispersed recreation sites is the same as discussed under Alternative 3, however, Alternative 5 downgrades two of the six NFTS roads, 14N38 and 17N63, that access dispersed recreation sites. Overall, Alternative 5 provides more access to dispersed recreation opportunities than the no action alternative, but the least benefit when compared to other action alternatives. Similar to Alternative 3, Alternative 5 would not provide access to some of the most popular dispersed recreation sites on the Smith River NRA.

Cumulative Effects:

The projects and their cumulative effects are the same as described for adding facilities under Alternative 3.

Alternative 6

Direct and indirect effects of adding, decommissioning, and making changes to the NFTS, including changes in maintenance levels and identifying seasons of use.

- Adds 10.97 miles of motorized trails
- Adds 2.43 miles of ML 2 roads
- Adds 0.42 miles of ML 3 roads
- Upgrades five ML 1 roads to ML 2 (4.2 miles)
- Converts two ML 1 roads to motorized trails (0.35 miles)
- Downgrades 22 ML 2 roads to ML 1 (20.5 miles)
- Designates 0.44 miles of 17N49 as ML 3 with mixed-use
- Establishes season gate closure for 39.18 miles of NFTS roads and motorized trails.
- Decommissions 76 ML 1 road segments (39.41 miles)
- Decommissions 36 ML 2 road segments (15.02 miles)

Nonmotorized recreation:

As a result of adding facilities, and downgrading and decommissioning existing facilities, Alternative 6 would provide 81,076 acres available for quiet recreation and nonmotorized activities in the dry season, which is 3,705 less than the no action alternative, and 103,472 acres available for quiet recreation and

nonmotorized activities in the wet season, which is 14,334 acres more than the no action alternative. On balance acreage available for motorized recreation would increase compared to the no action alternative when considered in the context of a full year (wet and dry seasons). Overall, Alternative 6 would result in a positive effect to nonmotorized quiet recreation in the undeveloped, more remote areas of the Smith River NRA.

Wilderness and adjacent ownership:

Overall, roads and motorized trails within ½ a mile of neighboring Wilderness and adjacent lands under non-federal ownership will increase by approximately five miles under Alternative 6. Alternative 6 will provide new motorized access on 7.1 miles, decommission 1.2 miles of road, and downgrade 0.7 miles of road to ML 1 resulting in a total increase of 5.3 miles of NFTS roads or motorized trails within ½ mile of wilderness or neighboring lands Table 135. Compared to the no action, Alternative 6 negatively affects neighboring Wilderness and adjacent ownership.

Motorized recreation:

Alternative 6 would result in the greatest positive effect to motorized recreation opportunities compared to all other alternatives. While Alternative 6 reduces roads open for motorized use by approximately 27 miles, it also designates 42.5 miles of motorized trails, resulting in an overall increase in motorized recreation opportunities by approximately 15.5 miles. The motorized trail network (20.8 miles long) along Road 17N49 under Alternative 6 is similar to Alternative 3. Alternative 6 also designates 0.44 miles of mixed-use on Road 17N49 to provide loop connectivity adequate to provide for numerous loop opportunities on those motorized trails. Unlike Alternative 3, Alternative 6 designates four parking areas along 17N49 to provide safe staging areas in various locations on the new proposed trail network. Given the overall increase in motorized recreation opportunities, the loop opportunities afforded by mixed-use, and staging facilities to allow for safe access to the motorized trail network, Alternative 6 provides the greatest positive effects to motorized recreation opportunities than all other alternatives.

Dispersed recreation:

Alternative 6 results in a positive effect to dispersed recreation compared to the no action alternative. Alternative 6 provides access to approximately 50 dispersed recreation sites, similar to Alternative 4. Two of the six NFTS dispersed recreation access roads would become seasonally closed. There are no decommissioning changes to NFTS roads that access dispersed recreation sites. Alternative 6 provides access to popular dispersed recreation sites on the Smith River NRA. Alternative 6 is second only to Alternative 4 in positive effects to dispersed recreation opportunities when compared to the other action alternatives.

Cumulative Effects:

The projects and their cumulative effects, when considered with adding facilities under Alternative 6, are the same as described for adding facilities under Alternative 3.

Summary of Effects Analysis across All Alternatives

Table 142. Recreation resource effects summary

Indicator – Recreation Resources	Rankings of Alternatives for Each Indicator[a]				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Indicator 1: Nonmotorized quiet recreation opportunity (more than ½ mile from motorized road or trails).	3	1	2	5	4
Indicator 2: Impact of proposed changes to the NFTS on neighboring private and federal lands (dust, noise, use conflicts).	4	2	1	5	3
Average ranking for nonmotorized Values	**3.5**	**1.5**	**1.5**	**5**	**3.5**
Indicator 3: Motorized recreation opportunity.	2	3	5	1	4
Indicator 4: Type of motorized access to dispersed recreation.	1	3	5	2	4
Average ranking for motorized values	**1.5**	**3**	**5**	**1.5**	**4**
Average Ranking for Nonmotorized Recreation and Motorized Recreation	**2.5 (2)**	**2.25 (1)**	**3.25 (4)**	**3.25 (4)**	**3.75 (5)**

a - A score of 5 indicates the alternative is the least impact for this resource; a score of 1 indicates the most impact.

Compliance with the Forest Plan and Other Regulatory Direction.

Alternatives 3, 4, 5, and 6 each require one non-significant Forest Plan amendment to the Recreation Opportunity Spectrum (ROS), in order to designate existing unauthorized route(s) that access dispersed recreation in the vicinity of Blackhawk Bar. This would reclassify 1.05 acres from semiprimitive nonmotorized to semiprimitive motorized under Alternatives 3 and 5, and 5.85 acres from semiprimitive nonmotorized to semiprimitive motorized under Alternatives 4 and 6 (Table 143). Aside from this one Forest Plan amendment to ROS in each of these alternatives, the action alternatives otherwise comply with the Six Rivers Forest Plan and other regulatory direction, by not designating other new routes or upgrading ML 1 roads in a manner inconsistent with the ROS.

Number of ROS acres in each class under each alternative and number of required non-significant ROS plan amendments (and any associated changes to Forest Plan recreation and OHV management prescriptions) displayed by associated acreage changes in the Forest Plan by alternative.

Table 143. Acreage within recreation opportunity spectrum (ROS) classifications, and required nonsignificant ROS plan amendment by alternative

ROS Class	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
	Acreage				
Primitive	2,350.78	2,350.78	2,350.78	2,350.78	2,350.78
Semiprimitive Nonmotorized	60,688.91	60,687.86	60,683.06	60,687.86	60,683.06
Semiprimitive Motorized	14,485.42	14,486.47	14,491.27	14,486.47	14,491.27
Roaded Natural	178,272.36	178,272.36	178,272.36	178,272.36	178,272.36
Rural	786.95	786.95	786.95	786.95	786.95
Urban	0.00	0.00	0.00	0.00	0.00
Forest Plan Amendment[a] by Alternative	0	1.1 ac.	5.9 ac.	1.1 ac.	5.9 ac.

a – changing the ROS classification from semiprimitive-nonmotorized to semiprimitive-motorized

Under any of the action alternatives, this non-significant Forest Plan amendment supports the provision of motorized access over existing routes historically used by the local community to access the popular swimming areas known as Blackhawk Bar. In other words, this motorized use has been occurring in this semiprimitive-nonmotorized area since well before the publication of the 1982 ROS Users Guide, but along routes not part of the NFTS during the original ROS analysis. The use levels and long-term general popularity of Blackhawk Bar warrant a special-case consideration of a Forest Plan amendment to the ROS designation, in order to provide continued public access to this area.

Table 144. New routes requiring non-significant forest plan amendments, by alternative

	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
New Route Additions (Route Number)	None	15N36N.1	15N36N.1 15N36N.1A 15N36N.1B 15N36N.1C	15N36N.1	15N36N.1 15N36N.1A 15N36N.1B 15N36N.1C

Table 145. ROS evaluation criteria for semiprimitive motorized and roaded natural area designations

Setting Component	Conditions	Semiprimitive Motorized	Roaded Natural
		Mapping Evaluation Criteria	
Physical	Remoteness	An area designated within ½ mile of primitive roads or trails used by motor vehicles; but not closer than ½ mile from better-than-primitive roads.	An area designated within ½ mile from better-than-primitive roads, and railroads.
Physical	Size	2,500 acres[a]	No size criteria.
Physical	Evidence of Humans	Natural setting may have moderately dominant alterations but would not draw the attention of motorized observers on trails and primitive roads within the area. Strong evidence of primitive roads and the motorized use of trails and primitive roads. Structures are rare and isolated.	Natural setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However, from (visually) sensitive travel routes and use areas, these alterations would remain unnoticed or visually subordinate. There is strong evidence of designed roads and/or highways. Structures are generally scattered, remaining visually subordinate or unnoticed to observers on the (visually) sensitive travel route. Structures may include power lines, microwave installations, etc.
Social	User Density	Low to moderate contact frequency.	Frequency contact is moderate to high on roads; low to moderate on trails and away from roads.
Managerial	Managerial Regimentation and Noticeability	On-site regimentation and controls – which may be physical (such as barriers) or regulatory (such as permits) – are present but subtle.	On-site regimentation and controls are noticeable, but harmonize with the natural environment.

a - According to the ROS Users Guide, area adjustments for a primitive or semiprimitive class may require individual consideration. If the area is sufficiently added to or buffered by the next contiguous class, then it may still provide the kinds of opportunities which could more certainly occur if the area were larger. When evaluating whether this condition applies, or whether the area is for some other reason unique relative to the surrounding area and provides a given class of opportunity in spite of its size, utilize site-specific evaluation of the area and its features.

The Blackhawk Bar routes, listed in Table 144, would trigger ROS amendments to the current area semiprimitive-nonmotorized within a 60-70 feet buffer of those routes, and these areas were analyzed for best fit into either the semiprimitive-motorized or the roaded natural designations, according to the ROS mapping evaluation criteria (ROS Users Guide, 1982). These criteria are listed in Table 145.

Under all the action alternatives, the route or routes leading to Blackhawk Bar conform best to the semiprimitive motorized ROS evaluation criteria, except regarding the size criteria: these routes are in primitive condition, but still show strong evidence of use as roads or trails; the area has minimal alterations and structures present; user density is generally low; and physical barriers in the area are and would remain subtle. Although the area sizes proposed for conversion to semiprimitive-motorized are well under the 2,500 acres recommended in the ROS Users Guide, the conditions of the site remain semiprimitive despite the motorized use on these currently unauthorized routes, and thus the area around the routes proposed for addition under Alternatives 3, 4, 5, and 6, is recommended for the semiprimitive motorized designation in each of those alternatives.

Transportation Facilities

Introduction

This section of the environmental analysis examines the extent to which alternatives respond to transportation facilities direction established in the Six Rivers National Forest Land and Resource Management Plan (Forest Plan). The Forest Plan transportation facilities direction was established under the implementing regulations of the National Forest Management Act (NFMA) and the National Forest Roads and Trails Act (FRTA). The National Forest Transportation System (NFTS) consists of roads, and trails. The NFTS provides for protection, development, management, and utilization of resources on the National Forests.

Transportation facilities considered in this analysis include roads and trails that are suitable for motor vehicle use. This analysis considers changes proposed to the NFTS to meet the purpose and need of the proposed action. Decisions regarding changes in the transportation facilities must consider: 1) providing for adequate public safety, and 2) providing adequate maintenance of the roads and trails that will be designated for public use. The analysis in this section focuses primarily on these two aspects of the NFTS.

The Regional Forester recommends mixed-use on NFTS roads be maintained for passenger car use. Concerns about designation of mixed-use are based on providing a safe transportation system for both highway and non-highway vehicles. See Table 146 for key information from the mixed-use analyses.

Regulatory Framework: Compliance with the Forest Plan and Other Regulatory Direction

Direction relevant to the proposed action as it affects transportation facilities includes:

Title 36, Code of Federal Regulations, Part 212 (36CFR212) is the implementing regulation for the FRTA and includes portions of the Travel Management Rule published in the Federal Register on November 9, 2005. Part 212 Subpart A provides criteria for designation of the minimum road system. Part 212 Subpart B provides criteria for designation of roads and trails. Providing safe transportation facilities and considering the affordability of maintaining the transportation facilities are two of the criteria.

Forest Service Manual Sections 2350 and 7700 contain agency policy for management of the National Forest Transportation System. The policy requires the development of trail management objectives and road management objectives. The trail management objectives and road management objectives document the purpose of each trail or road. The purpose for the trail or road sets the parameters for

maintenance standards needed to meet user needs, resource protection and public safety. Forest Service Handbook 7709.58 describes the maintenance management system the Forest Service uses and the maintenance standards needed to meet road management objectives for the road system and include considerations for public safety.

Road maintenance levels define the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road management objectives and maintenance criteria. Policy regarding maintenance levels is found in FSH 7709.59, Road System Operations and Maintenance Handbook, Chapter 60, Section 62.3. The following are excerpts from that direction:

“Roads may be currently maintained at one level and planned to be maintained at a different level at some future date. The maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns; in other words, it defines the level to which the road is currently being maintained. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the maintenance level. The transition from maintenance level to objective maintenance level may depend on reconstruction or disinvestment.”

“Roads assigned to maintenance levels 2-5 are either constant service roads or intermittent service roads during the time they are open to traffic. “

“The distinction between maintenance levels 1 and 2 is sharply defined. Maintenance level 1 roads are placed in storage with all vehicular traffic eliminated. Level 2 roads are passable by prudent drivers in high clearance vehicles. “

“The distinction between maintenance levels 2 and 3 is also sharply defined. Level 2 roads are not maintained to be passable to standard four wheel passenger cars. No provision is made for user comfort, user convenience, and speed of travel. Neither is any provision made to warn users about changing conditions and safety concerns on the road ahead. On the other hand, level 3 roads are passable to prudent drivers in passenger cars. Users can reasonably drive with expectations of predictable road conditions and can expect warning signs and traffic control devices meeting Manual on Uniform Traffic Control Devices standards when hazards are present.“

“The distinctions between maintenance levels 3, 4, and 5, which are roads managed as public roads (FSM 7730.5), are not sharply defined. Some parameters overlap. Maintenance levels are selected based on the best overall fit of the parameters for the road in question. In those situations where the parameters do not indicate a definite selection, the desired level of user comfort and convenience is the overriding criteria to determine the maintenance level.”

Regional Forester’s letters, file code 7700/2350, dated 08/21/2006, 06/20/2007, 01/13/2009, and 02/12/2009 contain procedures National Forests in Pacific Southwest Region will use to evaluate safety aspects of public travel on roads when proposed changes to the NFTS will allow both highway legal and non-highway legal traffic on a road (motorized mixed-use).

Regulations at 36 CFR 212.5a make State traffic regulations applicable to NFTS roads. The California Vehicle Code (CVC) regulates the use of motor vehicles in California, including motor vehicles used on the national forests. The California Vehicle Code sets safety standards for motor vehicles and vehicle operators. It defines the safety equipment needed for highway legal and non-highway legal vehicles. It also defines the roads and trails where non-highway legal motor vehicles may be operated.

Forest Plan

The Forest Plan goals for Motorized Recreation states in part “Provide a range of recreational opportunities to meet the needs of motorized recreationists. Manage motorized recreation to provide for public safety and resource protection, and to reduce user conflict.” (Forest Plan page IV – 123). Additionally the Forest Plan under the Standards and Guides for Motorized Recreation states the following: 18-21 OHV use is restricted to designated routes. 18-22 Level 2 roads are open to motorized recreation vehicles (including OHVs), unless otherwise designated closed (Forest Plan page IV – 124).

The Forest Plan goals for Transportation and facilities states in part “Provide public access to National Forest lands for the use and enjoyment of its natural resources. Provide a safe, efficient and cost-effective transportation system.” (Forest Plan page IV-115. Additionally, the Forest Plan under the Standards and Guides for Transportation and Facilities states the following: 13-1 Existing permanent roads not necessary for administrative, recreation, resource protection, commercial and/or public access should be closed after all project work has been completed. 13-4 The permanent transportation system should be maintained to meet the objectives as stated in the annual maintenance program. Correction of existing problems and prevention of future resource damage is the highest priority. 13-5 Temporary roads will be obliterated and rehabilitated.

Compliance with the Forest Plan and Other Regulatory Direction.

Motorized mixed-use analyses were conducted to be compliant with Federal guidelines, the Forest Management Plan standards and guides as well as the California Vehicle Code.

Effects Analysis Methodology

The Effects Analysis Methodology focuses on the assumptions, methodology, and indicators for addressing the direct and indirect effects of three actions and the cumulative effects of implementing the alternative as a whole. The following discrete actions: (1) Restoration of drainage patterns on unauthorized routes not added to the NFTS ; (2) The addition of roads and motorized trails to the NFTS, including identifying seasons of use; (3) Changes to the existing NFTS (decommissioning facilities, changing the season of use, or changing the maintenance level); (4) stormproofing identified roads; and (5) designating mixed-use on an ML 3 road.

For Fiscal Year (FY) 2014 it is estimated that the Smith River NRA will receive $50,000 dollars (based on one quarter of the Six Rivers National Forest total NFTS road and trail budget). This includes all projected funding for NFTS roads and trails. Table 147 shows what the district would need approximately $709,000 dollars to complete all routine maintenance on the existing NFTS, hence a shortfall of $659,000 dollars. Alternative 1 would not change this deficit. Alternatives 3, 4 and 6 would increase the maintenance funding shortfall from current levels as follows: Alternative 3 by $30,845, Alternative 4 by $34,613, and Alternative 6 by $27,057. Alternative 5 would potentially decrease annual maintenance costs by $44,784. All of the incomplete maintenance would be added to the current deferred maintenance total, which was estimated to be over 113.4 million dollars in FY2008 forest wide.

The current level of appropriated and non-appropriated funding is insufficient to complete routine maintenance of the current NFTS without tradeoffs and the accumulation of more deferred maintenance. For Alternatives 3 through 6 adding new facilities to the NFTS will increase the amount of deferred maintenance and increase the maintenance cycle. The maintenance cycle is the frequency at which a road or trail is entered and maintenance is performed.

Analysis Spatial boundary: The Gasquet Ranger District/Smith River NRA boundaries are the unit of special analysis when considering effects associated with the existing NFTS.

The proposed additions and changes to the NFTS have been evaluated for the effects on public safety.

Assumptions

General

- Any motor vehicle use authorized by state law is occurring on the NFTS unless there are Forest specific prohibitions.
- Motor vehicle uses authorized by contracts, permits or other written authorizations are outside the scope of this proposal (i.e. fuel wood gathering, motorized special use permit event, residences, mining activities, etc.).
- Vehicle classes eligible for motorized trail use include high clearance vehicles (4WD etc.). Traffic on NFTS roads generates needs for maintenance. Commercial users are required to perform or pay for maintenance made necessary by their use. Maintenance needs resulting from administrative use and public use are the Forest Service's financial responsibility.
- There is some cost of maintenance that must be borne by the Forest Service for needs generated by natural events such as rainfall and growth of vegetation for all routes on the NFTS irrespective of motor vehicle traffic. The cost of meeting these needs is shared with commercial users and cooperators when such traffic is present.
- State laws regulating motor vehicle equipment and operators set the standard of care for the safety of vehicle operators and other users of the NFTS.
- Maintenance Level 2 Roads (ML2, roads maintained for high clearance vehicles) are already open to mixed-use.
- The current season of use for NFTS roads would remain unchanged unless identified on a route specific basis within each alternative.
- It is assumed that most users are prudent drivers, observe "the rules of the road" and practice safe driving techniques.

Specific to Public Safety

36 CFR 212.55 requires public safety be considered when designating roads, trails and areas for motor vehicle use. The proposed additions and changes to the NFTS have been evaluated for the effects on public safety. Due to very low traffic volumes and the relatively remote location of NFTS roads, there is insufficient reporting of crashes on the roads to make determinations regarding whether roads are safe.

Stormproofing

Stormproofing is a suite of management actions that will be applied to NFTS roads and trails to reduce water quality and sedimentation risks through culvert and road surface improvements, including redesigning of culverts for fish passage. Activities identified as stormproofing include the installation of culverts, rolling dips, repair or replace culverts (including undersized culverts), and removing culverts and associated fills (limited to identified ML1 roads).

Motorized Mixed-use

FSM 7705 defines motorized mixed-use as the designation of an NFTS road for use by both highway-legal and non-highway legal motor vehicles.

The California Vehicle Code (CVC) requires motor vehicles operated on highways be highway-legal and be operated by licensed drivers. Region 5 considers passenger car roads (ML 3, 4, and 5) to be subject to

state highway law. The CVC allows the operation of non-highway legal vehicles operated by unlicensed drivers on roughly graded roads. Region 5 considers roads maintained for high clearance vehicles ML2 as roughly graded and considers operation of OHVs on these roads as consistent with state law.

Selected unauthorized routes are proposed to be added as roads to the NFTS in Alternatives 3-6. Some unauthorized routes will be added to the NFTS as full-size vehicle trails (open to all trail vehicles). The mixed-use designation does not apply to routes added to the NFTS as motorized trails. Use by non-highway legal trail vehicles would be allowed on motorized trails.

Motorized mixed-use on existing NFTS high clearance roads (ML2).

Maintenance Level 2 (FSM 7709.59 60) is assigned to low standard, high clearance NFTS roads and is to be maintained for use by high clearance 4WD vehicles rather than passenger travel. Use levels are generally low, consisting of one or a combination of administrative, permitted, dispersed recreation or other specialized uses. Commercial use may occur at this level. Maintenance level 2 roads have the following attributes:

- Roads have low traffic volume and low speed.
- Typically local roads.
- Typically connect collectors or other local roads.
- Dips are the preferred drainage treatment.
- Not subject to the requirements of the Highway Safety Act.
- Surface smoothness is not a consideration.
- Not suitable for passenger cars.

All existing high clearance NFTS ML 2 roads have been determined to have minimal safety concerns. These roads will be open to all vehicle classes (highway-legal and non-highway legal) in all alternatives. This is because the roads:

- Are and will be maintained for high clearance vehicles; passenger car traffic is and will continue to be discouraged.
- Do not have documented crash history involving motorized mixed-use on the road or similar roads in the vicinity.

Motorized mixed-use on existing NFTS passenger car roads (ML3).

Maintenance Level 3 (7709.59 60) is assigned to open roads and maintained for travel by prudent drivers in standard passenger cars. User comfort and convenience are low priorities. Roads in this maintenance level are typically low speed, single lane with turnouts, with spot surfacing. Some roads may be fully surfaced with either native or processed material. Maintenance level 3 roads have the following attributes:

- Subject to the requirements of the Highway Safety Act and Manual on Uniform Traffic Control Devices.
- Low- to moderate-traffic volume.
- Typically connect to arterial and collector roads.
- A combination of dips and culverts provide drainage.
- May include some dispersed recreation roads.

- Potholing or wash boarding may occur.

A motorized mixed-use analysis was performed to determine the number of miles, and the extent to which such use would enhance motorized recreation opportunities and comply with CVC laws. Forest Service Road 17N49 was brought forward as a viable opportunity for motorized mixed-use designation. The road surfaces vary between native, aggregate, gravel, and pavement. The road authorized for motorized mixed-use will be posted to alert drivers where mixed vehicle use is permitted. The costs (see Table 146) associated with motorized mixed-use implementation includes designating parking areas at existing wide spots along the road.

Table 146. Summary of mixed-use analysis

Road Segment Analyzed				
			Alternative 3	**Alternatives 4, 6**
Road Number			17N49	17N49
Beginning Mile Post/Ending Mile Post			2.54/6.3	4.76/5.17
Existing Maintenance Level			3	3
Subject to Highway Safety Act			Yes	Yes
Non-Highway Legal Vehicles Currently Permitted			No	No
Motorized Mixed-use Consistent with State and Local Laws			No	Yes
Surface Type			Nat/Agg/AC[a]	Nat/Agg
Length Miles			3.76	0.41
Expected Risk	Without Mitigations	Probability	High	Medium
		Severity	Medium	Medium
	With Mitigations	Probability	Medium	Low
		Severity	Medium	Medium
Mitigation Measures			1,2,3	1,2,3
Estimated Implementation Costs			$344,340.00	$46,715.00
Approved for Mixed-use by Regional Forester			No	Pending Decision

a - Native / Aggregate / Asphalt Concrete

Recommended Mitigation Measures

1. Information Kiosks
2. Signs at the beginning and end of road segment, minimum two signs, "Share the Road" symbol and "Next X Miles"
3. Brushing, mowing, clearing at intersections, clearing at curves

Affordability

36CFR212.55 requires consideration of the need for maintenance and administration of the designated NFTS. Costs for the NFTS system include costs for needed maintenance work that has not been completed for various reasons (deferred maintenance) and costs of maintenance that should be performed routinely to maintain the facility to its current standard (annual maintenance). In addition, there may be additional costs associated with proposed changes to the NFTS (implementation costs). These costs may

be for improving unauthorized routes that will be added to the NFTS, costs for proposed safety and resource improvements, costs for changing maintenance levels, costs for closing routes to use by motor vehicles, and cost of signing. Other future costs such as law enforcement were not analyzed.

Annual maintenance funding on NFTS roads comes primarily from appropriated road maintenance funding. The main focus of this funding has been on safety and resource protection on passenger car roads. This funding also covers road construction, bridge construction and maintenance activities, engineering support for timber sales and stewardship programs. Approximately half of the maintenance funding is used for roads on the Smith River National Recreation Area. Recently, road maintenance on high clearance roads has been funded with focused project proposal funding such as Resource Advisory Committee (RAC), Capital Investment Projects, and Legacy Roads/Trail appropriations funding. This funding must be competed for and is more sporadic and site specific in nature. Transportation system maintenance is accomplished mainly using contracts and to a lesser extent by cooperators, forest service personnel, and volunteers.

In recent years, annual road maintenance budgets have not been sufficient to fully maintain the entire road system. This has led to an increase in deferred maintenance. An estimate of the deferred maintenance for roads on the Forest is $113,439,464. Note this number is based on a national random sample of deferred maintenance needs done in 2008. It is not statistically valid at the National Forest level. However, it can be used as an indicator of maintenance needs for the existing road system.

Motorized trail maintenance differs from road maintenance in that the use of mechanized equipment is limited due to the narrower width and steeper terrain of most trails. Therefore, motorized trails may require considerable hand work and more time to maintain than the equivalent mile of road.

Table 148 below displays the estimated cost per mile to perform annual routine maintenance on existing NFTS roads and motorized trails on the Smith River NRA. The average costs were derived using the national road maintenance cost spreadsheet. The cost per mile for motorized trail was derived using current District costs.

Annual maintenance funding on NFTS motorized trails comes primarily from appropriated trail maintenance funding and other sources. Appropriated trail maintenance funding is also used to cover all trail construction and all trail bridge construction and maintenance activities. Region 5 has the potential to acquire supplemental funding for motorized recreation through the California Department of Parks and Recreation's Off-Highway Motorized Vehicle Recreation Division Cooperative Agreement Program. Since 2000 the Forest has received supplemental state funding to help maintain NFTS motorized trails.

Estimates of the annual maintenance costs for the road system for each alternative are included in Table 147.

Table 147. Summary of costs by alternative

Affordability Measurement Indicators	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
2A. Annual and Proposed Maintenance Costs of NFTS Roads:					
Subtotal	$709,586	$740,431	$744,199	$664,802	$736,643
2B. Implementation Costs of Design Features:					
Subtotal	$0	$7,251,404	$6,441,520	$6,425,688	$7,207,966
Monitoring Costs	$0	$11,105	$11,105	$11,105	$11,105
Total Est. cost by Alternative	$709,586	$8,002,940	$7,196,824	$7,101,595	$7,955,714

Forest wide average costs per mile to maintain each maintenance level (ML) were developed and applied to the road system to calculate the estimated total cost. The average costs per mile are shown in Table 148 below. The average costs per mile were derived from annual maintenance plans, condition survey estimates, anticipated maintenance functions, as well as required safety features needed to convey hazards.

Table 148. Average costs for annual road and trail maintenance on the Smith River National Recreation Area

Maintenance Level	Current NFTS Mileage	Annual Cost per Mile	Annual Maintenance Cost
1	89.47	$ 103	$ 9,215.41
2	251.19	$ 593	$ 148,955.67
3	111.85	$ 2,355	$ 263,406.75
4	11.81	$ 9,078	$ 107,211.18
5	18.55	$ 9,078	$ 168,396.90
Motorized Trail	12.4	$ 1,000	$ 12,400.00
NFTS Roads Total	482.87	--	$697,185.91
NRA NFTS Trails Total	12.4	--	$12,400.00
NRA NFTS TOTAL	**495.27**	**--**	**$709,585.91**

Implementation costs for the proposed changes to the NFTS on Smith River NRA are shown for roads and trails in the Affordability Indicator table (Table 150). The costs shown are based on estimates for the types of work typically needed to complete the changes. Costs may include safety, resource improvements on the NFTS, and work needed to bring unauthorized routes to acceptable standards for use by motor vehicles.

Data Sources

The data sources used for this analysis included the infrastructure database for roads (INFRA), local road data sheets, the Forest Roads Analysis for ML 3-5 roads completed in 2003, Motorized Mixed-use Engineering Report, and specialist data sets collected for this travel management plan.

Transportation Facilities Measurement Indicators

Estimated effects of implementing the alternatives on transportation facilities are evaluated on the basis of public safety and transportation affordability. Direct and indirect measurement indicators for these two elements are described in the following section. Public safety is measured in miles of road/trail change and affordability is measured in dollars.

Measurement Indicators for Public Safety

1A. Miles of unauthorized trails added to the NFTS. Unauthorized trails with safety concerns proposed for inclusion in the NFTS would be identified and corrected to conform to the National Quality Standards for Trails and design parameters associated with the trail class and user type. Trail work would include signing identified hazards, hazard tree removal, tread work for safety and ease of passage, etc.

1B. Miles of NFTS trails with proposed changes to the season of use. This change may affect public safety by reducing the risk of exposure to adverse conditions resulting from wet surfaces or winter weather situations.

Measurement Indicators for Transportation Affordability

2A. Annual Maintenance: Displays the estimated annual costs to maintain the existing NFTS of roads and trails. Appropriated funding history for roads and trails for the Forest from 2005-2009 is displayed in Table 151.

2B Implementation Costs: Displays the estimated costs of implementing the proposed additions and changes to the existing system. Included are estimated costs of mitigations for public safety and resource protection. More specifically these costs cover estimated annual road and trail maintenance, additions to the NFTS, proposed mixed-use on ML 3 roads, and the cost of producing a motor vehicle use map. See Table 150 Affordability Measurement table below.

Affected Environment

President Harry S. Truman established the Six Rivers National Forest by Presidential proclamation on June 3, 1947. The new Forest's initial 900,000 acres were carved from the western portion of the Klamath and Trinity National Forests and the southern portion of the Siskiyou National Forest. The 1947 Six Rivers National Forest roads "Situation Report" listed only 281 miles of roads that were deemed to be in "satisfactory" condition (Conners 1997). This transportation system was not designed to cope with or promote movement to the coast; instead most of the Forest roads were oriented to sawmills, transportation systems, and markets in Grants Pass and California's Central Valley. The Forest struggled with its marginal and eastward-oriented infrastructure for many years. There were few county and state roads which were mostly of low standards.

Beginning in the 1950s with the national emphasis on commodity production a concerted effort began to provide a more functional transportation system on the Forest was begun. The majority of the National Forest roads on the Smith River NRA were constructed and maintained between 1960 and 1990 in support of the timber program. These roads were Forest Service (FS) designed and generally constructed under a timber sale contract by the purchaser. These roads by and large were well located, well designed and well-constructed. Most of these roads were typically designed with an outsloped road prism, thereby reducing the concentration of road surface runoff. Typically, until the 1980s, most timber sale roads were surfaced to improve road integrity, reduce road maintenance and provide for a diversity of long-term uses.

In the 1980s, the agency began a shift in emphasis away from commodity outputs to a more holistic approach of resource management. With deficit timber sales in the 1980s and 1990s road construction standards were modified. Due to high road construction costs surface rocking was used on a site specific bases. New NFTS roads were outsloped, water barred and spot rocked. Gates or metal barricades were installed as resource mitigations. Many of these roads were high clearance vehicle roads.

By the mid to late 1990s the timber program had stalled and new permanent road construction had ceased except for the occasional short spur needed to access individual timber stands. The majority of arterial and collector system roads were in place. With timber harvest decreased and road maintenance budgets decreased, maintenance of the transportation system became an issue.

Current appropriated road maintenance funding is insufficient to cover current annual road maintenance needs. As a result annual maintenance is being reduced, maintenance cycles are extended, repairs are prioritized to mitigate public safety concerns and prevent resource damage. Major repairs and non NFTS facilities are funded by special appropriations outside the yearly Forest budget. Current and projected funding does not cover deferred maintenance, which means that the deferred maintenance backlog grows annually. Table 151 displays funding history. Current trail maintenance funding (both internal and external funding) has been adequate to cover the highest priority trail maintenance needs.

Currently, the Smith River NRA has a network of 482.87 miles of NFTS roads; 12.4 miles of NFTS motorized trails and 154.73 miles of identified non-system or unauthorized motorized routes within their boundaries. Some of these unauthorized motorized routes are being analyzed for inclusion to the NFTS.

Future vegetation management and fuel reduction projects would have a beneficial impact on reducing some annual and deferred maintenance costs on NFTS roads within their project areas. Some of the ongoing and future projects on Smith River NRA that include roads are Gordon Hill Timber Sale, the Hurdygurdy Recreation Improvement Project, the North Fork Smith River Special Interest Area Road Access, and the Big Flat Vegetation and Fuels Management Project.

Environmental Consequences

See the effects methodology section above regarding how this analysis was conducted.

Alternative 1 – No Action

Alternative 1, the No Action Alternative, provides a baseline for comparing the other alternatives. Under the No Action Alternative, no changes would be made to the NFTS. Current management plans would continue to guide project area management. Unauthorized routes would continue to have no status as NFTS facilities and drainage patterns would not be restored. The current MVUM would continue providing direction on motorized use on NFTS roads and motorized trails on the Gasquet Range District and the Smith River National Recreation Area. The no action alternative:

- does not add new NFTS roads or trails;
- does not make any changes to the NFTS;
- does not restore drainage patterns on inventoried UARs, and;
- maintains current MVUM as providing direction on motorized use on NFTS roads and trails on the Gasquet Range District and the Smith River National Recreation Area.

Direct and Indirect Effects

Additions to the NFTS

Public Safety: No new facilities would be added in this alternative. No short or long-term direct effects would result.

Implementation Costs: No new facilities would be added in this alternative. No short or long-term direct effects would result.

Upgrading and Downgrading Roads, and Designation of Mixed-Use, and designation of season of use

Public Safety: There would be no change under this alternative therefore no short or long-term direct effects would result.

Implementation Costs: There would be no change under this alternative therefore no short or long-term direct effects would result. Deferred maintenance costs would remain the same.

Restoration of Drainage Patterns on Unauthorized Routes

Public Safety: There would be no restoration of under this alternative therefore no short or long-term direct effects would result.

Implementation Costs: There would be no change under this alternative therefore no short or long-term direct effects would result.

Stormproofing

Public Safety: Stormproofing is not identified under this alternative therefore no short or long-term direct effects would result. There would be a potential for accidents associated with travel on roads not maintained from hazards and erodible terrain.

Alternative 3 – Modified Proposed Action

Alternative 3, the Modified Proposed Action, is the proposed action recommended by the collaborative group that was publicly scoped in April 2012; however, the geographic extent was modified to exclude inventoried UARs, and NFTS roads and trails within TCPs from the project area in response to a significant issue. Mileages are rounded to the nearest mile.

Changes to the NFTS, itemized below, would result in an overall addition of 15 miles of motorized access, and provide additional access to approximately 13 dispersed recreation sites. Restoration of drainage patterns would occur on 79 miles of unauthorized routes. Investments in the NFTS to reduce associated resource risks include barricading 72 miles of closed and decommission roads and unauthorized routes, 11 miles of additional seasonal gate closures, stormproofing 122 miles of NFTS roads and motorized trails.

Alternative 3 adds 307 feet (0.053 mi) of UAR 15N36N.1 as an ML 2 road currently in the semiprimitive nonmotorized ROS class. This action will require a non-significant Forest Plan amendment to change 1.05 acres of semiprimitive nonmotorized ROS class to semiprimitive motorized ROS class.

Alternative 3 is described as follows.

- **Changes to NFTS**
  - **Add to the NFTS**
    - 44 Miles of motorized trails,
    - 8 miles of ML 2 and 3 roads open to motorized use, and
    - 7miles of ML 1 roads
  - **Upgrade** 3 miles of ML 1 roads to ML 2 roads
  - **Downgrade** 19 miles of ML 2 roads to ML roads,
  - **Designation of mixed-use** on 4 miles ML 3 roads
  - **Decommission** 55 miles of ML 1 and 2 roads
- **Restoration of Drainage Patterns**: 79 miles of restoration of drainage patterns on unauthorized routes would occur under this alternative.
- **Resource Risk Mitigations**
  - **Barricades** – Barricade an additional 72 miles of unauthorized routes not added to the NFTS.
  - **Seasonal Gate Closure** – 11additional miles of NFTS roads and motorized trails of season-of-use would be reinforced through seasonal gate closures.
  - **Stormproofing** – Stormproofing would occur on 122.3 miles of NFTS roads and motorized trails.

- **Connected Actions**
  - **Change in ROS (Forest Plan Amendment**) – 1.1 Acres of semiprimitive nonmotorized will be converted to semiprimitive motorized to allow for the addition of UAR 15N36N.1 as an ML 2 road to provide motorized access near Blackhawk Bar, a popular dispersed recreation site.

Direct and Indirect Effects

Additions to the NFTS

Public Safety: Alternative 3 proposes the addition of 58.81 miles of UARs to the NFTS as roads and motorized trails. Long term this would enhance user safety when these motorized routes become part of the managed trail or road systems. Trail hazards would be assessed and prioritized for correction during trail inventory and maintenance. Trail signage and maps would be available to inform users of skill level and location, thereby reducing the hazard of being lost or stranded. Maps would be available to search and rescue personnel. Any hazardous intersections with system roads would be identified and corrected.

Implementation Costs: Short-term the additional estimated costs to implement alternative 3 would be approximately $6,603,404. Additions to the NFTS would include the addition of 44 miles of trails and 15 miles of roads. Table 150 displays all costs to implement this alternative.

Changes to existing NFTS, including decommissioning, upgrading, downgrading, designation of mixed-use on ML 3 roads, and designation of season of use.

Public Safety: The modified proposed action includes the addition of 3.89 miles of motorized mixed-use on Forest Road 17N49. There is no history of mixed-use related accidents in the project area. Even with the highest use, the use received on the District is normally light (0-25 vehicles per week) on the NFTS roads and trails. The proposed length is longer than the California Vehicle Code (CVC) allows for combined use on designated highways. Additionally, the amount of horizontal and vertical curves, changes in surface type material, and narrowness of the road width along the alignment pose a higher risk to regular traffic with the addition of OHV traffic. Mitigations for these road hazards would need to be implemented in order to provide a safe motorized mixed-use corridor.

The safety concerns of motorized users becoming stuck or stranded during inclement weather would be lessened through the 55.3 miles of decommissioning as well as the downgrading of 18.5 miles of ML2 roads to ML1 roads. Additionally, Alternative 3 includes upgrading 2.64 miles of ML1 roads to ML2 roads, which would require removal of any hazards and proper signage associated with the upgrade.

Implementation Costs: Short-term the additional estimated costs to implement alternative 3 would be approximately $6,603,404. Approximately 90 percent of this cost would be to decommission the 55.3 miles of roads on the NFTS. Additional costs would include the downgrading of existing roads and making changes to and distributing the motor vehicle use map. Season of use restrictions would reduce the likelihood of wheel rutting and water channeling thereby reducing some annual maintenance costs. Deferred maintenance costs would be lowered due to reduction of 34.87 miles of NFTS roads. Some costs would be needed for trails maintenance, approximately $43,980.

Restoration of drainage patterns on unauthorized routes

Public Safety: The modified proposed action includes the restoration of 79.24 miles of UAR's. User created trails identified as UAR's would be closed to motorized travel and made hydrologically stable. Restored UAR's would prevent activity on roads or trails not mitigated for hazards. Additionally, the modified proposed action identifies 72 miles of UAR's to be barricaded which would lessen the chance of accidents associated with the aforementioned hazards.

Affordability: Short term, the additional estimated costs to implement Alternative 3 restoration of UAR's would be approximately $211,517. The restoration implementation would include the installation of gates, barriers, and shaping of the UAR's.

Stormproofing

Public Safety: The modified proposed action identifies stormproofing of 81 NFTS miles. The potential for accidents associated with travel on roads maintained from hazards and erodible terrain would be lessened.

Affordability: Short term, the additional estimated costs to implement Alternative 3 stormproofing would be approximately $648,000.

Alternative 4

Alternative 4 responds to issues concerning impacts on motorized recreation opportunities. This alternative was developed to provide increased opportunities for motorized recreation and access to dispersed sites. Specifically, this alternative adds more motorized trails and level 2 roads; adds more motorized trails accessing dispersed recreation sites (including short inventoried unauthorized routes); maintains more level 2 roads; and designates parking along 17N49. Mileages are round to the nearest mile.

Changes to the NFTS would result in an overall addition of 51 miles of motorized access, and provide additional access to approximately 54 dispersed recreation sites. Restoration of drainage patterns would occur on 70 miles of unauthorized routes. Alternative 4 also includes investments in the NFTS to reduce resource risks include barricading 65 miles of unauthorized routes, 39 miles of additional seasonal gate closures, and stormproofing 114 miles of NFTS roads and motorized trails.

Alternative 4 adds three unauthorized route segments currently in the semiprimitive nonmotorized ROS class in the vicinity of Blackhawk Bar, which will require a non-significant Forest Plan amendment. These routes include 15N36N.1 (0.05 mi) and 15N36N.1B (0.21 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi) proposed as motorized trail. Alternative 4 requires 5.85 acres of semiprimitive nonmotorized to be converted to semiprimitive motorized.

Alternative 4 is described as follows.

- **Changes to NFTS**
  - **Add to the NFTS**
    - 58 miles of motorized trails,
    - 12 miles of ML 2 and 3 roads
    - 4 miles of ML 1 roads
  - **Upgrade** to ML2 11 miles of ML 1 roads
  - **Downgrade** to ML1 16 miles of ML 2 roads
  - **Designation of mixed-use** on 0.44 miles of roads,
  - **Convert road to motorized trail** on 8 miles of roads, and
  - **Decommissioning**: 57 miles of ML 1 and 2 roads would be decommissioned from the NFTS under this alternative.

- **Restoration of Drainage Patterns**: 70 miles of restoration of drainage patterns on unauthorized routes would occur under this alternative.
    - **Barricades** – Barricade an additional 67 miles of unauthorized routes not added to the NFTS.
- **Resource Risk Mitigations**
    - **Seasonal Gate Closure** – 39 additional miles of NFTS roads and motorized trails of season-of-use would be reinforced through seasonal gate closures.
    - **Stormproofing** – Stormproofing would occur on 113.9 miles of NFTS roads and motorized trails.
- **Connected Actions**
    - **Change in ROS (Forest Plan Amendment**) – Convert 6 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of the following unauthorized routes: 15N36N.1 (0.1 mi) and 15N36N.1B (0.2 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi) proposed as motorized trail to provide motorized access to multiple dispersed recreation sites near Blackhawk Bar.

Direct and Indirect Effects

Additions to the NFTS

Public Safety: Alternative 4 proposes changes to the NFTS that will increase opportunities for users to travel on additional designated roads or trails. Long term this would enhance user safety when these motorized trails become part of the managed trail system. Trail hazards would be assessed and prioritized for correction during trail inventory and maintenance. Trail signage and maps would be available to inform users of skill level and location, thereby reducing the hazard of being lost or stranded. Maps would be available to search and rescue personnel. Any hazardous intersections with system roads would be identified and corrected.

Implementation Costs: The additional estimated costs to implement Alternative 4 would be approximately $5,665,520. Additions to the NFTS would include the addition of 58 miles of trails and 16 miles of roads. This cost also would be to develop and distribute the Motor Vehicle Use Map (MVUM) and replace signs on existing NFTS roads and trails.

Changes to existing NFTS, including decommissioning, upgrading, downgrading, designation of mixed-use, and designation of season of use.

Public Safety: Alternative 4 includes the addition of 0.44 miles of motorized mixed-use on Forest Road 17N49. There is no history of mixed-use related accidents in the project area. Even with the highest use, the use received on the District is normally light (0-25 vehicles per week) on the NFTS roads and trails. The amount of horizontal curves, changes in surface type material, and narrowness of the road width along the alignment pose a higher risk to regular traffic with the addition of OHV traffic. Mitigations for these road hazards would need to be implemented in order to provide a safe motorized mixed-use corridor.

The safety concerns of motorized users becoming stuck or stranded during inclement weather would be lessened through the decommissioning of 44.86 miles of existing roads as well as the downgrading of 15.56 miles of ML2 and ML3 roads to ML1 roads. Additionally, Alternative 4 includes upgrading 11.05 miles of ML1 roads to ML2 roads, which would require removal of any hazards and proper signage associated with the upgrade. Motorized mixed-use along Forest Service Road 17N49 would allow OHV use on a ML3 road (Passenger car). The proposed length of 0.44 miles would require mitigations identified in the MMU report to be implemented in order to have a safe driving environment.

Implementation Costs: The estimated costs to implement Alternative 4 would be approximately $5,665,520. Approximately 90 per cent of this cost would be to decommission the 56.7 miles of roads on the NFTS. This cost also would be to develop and distribute the Motor Vehicle Use Map (MVUM) and replace signs on existing NFTS roads and trails. There would also be the implementation costs of bringing the 5 parking lots identified along 17N49 and the costs of bringing the new roads and trails to standards. Season of use restrictions would reduce the likelihood of wheel rutting and water channeling thereby reducing some annual maintenance costs.

Restoration of drainage patterns on unauthorized routes

Public Safety: Alternative 4 includes the restoration of 70.39 miles of UARs. User created trails or roads identified as UARs would be closed to motorized travel and made hydrologically stable. Restored UARs would prevent activity on roads or trails not mitigated for hazards. Additionally, the modified proposed action identifies 67 miles of UARs to be barricaded which would lessen the chance of accidents associated with the aforementioned hazards

Affordability: Short term, the additional estimated costs to implement Alternative 4 restoration of UARs would be approximately $291,228. The restoration implementation would include the installation of gates, barriers, and shaping of the UARs.

Stormproofing

Public Safety: Alternative 4 identifies stormproofing of 97 NFTS miles. The potential for accidents associated with travel on roads maintained from hazards and erodible terrain would be lessened.

Affordability: Short term, the additional estimated costs to implement Alternative 3 stormproofing would be approximately $776,000.

Alternative 5

Alternative 5 responds to issues related to impacts to forest resources and Inventoried Roadless Areas (IRA). This alternative reduces the number and miles of roads and motorized trails open for motorized travel with special attention given to protecting nonmotorized recreation opportunities in IRAs and increased level of protection for Port-Orford-cedar (POC), and botanical resources. Using the Modified Proposed Action as a starting point, this alternative would:

- **Changes to NFTS**
  - **Add to the NFTS**
    - 11 Miles of motorized trails,
    - 3 miles of ML 2 and 3 roads
    - 6 miles of ML 1
  - **Upgrade** to ML 2: 4 miles of ML 1 roads
  - **Downgrade** to ML1: 97 miles of ML 2 roads
  - **Decommissioning**: 54 miles of ML 1 and 2 roads
- **Restoration of Drainage Patterns**: 135 miles of restoration of drainage patterns on unauthorized routes would occur under this alternative.
  - **Barricades** – Barricade an additional 135 miles of unauthorized routes not added to the NFTS.
- **Resource Risk Mitigations**

- **Seasonal Gate Closure** – 2 additional miles of NFTS roads and motorized trails of season-of-use would be reinforced through seasonal gate closures.
- **Stormproofing** – Stormproofing would occur on 120.9 miles of NFTS roads and motorized trails.

- **Connected Actions**
  - **Change in ROS (Forest Plan Amendment**) – Convert 1.1 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of the following unauthorized routes: 15N36N.1 (0.1 mi) proposed as motorized trail to provide motorized access to multiple dispersed recreation sites near Blackhawk Bar.

Direct and Indirect Effects

Additions to the NFTS

Public Safety: Alternative 5 proposes the addition of 20.05 miles to the NFTS as roads and trails but reduce existing NFTS roads by 56.73 miles. Alternative 5 proposes 11 miles of new motorized trails added to the NFTS. Trail hazards would be assessed and prioritized for correction during trail inventory and maintenance. Trail signage and maps would be available to inform users of skill level and location, thereby reducing the hazard of being lost or stranded. Maps would be available to search and rescue personnel. Any hazardous intersections with system roads would be identified and corrected. Long term this would enhance user safety when these motorized routes become part of the managed road systems. Additionally, a parking lot is proposed on 17N49 near the proposed trailhead for 17N49.7, Spring Road.

Implementation Costs: The additional estimated costs to implement Alternative 5 would approximately $6,249,688. Additions to the NFTS would include the addition of 11 miles of trails and 9 miles of roads. This cost would be to develop and distribute the Motor Vehicle Use Map (MVUM) and replace signs on existing NFTS roads and trails. New routes would be added to the existing NFTS. One parking lot is proposed along Forest Service Road 17N49 at the intersection of proposed Motorized Trail 17N49.7 (Spring Road).

Changes to existing NFTS, including decommissioning, upgrading, downgrading, designation of mixed-use, and designation of season of use.

Public Safety: Small changes to vehicle classes are proposed in Alternative 5 (0.42 miles of UARs), which would allow for passenger cars to be traveled on these roads. In this alternative 2.20 miles of existing NFTS motorized trails would have an allowed season of use. The safety concerns of motorized users becoming stuck or stranded during inclement weather would be lessened through the decommissioning of 54.43 miles of existing roads as well as the downgrading of 97.11 miles of ML2 roads to ML1 roads. Additionally, Alternative 5 includes upgrading 4.21 miles of ML1 roads to ML2 roads, which would require removal of any hazards and proper signage associated with the upgrade.

Implementation Costs: The estimated costs to implement Alternative 5 would be approximately $6,249,688. Approximately 95 per cent of this cost would be to decommission the 54.4 miles of roads on the NFTS. This cost also would be to develop and distribute the Motor Vehicle Use Map (MVUM) and replace signs on existing NFTS roads and trails. There would also be the implementation cost of bringing the parking lot identified along 17N49. Season of use restrictions would reduce the likelihood of wheel rutting and water channeling thereby reducing some annual maintenance costs.

Restoration of UARs

Public Safety: Alternative 5 includes the restoration of 135 miles of UARs. Unauthorized routes would be closed to motorized travel and made hydrologically stable. Restored UARs would prevent activity on

roads or trails not mitigated for hazards. Additionally, the modified proposed action identifies 135 miles of UAR's to be barricaded which would lessen the chance of accidents associated with the aforementioned hazards.

Affordability: Short term, the additional estimated costs to implement Alternative 5 restoration of UAR's would be approximately $297,159. The restoration implementation would include the installation of gates, barriers, and shaping of the UARs.

Stormproofing

Public Safety: Alternative 5 identifies stormproofing of 97 NFTS miles. The potential for accidents associated with travel on roads maintained from hazards and erodible terrain would be lessened.

Affordability: Short term, the additional estimated costs to implement Alternative 5 stormproofing would be approximately $176,000.

Alternative 6

Alternative 6 largely maintains the collaborative group recommendations of 2010 described in the Modified Proposed Action; however, it makes limited changes to address key issues identified through public scoping related to dispersed recreation, and restoration of hydrologic function. Using the Modified Proposed Action as a starting point, this alternative would:

- **Changes to NFTS**
  - **Add to the NFTS**
    - 42 Miles of motorized trails,
    - 5 miles of ML 2 and 3 roads
    - 7 miles of ML 1 roads
  - **Upgrade** to ML 2: 4 miles of ML 1 roads
  - **Downgrade** to ML1: 21 miles of ML 2 roads
  - **Designation of Mixed Use** on 0.44 miles of roads,
  - **Convert Road to Trail** on 0.35 miles of roads, and
  - **Decommissioning**: 54 miles of ML 1 and 2 roads
- **Restoration of Drainage Patterns**: 101 miles of restoration of drainage patterns on unauthorized routes
  - **Barricades** –101 miles of unauthorized routes not added to the NFTS.
- **Resource Risk Mitigations**
  - **Seasonal Gate Closure** – 2 miles of NFTS roads and motorized trails
  - **Stormproofing** –22 miles of roads and motorized trails.
- **Connected Actions**
  - **Change in ROS (Forest Plan Amendment**)**–** Convert 1.1 acres of semiprimitive nonmotorized to semiprimitive motorized to allow for the addition of the following unauthorized routes: 15N36N.1 (0.1 mi) and 15N36N.1B (0.2 mi) proposed as ML 2 roads, and 15N36N.1C (0.03 mi)

proposed as motorized trail to provide motorized access to multiple dispersed recreation sites near Blackhawk Bar.

Direct and Indirect Effects

Additions to the NFTS

Public Safety: Alternative 6 proposes changes to the NFTS that will increase opportunities for users to travel on additional designated roads or trails. Long term this would enhance user safety when these motorized trails become part of the managed trail system. Trail hazards would be assessed and prioritized for correction during trail inventory and maintenance. Trail signage and maps would be available to inform users of skill level and location, thereby reducing the hazard of being lost or stranded. Maps would be available to search and rescue personnel. Any hazardous intersections with system roads would be identified and corrected.

Mixed-use is currently occurring on Maintenance Level 2 roads on the District. There is no history of mixed-use related accidents in the project area. Even with the highest use, the use received on the District is normally light (0-25 vehicles per week) on the NFTS roads and trails. Motorized mixed-use is proposed along Forest Service Road 17N49 on a 0.41 mile segment.

Implementation Costs: The additional estimated costs to implement Alternative 6 would approximately $6,559,966. Additions to the NFTS would include the addition of 42 miles of trails and 12 miles of roads. This cost would be to develop and distribute the Motor Vehicle Use Map (MVUM) and replace signs on existing NFTS roads and trails. New routes would be added to the existing NFTS as well as the four proposed parking lots on 17N49.

Changes to existing NFTS, including decommissioning, upgrading, downgrading, designation of mixed-use, and designation of season of use.

Public Safety: Alternative 6 includes the addition of 0.44 miles of motorized mixed-use on Forest Road 17N49. There is no history of mixed-use related accidents in the project area. Even with the highest use, the use received on the District is normally light (0-25 vehicles per week) on the NFTS roads and trails. The amount of horizontal curves, changes in surface type material, and narrowness of the road width along the alignment pose a higher risk to regular traffic with the addition of OHV traffic. Mitigations for these road hazards would need to be implemented in order to provide a safe motorized mixed-use corridor.

Changes to vehicle classes are proposed in alternative 6. In this alternative 39.18 miles of existing NFTS roads would have an allowed season of use. The safety concerns of motorized users becoming stuck or stranded during inclement weather would be lessened through the decommissioning of 54.43 miles of existing roads as well as the downgrading of 20.51 miles of ML2 roads to ML1. Additionally, Alternative 6 would include upgrading 4.21 miles of ML1 roads to ML2 roads, which would require removal of any hazards and proper signage associated with the upgrade.

Implementation Costs: The estimated costs to implement Alternative 6 would be approximately $6,559,966. Approximately 92 per cent of this cost would be to decommission the 54.43 miles of roads on the NFTS. This cost would be to develop and distribute the Motor Vehicle Use Map (MVUM). There would also be the implementation cost of bringing the four parking lots identified along 17N49. Season of use restrictions would reduce the likelihood of wheel rutting and water channeling thereby reducing some annual maintenance costs.

Restoration of UARs

Public Safety: Alternative 6 includes the restoration of 101 miles of UARs. User created trails or roads identified as UARs would be closed to motorized travel and made hydrologically stable. Restored UARs would prevent activity on roads or trails not mitigated for hazards. Additionally, the modified proposed action identifies 101 miles of UARs to be barricaded which would lessen the chance of accidents associated with the aforementioned hazards.

Affordability: Short term, the additional estimated costs to implement Alternative 6 restoration of UARs would be approximately $310,340. The restoration implementation would include the installation of gates, barriers, and shaping of the UARs.

Stormproofing

Public Safety: Alternative 6 identifies stormproofing of 81 NFTS miles. The potential for accidents associated with travel on roads maintained from hazards and erodible terrain would be lessened.

Affordability: Short term, the additional estimated costs to implement Alternative 6 stormproofing would be approximately $648,000.

Cumulative Effects (Alternatives 3-6)

Public Safety

There would be no significant cumulative effects on public safety in any of the action alternatives. There is no history of mixed-use related accidents in the project area. Even with the highest use, the use received on the Districts is normally light (0-25 vehicles per week) on the NFTS roads and trails. Trail hazards would be assessed and prioritized for correction during trail inventory and maintenance. Trail signage and maps would be available to inform users of skill level and location, thereby reducing the hazard of being lost or stranded. Users would be concentrated on fewer UAR (more NFTS) trails resulting in relatively higher use. This could have a negative effect on long-term user safety and may increase user conflicts. Maps would be available to search and rescue personnel. Any hazardous intersections with system roads would be identified and corrected. Long term, this would enhance user safety when these motorized routes become part of the managed road systems.

Affordability

Table 150 show the cumulative economic effect of each alternative in terms of the additional monetary resources needed to complete routine maintenance when new facilities (currently unauthorized routes) are added to the existing NFTS. Table 150 also compares mitigation costs to implement (e.g., signage, weed removal, erosion control, dust abatement, cultural resource mitigations and MVUM publication) for each of the alternatives on the Smith River NRA. Although the additional motorized trails will further impact the limited annual maintenance dollars as displayed in Table 151, trails added to the system could be maintained using NFTS funds or other funding sources (e.g., grants, partnerships, volunteers, etc.). These costs are associated with annual maintenance and deferred maintenance costs for roads. Initial implementation costs would be greatest in the short term, but overall costs related to road maintenance would decrease over time with a smaller inventory of NFTS roads in the long-term. Maintenance would be prioritized to maintain roads to minimum acceptable standard.

Summary of Effects Analysis across All Alternatives

Table 149. Public safety measurement indicator – proposed additions and changes to the existing transportation system on the Smith River NRA by alternative

Public Safety Measurement Indicator (Miles)	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
1B. Miles of unauthorized trails added to the NFTS	0	43.98	65.49	10.97	42.80
1C. NFTS motorized trails with changes to the season of use	0	11.22	38.87	2.21	39.18

The affordability table below displays the estimated cost to perform annual maintenance on all existing NFTS roads and trails by alternative. Section 2B displays the estimated implementation changes to the existing NFTS by alternative.

Table 150. Affordability measurement indicator – proposed additions and changes to the existing transportation system on the Smith River NRA by alternative

Affordability Measurement Indicators	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Existing NFTS Roads (miles)	482.87	482.87	482.87	482.87	482.87
Existing NFTS Trails (miles)	12.4	12.4	12.4	12.4	12.4
Net Changes to NFTS Roads (miles)	0	-34.87	-47.72	-47.07	-44.17
Net Changes to NFTS Trails (miles)	0	43.98	65.49	10.97	42.80
2A. Annual and Proposed Maintenance Costs of System:					
Existing/Proposed Annual Maintenance for Roads	$697,186	$684,051	$687,819	$641,432	$679,443
Existing Annual Maintenance for Trails	$12,400	$12,400	$12,400	$12,400	$12,400
Proposed Additional Annual Maintenance for Trails	$0	$43,980	$65,490	$10,970	$42,800
Subtotal	$709,586	$740,431	$744,199	$664,802	$736,643
2B. Implementation Costs of Design Features:					
Unauthorized routes added as NFTS motorized trails including costs of mitigations	$0	$53,300	$70,100	$13,700	$51,500
Cost mixed-use on ML3+ roads	$0	$344,340	$46,715	$0	$46,715
Gates and/or Barricade Installation	$0	$194,000	$289,500	$237,500	$284,000
Cost of implementing MVUM	$0	$37,800	$37,800	$37,800	$37,800
Cost of Decommissioning	$0	$5,973,964	$5,125,527	$5,952,459	$6,056,305
Parking Lots	$0	$0	$95,878	$8,229	$83,646
Stormproofing	$0	$648,000	$776,000	$176,000	$648,000
Subtotal	$0	$7,251,404	$6,441,520	$6,425,688	$7,207,966
Monitoring Costs	$0	$11,105	$11,105	$11,105	$11,105
Total Est. cost by Alternative	$709,586	$8,002,940	$7,196,824	$7,101,595	$7,955,714
Cost Difference from No Action Alternative	$0	$7,293,354	$6,487,238	$6,392,009	$7,246,128

Table 151 displays the Six Rivers National Forest annual available funding for NFTS roads and trails from FY 2005 to FY 2009. Approximately one-quarter of the funding is used of the Smith River NRA.

Table 151. Funding history for the Six Rivers National Forest

Year	Roads (CMRD)	Roads (CWFS)	Roads Other	Trails (CMTL)	Trails Other	Total Funds by Year
2009	$1,092,000	$320,000	$734,931	$66,000	$127,537	$2,340,468
2008	$1,028,000	$167,033	$982,181	$149,000	$148,645	$2,475,059
2007	$1,434,000	$283,805	$1,043,435	$77,460	$189,896	$3,028,596
2006	$690,000	$166,000	$0	$191,450	$101,694	$1,423,205
2005	$660,482	$140,000	$413,797	$87,392	$66,565	$1,368,236

Table 152. Transportation facilities effects summary

Indicators – Transportation	Rankings of Alternatives for each Indicator[a]				
	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Public Safety[a]	2	3	1	5	4
Transportation System Affordability	4	1	2	5	3
Average for Transportation (rank)	3 (3)	2 (2)	1.5 (1)	5 (5)	3.5 (4)

a - For safety a score of 5 indicates the alternative safest (least risk); a score of 1 indicates the alternative is the least safe (highest risk). For transportation facilities a score of 5 indicates the alternative with the least annual cost; a score of 1 indicates the alternative has the most annual cost (highest cost).

Visual Resources

Introduction

This section of the Motorized Travel Management environmental analysis examines the extent to which alternatives respond to visual resources management direction established in the Six Rivers National Forest Land and Resource Management Plan (Forest Plan) and the Travel Management (TM) Rule. The Forest Plan visual resources direction was established under the implementing regulations of the National Forest Management Act (NFMA).

In the development of the Six Rivers National Forest's Land and Resource Management Plan (Forest Plan), the Forest's visual resources were inventoried to determine the landscape's scenic attractiveness (Variety Class inventory) and the public's visual expectations (Sensitivity Level inventory). Based upon these inventories, Visual Quality Objectives (VQOs) were established for all forest land areas. The VQOs establish minimum acceptable thresholds for landscape alterations from an otherwise natural-appearing forest landscape. For example, areas with a Retention VQO are expected to retain a natural appearance; areas with a Partial Retention VQO may have some alterations, but they remain subordinate to the characteristic landscape; areas with a Modification VQO can have alterations that do not look natural appearing.

Roads and trails create linear alterations in landscapes that can be mitigated through sound design. Unmitigated, they present uncharacteristic line qualities in forest landscapes. Landscapes with a dense canopy cover have the capability of masking these linear alterations; sparsely covered landscapes have less capability. The proliferation of unauthorized routes, particularly in sparsely covered landscapes, can adversely affect the Forest's visual resources.

Analysis Framework: Statute, Regulation, Forest Plan, and Other Direction

Direction relevant to the proposed action as it affects visual resources includes:

National Forest Management Act (NFMA) The National Forest Management Act (NFMA), and its implementing regulations, required the inventory and evaluation of the forest's visual resource, addressing the landscape's visual attractiveness and the public's visual expectations. Management prescriptions for definitive lands areas of the forest are to include Visual Quality Objectives.

Travel Management Rule The TM Rule does not cite aesthetics specifically, but in the designation trails or areas, the responsible official shall consider effects on forest resources, with the objective of minimizing effects of motor vehicle use.

Six Rivers National Forest Plan The Forest Plan contains forest-wide management direction in the form of Visual Quality Objectives and specific management area direction for visual resources. The forestwide goal for visual resources is to "Manage Forest lands to achieve visual quality commensurate with public uses. The Forest will implement a program of visual resource management that will emphasize the maintenance of the undisturbed or near undisturbed character of the landscape within the viewsheds adjacent to heavily used recreation travel routes or use areas" (IV-131). Forest-wide visual standards and guidelines in the Forest Plan applicable to Motorized Travel Management include 17 Management Areas identified in the Six Rivers Forest Plan, two of which provide guidelines for this process, MA 13 Retention and MA 16 Partial Retention. The goal of MA 13 Retention is to "maintain the area in a natural or near natural appearing condition." (IV-56) The goal of MA Partial Retention is to "maintain the area in a near-natural appearing condition." (IV-62)

Effects Analysis Methodology

This section focuses on the assumptions, methodologies, and indicators used to determine the visual effects of the proposed alternatives. There are three discrete actions common to all action alternatives: (1) The addition of facilities (unauthorized roads and trails) to the NFTS, including identifying seasons of use and vehicle class; and (2) Changes to the existing NFTS (including removing facilities from the NFTS, changing maintenance levels of authorized roads and adding wet weather road closures.); and (3) restoration of unauthorized routes.

Agriculture Handbook Number 462 (USDA Forest Service, 1974) describes the basic landscape management concepts used by the Forest Service for the management of visual resources. The basic visual terminology used to describe landscape character include form, line, color, and texture. For classification, analysis, and inventory of the visual resource, landscape viewing is identified by the distance zones of foreground (0 to .5 miles), middleground (.5 to 4 miles), and background (4 miles to horizon).

All National Forest lands are assigned a visual quality objective (VQO). USDA Forest Handbook Number 462 provides a description of the VQOs used for the visual management of lands administered by the Forest:

- Preservation VQO– Only allows for ecological changes. Management activities, except for very low visual impact recreation facilities are prohibited. (USDA Forest Service 1974)
- Retention VQO– Provides for management activities that are not visually evident. Activities may only repeat form, line, color and texture, which are frequently found in the characteristic landscape. (USDA Forest Service 1974)

- Partial Retention VQO– Activities may be evident, but must remain visually subordinate to the landscape. Activities may also introduce form, line, color, or texture which are found frequently or not at all in the characteristic landscape but they should remain subordinate to the visual strength of the characteristic landscape. (USDA Forest Service 1974)
- Modification – Management activities may visually dominate the characteristic landscape but should borrow from naturally established from, line, color, or texture. (USDA Forest Service 1974)

Assumptions Specific to Visual Resources Analysis

- Based upon the review of the Forest Plan, the basic Measurement Indicator for the visual resources is Compliance with the Retention and Partial Retention VQOs, which are delineated as specific management areas in the Forest Plan.
- NFTS additions that contribute to the continuity of motor touring will have a beneficial effect on visual resources, since it is assumed that there will be less user-created routes across the landscape.
- Off highway vehicle use on the Smith River NRA is currently permitted only on designated routes. (Forest Plan, Smith River NRA Management Plan-p.8)
- Maintenance Level 2 Roads (ML2 roads maintained for high-clearance vehicles) are already open to mixed-use.
- Maintenance Level 1 roads are closed to the public, open for administrative use only.
- Unauthorized routes being proposed as additions to the NFTS have already generated a pre-existing footprint on the visual resource. In many cases the UARs have been and continue to be used by Forest visitors who seek to engage in motorized and nonmotorized recreation opportunities, as well as access for cultural uses, fuel wood, gathering, and hunting.
- No motorized trails or roads will be added within Preservation VQO since this VQO is assigned to wilderness. Modification VQO is not analyzed because it allows for alterations such as roads that do not appear natural.
- Proposals for season of use, vehicle class restrictions, and parking and do not cause physical impositions that are permanent on the landscape, and therefore do not affect scenic quality in terms of VQOs.
- Restoration of unauthorized routes and road decommissioning promotes natural re-vegetation of the travelway and has a beneficial effect on scenery.
- Routine maintenance of NFTS roads and trails do not affect scenic quality in terms of VQOs.

Data Sources

- Forest Plan for distribution of VQOs and identification of scenic Viewsheds.
- Six Rivers National Forest National Visitor Use Monitoring Results Report FY 2008.
- GIS layers and associated tabular data sets of the following data: NFTS routes and UARs within each VQO and for each Alternative.
- Six Rivers National Forest VQO map used in conjunction with the Forest Plan and the Visual Management System concepts.

Visual Resources Indicators:

- The extent to which the proposed NFTS falls within the Retention and Partial Retention VQOs (number of miles traversing landscapes that are to remain natural to near-natural appearing in

character). Number of key viewsheds that are or have the potential to be affected by motor vehicle travel.

- Total miles of unauthorized routes or existing NFTS roads proposed for restoration/decommissioning with Retention and Partial Retention VQOs.

Visual Resources Methodology by Action

1. Direct and indirect effects of adding facilities (presently unauthorized roads, trails) to the NFTS, including identifying seasons of use and vehicle class.

Adding facilities can have a beneficial effect on the motorized vehicle experience if the additions contribute to the continuity of the motor-touring experience. Direct and indirect effects to the visual resource are evaluated by the extent to which the proposed NFTS falls within the Retention and Partial Retention VQOs (number of miles traversing landscapes that are to remain natural to near-natural appearing in character).

Short-term timeframe: 1 year

Long-term timeframe: 20 years.

Spatial boundary: The "viewshed" is the unit of spatial analysis when considering effects associated with changes in the NFTS or season of use.

Indicator(s): The extent to which the proposed NFTS falls within the Retention and Partial Retention VQOs (number of miles traversing landscapes that are to remain natural to near-natural appearing in character).

Methodology: GIS analysis of added routes in relation to Retention and Partial Retention VQOs. Input from Resource Specialists who have field reviewed routes.

Rationale: Compliance with the Retention and Partial Retention Visual Quality Objectives (VQOs).

2. Direct and indirect effects of decommissioning roads on the NFTS, and restoring drainage patterns on unauthorized routes.

Decommissioning of roads with Retention and Partial Retention VQOs would have a beneficial effect on visual resources over the long-term timeframe through the natural rehabilitation of former NFTS roads.

Closure and restoration of UARs would have a beneficial effect on visual resources over the long-term timeframe. Erosion on UARs would be mitigated, thereby reducing rutting and run-off that may visually impact the landscape. The routes would revegetate and naturalize over time.

Short-term timeframe: 1 year

Long-term timeframe: 10-20 years.

Spatial boundary: The "viewshed" is the unit of spatial analysis when considering effects associated with changes in the NFTS or season of use.

Indicator(s): The extent to which the proposed NFTS falls within the Retention and Partial Retention VQOs (number of miles traversing landscapes that are to remain natural to near-natural appearing in character).

Methodology: GIS analysis of added routes in relation to Retention and Partial Retention VQOs. Input from Resource Specialists who have field reviewed routes.

Rationale: Compliance with the Retention and Partial Retention Visual Quality Objectives (VQOs).

3. Direct and indirect effects of changing maintenance levels and season of use on the existing NFTS

Changes to maintenance levels and season of use would have no effect on visual resources, and are therefore not addressed in the Environmental Consequences section.

Cumulative Effects

The cumulative effects analysis for the visual resource considers the impact of the alternatives when combined with past, present, and foreseeable future actions. The temporal scope is 10-20 years because it is the approximate length of time for natural rehabilitation of unauthorized routes.

Short-term timeframe: Not applicable; cumulative effects analysis will be done only for the long-term time frame.

Long-term timeframe: 10-20 years.

Spatial boundary: The “viewshed” is the unit of spatial analysis for determining cumulative effects.

Indicator(s): Number of key viewsheds that are or have the potential to be adversely affected by motor vehicle travel. Number of key viewsheds that may benefit from route restoration and road decommissioning.

Methodology: Identify key forest viewsheds (scenic byway corridors, etc.). Identify whether any of these key viewsheds are or have the potential to be adversely affected by motor vehicle travel and number of key viewsheds that may benefit from route restoration and road decommissioning.

Rationale: Compliance with the Retention and Partial Retention Visual Quality Objectives (VQOs).

Affected Environment

From a visual perspective, Smith River NRA has diverse landscapes with many areas of high scenic quality including the Wild and Scenic Smith River, steep forested mountains, and the Smith River Scenic Byway. The area exhibits tremendous diversity including: dense stands of mixed conifers and hardwoods; sparsely vegetated, high elevation plateaus; and high peaks and meadows. Because of this diversity, the Smith River National Recreation Area (NRA) is well-suited for a variety of uses.

The scenic qualities of the overall Forest have changed over the last 100 years, from an undisturbed appearing landscape to one modified by human activities such as timber harvest and road construction. Wildfires and the historic needs to move goods and people through the landscape have also modified its appearance. Utility lines, and mining have affected the undisturbed appearance of the Forest to a lesser extent.

Forest scenery and its condition are of high importance to forest visitors. In the 2008 National Visitor Use Monitoring survey, visitors rated the forest scenery condition as good to very good; on a mean scale of importance with 5.0 as highest, scenery was ranked at or above 4.0. During their visits to the Forest, viewing natural features was one of the top three recreation activities while driving for pleasure ranked sixth.

Table 153. Project area by VQOs

VQO	Acres in Project Area	Percent
Preservation	82	00.03%
Partial Retention	60,062.8	22.18%
Retention	44,044.4	16.27%
Modification	166.601.5	62.52%
Total	270,790.7	

Table 154. VQO baseline and proposed mileage additions to NFTS within retention and partial retention VQOs by alternative

VQO	Current NFTS (miles)	Current UAR (miles)	Alternative 3 Miles Added	Alternative 4 Proposed (mile)s	Alternative 5 Proposed (mile)s	Alternative 6 Proposed (mile)s
Preservation	120	0.04	0	0	0	0
Retention	47.6	20.3	2.9	6.1	2.2	4.9
Partial Retention	0	31.7	13.4	13.7	5.5	10.5
Modification	285.2	99.3	40.2	54.1	11.6	38.6
Total	452.8	151.34	56.5	73.9	19.3	54

Table 155. Miles of proposed UAR restoration within retention and partial retention VQOs by alternative

VQO	Alternative 1 Miles Reduced	Alternative 3 Miles Reduced	Alternative 4 Miles Reduced	Alternative 5 Miles Reduced	Alternative 6 Miles Reduced
Preservation	0	.04	.04	.04	.04
Retention	0	13.9	12.6	17.6	14.9
Partial Retention	0	15.2	14.8	26	21.1
Modification	0	50	40.9	88.8	61.8
Total	0	79.14	68.34	132.44	97.84

Table 156. Proposed NFTS mileage to be decommissioned within retention and partial retention VQOs by alternative

VQO	1 Proposed Mile(s)	3 Proposed Mile(s)	4 Proposed (mile)s	5 Proposed (mile)s	6 Proposed (mile)s
Preservation	0	0	0	0	0
Retention	0	4.6	4.5	4.5	4.5
Partial Retention	0	11.4	11.4	11.4	11.7
Modification	0	34.6	34.30	34.3	35.5
Total	0	50.6	50.2	50.2	51.7

Table 157. Summary table of changes to motorized travel opportunities in retention/partial retention VQOs

VQO	Current NFTS (miles)	Current UAR (miles)	Alternative 3 Proposed Miles Added	Alternative 4 Proposed Miles Added	Alternative 5 Proposed Miles Added	Alternative 6 Proposed Miles Added
Proposed added miles-Retention/Partial Retention	0	0	16.3	19.8	7.7	15.4
Proposed miles Decommissioned/Closed-Retention/Partial Retention	0	0	16	15.9	15.9	16.2
Net Change of Miles	0	0	+.3	+3.9	-8.2	-.8

Environmental Consequences

See the effects methodology section above regarding how this analysis was conducted.

Alternative 1 - No Action

Direct and Indirect Effects

Additions to the NFTS

No additions to the NFTS would be proposed. This alternative would have a negative effect to visual resources over the long-term time frame.

Decommissioning Roads on the NFTS, and Restoring Unauthorized Routes

Since no existing NFTS routes would be decommissioned and no UARs restored, this alternative would have a negative effect to visual resources over the long-term time frame.

Cumulative Effects

The cumulative effects analysis for the visual resource considers the impact of the alternatives when combined with the following past, present, and foreseeable future actions. Projects with decisions or proposals to close or add routes, fuels and vegetation treatment, timber management and vegetation treatment, minerals and geology, special uses and lands management, recreation, fish/wildlife/rare plant management and road/watershed management have been considered. Forest management activities that have the potential for affecting the visual resource, such as vegetation management projects, are expected to comply with visual resource direction in the Forest Plan.

The temporal scope is 10-20 years because it is the approximate length of time for natural rehabilitation of unauthorized routes.

Past activities have formed the current landscape aesthetics and recreation opportunities. Recreation activities and developments and travel management activities, including the existing NFTS, most often form the viewing platform and opportunities for viewing scenery.

This Alternative does not propose any decommissioning of existing NFTS routes nor any restoration of UARs. Cumulatively, the effects of no action along with the past, present, and reasonably foreseeable future actions could result in a more unnatural appearing landscape characteristics resulting in lower VQO

ratings that do not meet the Retention or Partial Retention VQO along the Forest key viewsheds. Although the majority of the district would continue to have a natural appearance, it is anticipated that the Alternative 1, the no action alternative, would result in an increase in forest lands which appear altered.

Alternative 3

Summary of Action

- NFTS roads: Adds approximately 14 miles:
  - Approximately 2.94 miles in Retention VQO
  - Approximately 4 miles in Partial Retention VQO
- NFTS motorized trails: Adds approximately 42 miles of motorized trails:
  - Approximately .1 miles in Retention VQO
  - Approximately 9.4 miles in Partial Retention VQO
- Decommissions approximately 51 miles of roads and trails
  - Approximately 4.6 miles in Retention VQO
  - Approximately 11.4 miles in Partial Retention VQO
- Restores approximately 79 miles of unauthorized routes
  - Approximately .04 miles in Preservation VQO
  - Approximately 14 miles in Retention VQO
  - Approximately 15 miles in Partial Retention VQO

Table 158. Alternative 3 summary of proposed actions within retention and partial retention VQOs (by miles)

Alternative 3	Preservation	Retention	Partial Retention	Modification	TOTAL
UARs Added to NFTS					
UAR to Level 1 Road	0	0.15	0.9	5	6.05
UAR to Level 2 Road	0	2.15	3.1	2.35	7.6
UAR to Level 3 Road	0	0.54	0	0	0.54
UAR to Motorized Trail	0	0.1	9.4	32.8	42.3
TOTAL	0	2.94	13.4	40.15	56.49
UARs Restored	0.04	13.9	15.2	50	79.14
NFTS Decommissioned	0	4.6	11.4	34.6	50.6

Direct and Indirect Effects

Additions to the NFTS

Overall Change to NFTS in Retention/Partial Retention VQOs = additional 0.3 miles: When the number of miles of roads proposed for closure or decommissioning is subtracted from proposed additions to NFTS the net change in in Retention/Partial Retention VQOs miles is an additional 0.3 miles (Table 157). Unauthorized routes proposed as additions to the NFTS have already generated a pre-existing

footprint on the visual resource. The proposed route additions may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes, should allow these roadside scenes to meet their prescribed VQO of retention or partial retention.

Decommissioning Roads on the NFTS, and Restoring Unauthorized Routes

This Alternative proposes decommissioning approximately 16 miles roads in Retention and Partial Retention VQO. This would have a beneficial effect on Forest visual resources over the long-term timeframe through the natural rehabilitation of former NFTS roads.

This Alternative proposes restoration of approximately 29 miles of UARs within Retention and Partial Retention VQOs. This would have a beneficial effect on visual resources over the long-term timeframe. Erosion on UARs would be mitigated, thereby reducing rutting and run-off that may visually impact the landscape. The routes would revegetate and naturalize over time.

Cumulative Effects

See the cumulative effects section under Alternative 1 for the past, present, and reasonably foreseeable future actions considered.

Unauthorized routes proposed as additions to the NFTS have already generated a pre-existing footprint on the visual resource. The proposed routes may be noticeable in the foreground distance zone, but generally these activities will remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes, should allow these roadside scenes to meet their prescribed VQO of retention or partial retention.

This alternative proposes closure and decommissioning of designated NFTS roads and restoration of designated UARs in Retention and Partial Retention VQOs. This will generally result in a more naturally appearing landscape in the long-term. Other Forest management activities that have the potential for affecting the visual resource, such as vegetation management projects, are expected to comply with visual resource direction in the Forest Plan. The majority of the district would continue to have a natural appearance, and the visually impacted areas would continue to rehabilitate, resulting in a more natural-appearing landscape.

It is anticipated that this alternative along with past, present, and reasonably foreseeable future actions would result in no adverse cumulative effects to visual resources.

Alternative 4

- Adds approximately 16 miles inventoried UARs as NFTS roads:
  - Approximately 3.5 miles in Retention VQO
  - Approximately 3.9 miles in Partial Retention VQO

- Adds approximately 58 miles inventoried UARs as NFTS motorized trails:
  - Approximately 2.6 miles in Retention VQO
  - Approximately 9.8 miles in Partial Retention VQO
- Decommissions approximately 50 miles of roads and trails
  - Approximately 4.5 miles in Retention VQO
  - Approximately 11.4 miles in Partial Retention VQO
- Restores approximately 68 miles of unauthorized routes
  - Approximately .04 miles in Preservation VQO
  - Approximately 12.6 miles in Retention VQO
  - Approximately 14.8 miles in Partial Retention VQO

Table 159. Alternative 4 summary of proposed actions within retention and partial retention VQOs (by miles)

Alternative 4	Preservation	Retention	Partial Retention	Modification	Total
UARs Added to NFTS					
UAR to Level 1 Road	0	0.15	0	2.3	2.45
UAR to Level 2 Road	0	2.8	3.9	6	12.7
UAR to Level 3 Road	0	0.54	0	0	0.54
UAR to Motorized Trail	0	2.6	9.8	45.8	58.2
TOTAL	0	6.1	13.7	54.1	73.9
UAR Restored	0.04	12.6	14.8	40.9	68.34
NFTS Decommissioned	0	4.5	11.4	34.3	50.2

Direct and Indirect Effects

Additions to the NFTS

Overall Change to NFTS in Retention/Partial Retention VQOs = additional 3.9 miles: When number of miles of roads proposed for closure or decommissioning is subtracted from proposed additions to NFTS, the net change within Retention/Partial Retention VQOs miles is an additional 3.9 miles (Table 157).

Compared with the other action Alternatives, this Alternative proposes to add the most miles to the NFTS within Retention and Partial Retention VQOs. The proposed routes may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes, should allow these roadside scenes to meet their prescribed VQO of Retention or Partial Retention.

Decommissioning Roads on the NFTS, and Restoring Unauthorized Routes

This Alternative proposes decommissioning approximately 15.9 miles roads in Retention and Partial Retention VQO. This would have a beneficial effect on Forest visual resources over the long-term timeframe through the natural rehabilitation of former NFTS roads.

This Alternative proposes restoration of approximately 27.4 miles of UARs within Retention and Partial Retention VQOs. This would have a beneficial effect on visual resources over the long-term timeframe. Erosion on UARs would be mitigated, thereby reducing rutting and run-off that may visually impact the landscape. The routes would revegetate and naturalize over time.

When compared to the other action Alternatives, Alternative 4 proposes to restore the least number of miles of UARs within Retention and Partial Retention VQOs.

Cumulative Effects

See the cumulative effects section under Alternative 1 for the past, present, and reasonably foreseeable future actions considered.

More motorized routes would be present on the landscape than proposed in the other action Alternatives. The unauthorized routes proposed as additions already generate a pre-existing footprint on the visual resource. The proposed routes may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes should allow these roadside scenes to meet their prescribed VQO of Retention or Partial Retention.

This Alternative proposes closure and decommissioning of designated NFTS roads and restoration of designated UARs in Retention and Partial Retention VQOs. This will generally result in a more naturally appearing landscape in the long-term. Other Forest management activities that have the potential for affecting the visual resource, such as vegetation management projects, are expected to comply with visual resource direction in the Forest Plan. The majority of the district would continue to have a natural appearance, and the visually impacted areas would continue to rehabilitate, resulting in a more natural-appearing landscape.

Compared with the other action Alternatives, this Alternative proposes to add the most miles to the NFTS and restore the least number of miles of UARs within Retention and Partial Retention VQOs.

It is anticipated that this alternative along with past, present, and reasonably foreseeable future actions would likely result in minimal to no adverse cumulative effects to visual resources.

Alternative 5

- Adds approximately 8.5 miles inventoried UARs as NFTS Roads
  - Approximately 1.9 miles of in Retention VQO
  - Approximately 1.4 miles in Partial Retention VQO
- Adds approximately 11 miles inventoried UARs as NFTS Motorized Trails:
  - Approximately .2 miles in Retention VQO

  - Approximately 4.1 miles in Partial Retention VQO
- Decommissions approximately 50 miles of roads and trails
  - Approximately 4.5 miles in Retention VQO
  - Approximately 11.4 miles in Partial Retention VQO
- Restores approximately 132.44 miles of unauthorized routes
  - Approximately .04 miles in Preservation VQO
  - Approximately 17.6 miles in Retention VQO
  - Approximately 26 miles in Partial Retention VQO

Table 160. Alternative 5 summary of proposed actions within retention and partial retention VQOs (by miles)

Alternative 5	Preservation	Retention	Partial Retention	Modification	Total
UARs Added to NFTS					
UAR to Level 1 Road	0	0.15	0.9	4	5.05
UAR to Level 2 Road	0	1.3	0.5	1	2.8
UAR to Level 3 Road	0	0.54	0	0	0.54
UAR to Motorized Trail	0	0.2	4.1	6.6	10.9
TOTAL	0	2.2	5.5	11.6	19.3
UAR Restored	0.04	17.6	26	88.8	132.44
NFTS Decommissioned	0	4.5	11.4	34.3	50.2

Direct and Indirect Effects

Additions to the NFTS

Overall Change to NFTS in Retention/Partial Retention VQO= reduction of 8.2 miles: When the number of miles of roads and trails proposed for closure or decommissioning is subtracted from proposed additions to NFTS, the overall change within Retention/Partial Retention VQOs miles is a reduction of 8.2 miles (Table 157).

Compared with the other action Alternatives, this Alternative proposes to add the least number of miles to the NFTS within the Retention and Partial Retention VQOs. As with the other action Alternatives, the unauthorized routes proposed as additions already generate a pre-existing footprint on the visual resource. The proposed routes may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes should allow these roadside scenes to meet their prescribed VQO of Retention or Partial Retention.

Decommissioning Roads on the NFTS, and Restoring Unauthorized Routes

This Alternative proposes decommissioning approximately 15.9 miles roads in Retention and Partial Retention VQO. This would have a beneficial effect on Forest visual resources over the long-term timeframe through the natural rehabilitation of former NFTS roads.

In comparison to the other action Alternatives, Alternative 5 proposes restoration on the greatest number of miles (approximately 43.6 miles) of UARs within Retention and Partial Retention VQOs. This would have a beneficial effect on visual resources over the long-term timeframe. Erosion on UARs would be mitigated, thereby reducing rutting and run-off that may visually impact the landscape. The routes would revegetate and naturalize over time.

Cumulative Effects

See the cumulative effects section under Alternative 1 for the past, present, and reasonably foreseeable future actions considered.

When compared with the other action Alternatives, this Alternative proposes to add the least number of miles to the NFTS within the Retention and Partial Retention VQOs. As with the other action Alternatives, the unauthorized routes proposed as additions already generate a pre-existing footprint on the visual resource. The proposed routes may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes should allow these roadside scenes to meet their prescribed VQO of Retention or Partial Retention.

This Alternative proposes decommissioning approximately 15.9 miles roads in Retention and Partial Retention VQO. This would have a beneficial effect on Forest visual resources over the long-term timeframe through the natural rehabilitation of former NFTS roads.

This Alternative proposes restoration of the greatest number of miles of UARs within Retention and Partial Retention VQOs. Closure and restoration of UARs would have a beneficial effect on visual resources over the long-term timeframe. Erosion on UARs would be mitigated, thereby reducing rutting and run-off that may visually impact the landscape. The routes would revegetate and naturalize over time. It is anticipated that this alternative along with past, present, and reasonably foreseeable future actions would likely result in no adverse cumulative effects to visual resources.

Alternative 6

- Adds approximately 11.5 miles inventoried UARs as NFTS Roads:
  - Approximately 3.4 miles of in Retention VQO
  - Approximately 1.3 miles in Partial Retention VQO
- Adds approximately 42.5 miles inventoried UARs as NFTS Motorized Trails:
  - Approximately 1.5 miles in Retention VQO
  - Approximately 9.2 miles in Partial Retention VQO
- Decommissions approximately 51.7 miles of roads and trails:
  - Approximately 4.5 miles in Retention VQO

- Approximately 11.7 miles in Partial Retention VQO

- Restores approximately 97.8 miles of UARs:
  - Approximately .04 miles in Preservation VQO
  - Approximately 14.9 miles in Retention VQO
  - Approximately 21.1 miles in Partial Retention VQO

Table 161. Alternative 6 summary of proposed actions within retention and partial retention VQOs (by miles)

Alternative 6	Preservation	Retention	Partial Retention	Modification	Total
UARs Added to NFTS					
UAR to Level 1 Road	0	0.15	0.9	5.2	6.2
UAR to Level 2 Road	0	2.8	0.4	1.6	4.8
UAR to Level 3 Road	0	0.54	0	0	0.5
UAR to Motorized Trail	0	1.5	9.2	31.8	42.5
TOTAL	0	4.9	10.5	38.6	54
UAR Restored	0.04	14.9	21.1	61.8	97.84
NFTS Decommissioned	0	4.5	11.7	35.5	51.7

Direct and Indirect Effects

Additions to the NFTS

Overall Change to NFTS in Retention/Partial Retention VQO= Reduction of 0.8 miles: When the number of miles of roads and trails proposed for closure or decommissioning is subtracted from proposed additions to NFTS, the overall change within Retention/Partial Retention VQOs miles is a reduction of 0.8 miles (Table 157).

As with the other action Alternatives, the unauthorized routes proposed as additions already generate a pre-existing footprint on the visual resource. The proposed routes may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes should allow these roadside scenes to meet their prescribed VQO of Retention or Partial Retention.

Decommissioning Roads on the NFTS, and Restoring Unauthorized Routes

This Alternative proposes decommissioning approximately 16.2 miles roads in Retention and Partial Retention VQO. This would have a beneficial effect on Forest visual resources over the long-term timeframe through the natural rehabilitation of former NFTS roads. This Alternative proposes restoration of approximately 36 miles of UARs within Retention and Partial Retention VQOs. Closure and restoration of UARs would have a beneficial effect on visual resources over the long-term timeframe.

Erosion on UARs would be mitigated, thereby reducing rutting and run-off that may visually impact the landscape. The routes would revegetate and naturalize over time.

Cumulative Effects

As with the other action Alternatives, the unauthorized routes proposed as additions already generate a pre-existing footprint on the visual resource. The proposed routes may be noticeable in the foreground distance zone, but generally these activities remain subordinate to the characteristic landscape due to topographic and vegetative screening. If and when seen, these routes will typically appear as any other forest road or trail (such as unimproved, natural-surfaced temporary roads or trails that may resemble physically Forest Service ML 1 or 2 roads or motorized trails). When the proposed route intersects existing NFTS roads and trails, the route would be seen briefly by the casual observer traveling the NFTS roads and trails at the posted speed limits. The short duration for observation, in addition to the low development level and quality of the routes should allow these roadside scenes to meet their prescribed VQO of Retention or Partial Retention.

This Alternative proposes closure and decommissioning of designated NFTS roads and restoration of designated UARs in Retention and Partial Retention VQOs. This will generally result in a more naturally appearing landscape in the long-term. Other Forest management activities that have the potential for affecting the visual resource, such as vegetation management projects, are expected to comply with visual resource direction in the Forest Plan. The majority of the district would continue to have a natural appearance, and the visually impacted areas would continue to rehabilitate, resulting in a more natural-appearing landscape.

It is anticipated that this alternative along with past, present, and reasonably foreseeable future actions would likely result in no adverse cumulative effects to visual resources.

Summary of Effects Analysis across All Alternatives

The following table summarizes the effect analysis by ranking each alternative regarding how well it addresses the visual quality objectives along key viewsheds. Rankings are scored on a scale of 1 to 5 from greatest (1) to least (5) impact.

Table 162. Summary of effects by alternative

Indicators – Visual Resources	Alt. 1	Alt. 3	Alt. 4	Alt. 5	Alt 6
Disturbance/Integrity: Compliance with the Retention and Partial Retention VQOs.	1	5	4.5	5	5
Key Viewsheds Affected by Proposed NFTS	1	4.5	4	5	4.5
Average for Visual Resources (rank)	1 (1)	4.75 (4)	4.25 (3)	5 (5)	4.75 (4)

Note: A score of 5 indicates the alternative is the best for visual resources related to the indicator; a score of 1 indicates the alternative is the worst for visual resources related to the indicator

Compliance with the Forest Plan and Other Direction

All action alternatives comply with the Six Rivers Forest Plan and other regulatory direction, although in the long term, Alternative 1 would have the most impacts to the visual resource.

Short-term Uses and Long-term Productivity

NEPA requires consideration of “the relationship between short-term uses of man’s environment and the maintenance and enhancement of long-term productivity” (40 CFR 1502.16). As declared by the

Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

Alternatives 5, 6, 3, and 4, from most to least, have the potential to improve long-term productivity by reducing the number of miles of unauthorized routes on the landscape. Routes that are not designated for public motor vehicle use will have the potential to revert to vegetated conditions.

Unavoidable Adverse Effects

Implementation of any action alternative could cause some adverse environmental effects that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources. Some adverse effects are short term and necessary to achieve long-term beneficial effects. Many adverse effects can be reduced, mitigated, or avoided by limiting the extent or duration of effects. The interdisciplinary procedure used to identify specific roads and unauthorized routes was designed to eliminate or lessen the significant adverse consequences to resource protection standards of the Six Rivers National Forest Plan. The application of mitigation measures was intended to further limit the extent, severity, and duration of potential effects. Such measures are discussed throughout this chapter.

Implementation of any of the alternatives would result in some unavoidable adverse environmental effects. Although formation of the action alternatives included avoidance of some potential adverse effects, other adverse effects could occur that cannot be completely mitigated. The environmental consequences section for each resource area discusses these effects, if applicable.

Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road. There are no irreversible or irretrievable commitments of resources expected as a result of this project.

Legal and Regulatory Compliance

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with …other environmental review laws and executive orders.” The proposed action and alternatives must comply with following:

Principle Environmental Laws

The following laws contain requirements for protection of the environment that apply to the proposed action and alternatives:

Endangered Species Act

Clean Water Act

Clean Air Act

National Historic Preservation Act

Coastal Zone Management Act

National Forest Management Act

- 10 Findings Pertaining to Timber Harvest
- Soil Productivity
- Management Indicator Species
- Other Standards and Guidelines, especially those dealing with Water Quality

Executive Orders

The following executive orders provide direction to federal agencies that apply to the proposed action and alternatives:

Indian Sacred Sites, Executive Order 13007 of May 24, 1996

Invasive Species, Executive Order 13112 of February 3, 1999

Recreational Fisheries, Executive Order 12962 of June 6, 1995

Migratory Birds, Executive Order 13186 of January 10, 2001

Floodplain Management, Executive Order 11988 of May 24, 1977

Protection of Wetlands, Executive Order 11990 of May 24, 1977

Environmental Justice, Executive Order 12898 of February 11, 1994

Use of Off-Road Vehicles, Executive Order 11644, February 8, 1972

Special Area Designations

The selected alternative will need to comply with laws, regulations and policies that pertain to the following special areas:

Research Natural Areas

Inventoried Roadless Areas

Wilderness Areas

Wild and Scenic Rivers

Municipal Watersheds (FSM 2540)

Chapter 4. Consultation and Coordination

Preparers and Contributors

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental impact statement:

ID Team Members:

Interdisciplinary Team Member	Role or Resource Area	Experience/Education
Tyrone Kelley	Line Officer	Forest Supervisor 8 years, B.S. Mechanical Engineering
Mary Kay Vandiver	Line Officer	District Ranger 12 years, B.S. Forestry and Business Administration
Christy Prescott	IDT Leader, Writer/Editor Inventoried Roadless Areas	Environmental Coordinator 4 years, B.S. Environmental Science, M.A. Social Science
Brenda Devlin	Wildlife	Wildlife Biologist 24 years, M.S. Wildlife
Mike McCain	Fisheries	Fisheries Biologist 23 years, B.S. Fisheries and M.S. Natural Resources
Corrine Black	Hydrology	Hydrologist 20 years, B.S. Forestry
Sheila Balent	Fire and Fuels	Fuels Specialist 7 years, B.S Fire Science (in progress)
Julie Ranieri	Public Affairs	Public Affairs Officer 14 years, B.S Forestry
John McRae	Botany and Noxious Weeds	Botanist 18 years, B.S. Horticulture
Julie Cassidy	Archeology	Archeologist 30 years, M.A. Anthropology
Brandy Clark	Archaeology	Archaeological Technician 2 years, B.A. Anthropology, B.A. Art History
Jennifer Peterson	GIS Support	GIS Specialist 5 years, M.S. GIS
Julia Everta	Recreation	Lands and Special Uses 13 years, M.A. Biology
Lynn Wright	Visuals	Partnership Coordinator, 2 years, B.A. Political Science
Terrah Owens	Wildlife	Wildlife Biologist 2 years, B.S. Zoology
Mike Turek	Economic	Tribal Relations 20 years, B.A. Human Ecology
Scott Haggerty	Soils	Soils Scientist 30 years, B.S. Forestry
Fred Levitan	Geology	Geologist 10 years, B.S. and M.S. (in progress) Geology
Jeff Jones	Port-Orford-cedar	Ecologist/Silviculturist 23 years, M.S Forestry/Natural Resources
Kary Schlick	Inventoried Roadless Areas	Wildlife Biologist 15 years, B.S. Zoology and Biology
Victor Dumlao	Transportation	Transportation Planner 4 years, B.S. Civil Engineering, P.E.

Federal, State, and Local Agencies:

Del Norte County Board of Supervisors

Del Norte County Sheriff's Office

National Marine Fisheries Service

U.S. Fish and Wildlife Service

State Historic Preservation Officer

Environmental Protection Agency

North Coast Regional Water Quality Control Board

Tribes:

Elk Valley Rancheria, 2332 Howland Hill Road, Crescent City, CA 95531

Yurok Tribe, 190 Klamath Blvd., PO Box 1027, Klamath, CA 95548

Resighini Rancheria, P.O. Box 529, Klamath, CA 95548

Smith River Rancheria of the Tolowa Dee-ni' Indians, 149 Rowdy Creek Road, Smith River, CA 95567

The Karuk Tribe, 64236 Second Avenue, PO Box 1016, Happy Camp, CA 96039

Distribution of the Environmental Impact Statement

This environmental impact statement has been distributed to individuals who specifically requested a copy of the document. In addition, copies have been sent to the following Federal agencies, federally recognized tribes, State and local governments, and organizations:

National Marine Fisheries Service
U.S. Fish and Wildlife Service
Environmental Protection Agency Region 9
Klamath National Forest
Rogue River Siskiyou National Forest
Elk Valley Rancheria
Yurok Tribe
Resighini Rancheria
Smith River Rancheria of the Tolowa Dee-ni' Indians
The Karuk Tribe
The State Historic Preservation Officer
North Coast Regional Water Quality Control Board
Del Norte County Board of Supervisors
Del Norte County Sheriff's Office
Del Norte County Planning Division
Blue Ribbon Coalition
Agnew Company
American Towing
Environmental Protection Information Center
Far West Motorcycle Club
Friends of Del Norte
Friends of the Kalmiopsis
Green Diamond Resource Company
HW3 LLC
Klamath Forest Alliance
JR Wood Trucking Inc.
Northcoast Cliff Hangers
Northwest Trail Riders
Northcoast Environmental Center
OHMVR Commission
Siskiyou Land Conservancy
Smith River Advisory Council

Siskiyou Project

Smith River Alliance

Wildlands CPR

Klamath Siskiyou Wildlands Center

Redwood National Park

Backcountry Horsemen

South Coast Lumber Company

Pacific Power Company

Oregon Wild

Center for Sierra Nevada Conservation

Congressman Jared Huffman

California Wilderness Coalition

Kayser Investment Group LLC.

California Native Plant Society

Environmental Policies and Procedures Committee

Private landowners with property that may be affected by the project:

Donald and Barby Edwards

Janet Didonato

Jose Luis and Cathy Caballero

Sara May Twigg

Dan and Sharol Leavitt

Micheal Mitchell

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Glossary

Terminology

The Forest Service uses the term “NFS road” and “NFS trail” (also referred to as NFS routes when combined) to refer to any road or trail that is listed on the forest transportation atlas other than a road or trail which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority. The NFS routes range from trails to arterial and collector roads, which may be paved or surfaced, to local roads that may be either improved or unimproved. The lower-level, unimproved roads are not actively maintained, but are primarily kept open by timber sale road reconstruction and vehicle use.

In addition to NFS routes on the transportation system, a number of other types of routes currently exist on the Forest. Some originated as temporary logging roads, skid trails, or firelines, which were never rehabilitated, and, over time, have remained open to use by the public, even though they are not maintained. Forest users created other roads and trails by driving cross-country through the Forest. These routes are not part of the forest transportation atlas, and, are therefore, referred to as “unauthorized routes.”

Definitions

All-terrain vehicle (ATV): A type of off-highway vehicle that travels on three or more low-pressure tires; has handle-bar steering; is less than or equal to 50 inches in width; and has a seat designed to be straddled by the operator.

Area: A discrete, specifically delineated space that is smaller, and in most cases much smaller, than a Ranger District (36 CFR 212.1).

Arterial road: An NFS road that provides service to large land areas and usually connects with other arterial roads or public highways.

Collector road: An NFS road that services smaller areas than an arterial road and that usually connects arterial roads to local roads or terminal facilities.

Designated road, trail, or area: A NFS road, NFS trail, or an area on NFS lands that is designated for motor vehicle use pursuant to 36 CFR part 212.51 on a motor vehicle use map (36 CFR 212.1).

Forest road or trail: A road or trail wholly or partially within or adjacent to and serving the NFS that the Forest Service determines is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 CFR 212.1).

Forest transportation atlas: A display of the system of roads, trails, and airfields of an administrative unit (36 CFR 212.1).

Forest transportation facility: A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

Forest transportation system: The system of NFS roads, trails, and airfields on NFS lands (36 CFR 212.1).

Green-sticker Vehicle: A motor vehicle built since 2003 which is in compliance with the 1998 California Air Resources Board off-highway vehicle exhaust emission standards and registered pursuant to California Vehicle Code Book Division 16.5, Section 38160, in addition to those built prior to 2003 and also registered pursuant to California Vehicle Code Book Division 16.5, Section 38160. Currently, the registration identification for these vehicles in the State of California comes in the form of a green sticker. These vehicles may include: motorcycles, motor driven cycles, sand buggies, dune buggies, all-terrain vehicles (ATV), or any motor vehicle commonly referred to as a jeep or four-wheel drive (4WD).

Highway-licensed vehicle: Any motor vehicle that is licensed or certified under State law for general operation on all public roads within the State. Operators of highway legal vehicles are subject to State traffic law, including requirements for operator licensing.

Local road: A NFS road that connects a terminal facility with collector roads, arterial roads, or public highways and that usually serves a single purpose involving intermittent use.

Maintenance level (ML): Defined in FSH 7709.58, 10, 12. 3 as the level of service provided by, and maintenance required for, a specific road. Maintenance levels must be consistent with road management objectives, and maintenance criteria. Roads may be maintained at one level and planned to be maintained at a different level at some future date. The maintenance level is the maintenance level currently assigned to a road considering today's needs, road condition, budget constraints, and environmental concerns; in other words, it defines the standard to which the road is currently being maintained. The objective maintenance level is the maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns.

Maintenance level 1 road: Defined in FSH 7709.58, 10, 12. 3 as intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. 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. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class, or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for nonmotorized uses. These roads have the following attributes: (1) vehicular traffic is eliminated, including administrative traffic; (2) physically blocked or entrance is disguised; (3) not subject to the requirements of the Highway Safety Act; (4) maintenance is done only to minimize resource impacts; and (5) no maintenance other than a condition survey may be required so as long as no potential exists for resource damage.

Maintenance level 2 road: Defined in FSH 7709.58, 10, 12.3 as roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles. These roads have the following attributes: (1) low traffic volume and low speed; (2) typically local roads; (3) typically connect collectors and other local roads; (4) dips are the preferred drainage treatment; (5) not subject to the requirements of the Highway Safety Act; (6) surface smoothness is not a consideration; and (7) not suitable for passenger cars.

Maintenance level 3 road: Defined in FSH 7709.58, 10, 12.3 as roads open and maintained for travel by prudent drivers in a standard passenger car. User comfort and convenience are low priorities. 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. Appropriate traffic management strategies are either “encourage” or “accept.” “Discourage” or “prohibit” strategies may be employed for certain classes of vehicles or users. These roads have the following attributes: (1) subject to the requirements of the Highway Safety Act and Manual of Uniform Traffic Control Devices (MUTCD); (2) roads have low- to moderate-traffic volume; (3) typically connect arterial and collector roads; (4) a combination of dips and culverts provide drainage; (5) may include some dispersed recreation roads; and (6) potholing or washboarding may occur.

Maintenance level 4 road: Defined in FSH 7709.58, 10, 12.3 as roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is “encourage.” However, the “prohibit” strategy may apply to specific classes of vehicles or users at certain times. These roads have the following attributes: (1) subject to requirements of the Highway Safety Act and MUTCD; (2) roads have moderate traffic volume and speeds; (3) may connect to county roads; (4) culverts provide drainage; (5) usually a collector; and (6) may include some developed recreation roads.

Maintenance level 5 road: Defined in FSH 7709.58, 10, 12.3 as roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is “encourage.” These roads have the following attributes: (1) subject to the requirements of the Highway Safety Act and MUTCD; (2) highest traffic volume and speeds; (3) typically connect State and county roads; (4) culverts provide drainage; (5) usually arterial and collector; (6) may include some developed recreation roads; and (7) usually paved or chip-sealed.

Motor vehicle: Any vehicle which is self-propelled, other than: (1) A vehicle operated on rails; and (2) Any wheelchair or mobility device that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR 212.1).

Motor vehicle use map: A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the NFS (36 CFR 212.1).

Motorized trail: A travel way usually, but not always, less than 50 inches in width usually, but not always, available for use by all-terrain vehicles (ATVs) and/or motorcycles. These travelways may also be made available to high-clearance four-wheel drive vehicles, and may also be used by bicycles, horses, and hikers.

National Forest System road: A forest road other than a road which has been authorized by a legally documented right-of-way by a State, county, or local public road authority (36 CFR 212.1).

National Forest System trail: A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county, or local public road authority (36 CFR 212.1).

Non-highway legal vehicle: Any motor vehicle that is not licensed or certified under State law for general operation on all public roads within the State. Operators of non-highway legal vehicles are subject to State requirements, if any, for licensing and operation of the vehicle in questions.

Off-highway vehicle (OHV): Any motor vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

Private road: A road under private ownership authorized by an easement granted to a private party or a road that provides access pursuant to a reserved or outstanding right.

Public road: The road under the jurisdiction of and maintained by a public road authority and open to public travel (23 U.S.C. 101 (a)).

Qualified engineer: An engineer who by experience, certification, education, or license is technically trained and experienced to perform the engineering tasks specified and is designated by the Director of Engineering, Regional Office.

Red-sticker vehicle: Vehicles built since 2003 and registered pursuant to California Vehicle Code Book Division 16.5, Section 38160, which are not in compliance with the 1998 California Air Resources Board off-highway vehicle exhaust emission standards are issued a red sticker. Use of these vehicles may be restricted to specific days of the year and to specific areas in regions throughout the state. Areas on the Eldorado National Forest with red sticker restrictions include Mace Mill – Rock Creek and Barrett Lake.

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road construction or reconstruction: Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road (36 CFR 212.1).

Road decommissioning: Activities that result in restoration of unneeded roads to a more natural state (FSM 7734).

Road maintenance: Ongoing upkeep of a road necessary to maintain or restore the road in accordance with its road management objectives (FSM 7714).

Road Subject to the Highway Safety Act: An NFS road that is open to public use in a standard passenger car, including a road with access restricted on a seasonal basis and a road closed during extreme weather conditions or for emergencies, but which is otherwise open to public travel.

Route: A road or trail.

Terminal facility: A transfer point between the forest transportation system and forest resources served by the system or between different transportation modes, including parking areas, boat ramps and docks, trailheads, marine access facilities, airfields, and heliports (FSM 7705).

Traditional Cultural Property (TCP): A traditional cultural property, can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community.

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 CFR 212.1).

Travel management atlas: An atlas that consists of a forest transportation atlas and a motor vehicle use map or maps (36 CFR 212.1).

Unauthorized route: A route that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas (36 CFR 212.1).

Acronyms

ARPA – Archaeological Resource Protection Act

BMP – Best manangement practises

CEQ – Council on Environmental Quality

CFR – Code of Federal Regulation

EA – Environmental Assessment

EIS – Environmental Impact Statement

EPA – Environmental Protection Agency

FS – Forest Service

FSH – Forest Service Handbook

FSM – Forest Service Manual

MVUM – Motor Vehicle Use Map

NAGPRA – Native American Graves Protection and Repatriation Act

NEPA – National Environmental Policy Act

NHPA – National Historic Preservation Act

NFS – National Forest System

NFTS – National Forest Transportation System

NOA – Naturally Occurring Asbestos

NRA – National Recreation Area

OHV – Off-Highway Vehicles

ML –Maintenance Level (defined below)

POC – Port-Orford-cedar

RAP – Roads Analysis Process

ROS – Recreation Opportunity Spectrum

SHPO – State Historic Preservation Officer

SPNM –Semiprimitive Nonmotorized

SPM –Semiprimitive Motorized

SRNF –Six Rivers National Forest

SRPM –Standard Resource Protection Measures

TAP –Travel Analysis Process

TCP –Traditional Cultural Property

UAR – Unauthorized Routes

Catalogue of Maps

Alternative 1 Existing National Forest Transportation System

Alternative 1 Inventoried Unauthorized routes

Alternative 3 Proposed National Forest Transportation System

Alternative 3 Restoration and Decommissioning Actions

Alternative 4 Proposed National Forest Transportation System

Alternative 4 Restoration and Decommissioning Actions

Alternative 5 Proposed National Forest Transportation System

Alternative 5 Restoration and Decommissioning Actions

Alternative 6 Proposed National Forest Transportation System

Alternative 6 Restoration and Decommissioning Actions

Appendix A. Alternative Tables

Alternative 1

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
13N27	1.60	0.00	1.60	2 - high clearance vehicles
13N35	6.15	0.25	6.40	2 - high clearance vehicles
13N35A	0.55	0.00	0.55	2 - high clearance vehicles
13N35B	0.63	0.00	0.63	2 - high clearance vehicles
13N35D	0.16	0.00	0.16	2 - high clearance vehicles
13N35E	0.27	0.00	0.27	2 - high clearance vehicles
13N35F	0.42	0.00	0.42	2 - high clearance vehicles
13N35G	0.39	0.00	0.39	2 - high clearance vehicles
13N35J	0.25	0.00	0.25	2 - high clearance vehicles
13N35K	0.28	0.00	0.28	2 - high clearance vehicles
13N35L	0.11	0.00	0.11	2 - high clearance vehicles
13N35M	0.07	0.00	0.07	2 - high clearance vehicles
13N37	2.00	0.00	2.00	2 - high clearance vehicles
13N37A	0.77	0.00	0.77	2 - high clearance vehicles
13N37B	0.27	0.00	0.27	2 - high clearance vehicles
14N01	4.61	9.60	14.21	3 - suitable for passenger cars
14N01D	1.80	0.00	1.80	2 - high clearance vehicles
14N08	0.50	0.00	0.50	2 - high clearance vehicles
14N08T	0.11	0.00	0.11	1 - basic custodial care (closed)
14N15	0.50	0.00	0.50	2 - high clearance vehicles
14N18	1.00	0.00	1.00	1 - basic custodial care (closed)
14N29	1.60	0.00	1.60	2 - high clearance vehicles
14N32	1.70	0.00	1.70	2 - high clearance vehicles
14N33	1.78	0.00	1.78	2 - high clearance vehicles
14N33A	0.22	0.00	0.22	1 - basic custodial care (closed)
14N38	0.60	0.00	0.60	2 - high clearance vehicles
14N39	1.90	0.00	1.90	2 - high clearance vehicles
14N46	2.70	0.00	2.70	2 - high clearance vehicles
14N46B	0.37	0.00	0.37	1 - basic custodial care (closed)
15N01	18.30	0.00	18.30	5 - high degree of user comfort
15N01A	1.59	0.00	1.59	2 - high clearance vehicles
15N01B	0.57	0.00	0.57	2 - high clearance vehicles
15N01P	0.79	0.00	0.79	1 - basic custodial care (closed)
15N01Q	0.79	0.00	0.79	1 - basic custodial care (closed)
15N01R	0.10	0.00	0.10	1 - basic custodial care (closed)
15N01S	0.10	0.00	0.10	1 - basic custodial care (closed)

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
15N01U	0.70	0.00	0.70	1 - basic custodial care (closed)
15N02	10.39	0.00	10.39	2 - high clearance vehicles
15N11	2.70	0.00	2.70	2 - high clearance vehicles
15N11A	1.70	0.00	1.70	1 - basic custodial care (closed)
15N11B	1.39	0.00	1.39	1 - basic custodial care (closed)
15N13	3.80	0.00	3.80	2 - high clearance vehicles
15N33	0.90	0.00	0.90	1 - basic custodial care (closed)
15N34	2.12	0.00	2.12	2 - high clearance vehicles
15N34	0.03	2.12	2.15	2 - high clearance vehicles
15N35	2.24	0.00	2.24	2 - high clearance vehicles
15N35A	0.24	0.00	0.24	2 - high clearance vehicles
15N35B	0.57	0.00	0.57	1 - basic custodial care (closed)
15N35C	0.57	0.00	0.57	1 - basic custodial care (closed)
15N36	1.36	0.00	1.36	3 - suitable for passenger cars
15N36C	0.55	0.00	0.55	1 - basic custodial care (closed)
15N36N	2.60	0.00	2.60	1 - basic custodial care (closed)
15N38	2.90	0.00	2.90	2 - high clearance vehicles
15N39	2.05	0.00	2.05	3 - suitable for passenger cars
15N39A	1.20	0.00	1.20	1 - basic custodial care (closed)
15N39B	0.50	0.00	0.50	1 - basic custodial care (closed)
15N42	1.06	0.00	1.06	2 - high clearance vehicles
15N42A	0.44	0.00	0.44	1 - basic custodial care (closed)
15N45	1.27	1.23	2.50	1 - basic custodial care (closed)
15N52	0.14	0.00	0.14	3 - suitable for passenger cars
15N53	0.15	0.00	0.15	2 - high clearance vehicles
15N54	0.10	0.00	0.10	2 - high clearance vehicles
15N55	0.23	0.00	0.23	2 - high clearance vehicles
15N56	0.16	0.00	0.16	2 - high clearance vehicles
15N57	0.20	0.00	0.20	2 - high clearance vehicles
15N58	0.27	0.00	0.27	2 - high clearance vehicles
15N59	0.44	0.00	0.44	3 - suitable for passenger cars
15N63	0.30	0.00	0.30	2 - high clearance vehicles
16N02	0.81	0.89	1.70	3 - suitable for passenger cars
16N02	3.21	1.70	4.91	3 - suitable for passenger cars
16N02	4.58	4.91	9.49	3 - suitable for passenger cars
16N02	0.89	0.00	0.89	3 - suitable for passenger cars
16N02	8.31	9.49	17.80	3 - suitable for passenger cars
16N02	3.50	17.80	21.30	3 - suitable for passenger cars
16N02A	0.60	0.00	0.60	2 - high clearance vehicles
16N02D	0.61	0.00	0.61	2 - high clearance vehicles
16N02E	0.40	0.00	0.40	2 - high clearance vehicles

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
16N02F	0.10	0.00	0.10	2 - high clearance vehicles
16N02G	0.70	0.00	0.70	2 - high clearance vehicles
16N02H	0.40	0.00	0.40	1 - basic custodial care (closed)
16N02L	1.70	0.00	1.70	2 - high clearance vehicles
16N02P	0.40	0.00	0.40	2 - high clearance vehicles
16N02S	1.20	0.00	1.20	1 - basic custodial care (closed)
16N02T	0.50	0.00	0.50	1 - basic custodial care (closed)
16N03	14.43	0.00	14.43	2 - high clearance vehicles
16N03	0.00	14.43	14.43	2 - high clearance vehicles
16N03A	0.06	0.00	0.06	1 - basic custodial care (closed)
16N03B	0.80	0.00	0.80	2 - high clearance vehicles
16N03D	1.40	0.00	1.40	1 - basic custodial care (closed)
16N03F	0.70	0.00	0.70	2 - high clearance vehicles
16N03G	0.08	0.00	0.08	1 - basic custodial care (closed)
16N03H	0.30	0.00	0.30	2 - high clearance vehicles
16N03K	1.50	0.00	1.50	2 - high clearance vehicles
16N03L	0.20	0.00	0.20	1 - basic custodial care (closed)
16N04	0.19	0.00	0.19	4 - moderate degree of user comfort
16N04A	0.05	0.00	0.05	4 - moderate degree of user comfort
16N09	0.58	0.00	0.58	2 - high clearance vehicles
16N15	0.80	0.00	0.80	2 - high clearance vehicles
16N15A	0.17	0.00	0.17	2 - high clearance vehicles
16N16	2.10	0.00	2.10	2 - high clearance vehicles
16N18	4.12	0.00	4.12	2 - high clearance vehicles
16N18	4.88	4.12	9.00	2 - high clearance vehicles
16N18A	2.30	0.00	2.30	2 - high clearance vehicles
16N18B	0.50	0.00	0.50	2 - high clearance vehicles
16N18C	0.39	0.00	0.39	1 - basic custodial care (closed)
16N18E	0.96	0.00	0.96	2 - high clearance vehicles
16N18G	0.80	0.00	0.80	2 - high clearance vehicles
16N18K	1.10	0.00	1.10	1 - basic custodial care (closed)
16N19	2.70	0.00	2.70	2 - high clearance vehicles
16N19	4.10	2.70	6.80	2 - high clearance vehicles
16N19	1.48	6.80	8.28	2 - high clearance vehicles
16N19A	0.23	0.00	0.23	2 - high clearance vehicles
16N19B	1.40	0.00	1.40	2 - high clearance vehicles
16N19D	0.40	0.00	0.40	2 - high clearance vehicles
16N19E	0.95	0.00	0.95	2 - high clearance vehicles
16N19F	0.76	0.00	0.76	2 - high clearance vehicles
16N19G	0.23	0.00	0.23	2 - high clearance vehicles
16N21	3.69	0.00	3.69	2 - high clearance vehicles

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
16N21F	0.30	0.00	0.30	2 - high clearance vehicles
16N21F	1.50	0.30	1.80	2 - high clearance vehicles
16N23	7.40	0.00	7.40	2 - high clearance vehicles
16N24	1.10	0.00	1.10	2 - high clearance vehicles
16N24A	0.65	0.00	0.65	1 - basic custodial care (closed)
16N25	0.96	0.00	0.96	2 - high clearance vehicles
16N27	0.50	0.00	0.50	1 - basic custodial care (closed)
16N30	0.24	0.00	0.24	1 - basic custodial care (closed)
16N31	0.35	0.00	0.35	1 - basic custodial care (closed)
16N31B	1.00	0.00	1.00	1 - basic custodial care (closed)
16N32	3.94	0.00	3.94	2 - high clearance vehicles
16N32A	0.08	0.00	0.08	1 - basic custodial care (closed)
16N32C	0.47	0.00	0.47	1 - basic custodial care (closed)
16N33	0.70	0.00	0.70	2 - high clearance vehicles
16N33	3.70	0.70	4.40	1 - basic custodial care (closed)
16N33A	0.21	0.00	0.21	1 - basic custodial care (closed)
16N34	0.90	0.00	0.90	2 - high clearance vehicles
16N34A	0.50	0.00	0.50	2 - high clearance vehicles
16N35	0.80	0.00	0.80	2 - high clearance vehicles
16N35	0.84	0.80	1.64	2 - high clearance vehicles
16N35A	0.14	0.00	0.14	1 - basic custodial care (closed)
16N35B	0.16	0.00	0.16	2 - high clearance vehicles
16N35C	0.12	0.00	0.12	2 - high clearance vehicles
16N36	1.20	0.00	1.20	2 - high clearance vehicles
16N36B	0.80	0.00	0.80	2 - high clearance vehicles
16N37	1.20	0.00	1.20	2 - high clearance vehicles
16N37B	0.17	0.00	0.17	2 - high clearance vehicles
16N38	1.60	0.00	1.60	2 - high clearance vehicles
16N39	0.58	0.00	0.58	1 - basic custodial care (closed)
16N39A	0.22	0.00	0.22	1 - basic custodial care (closed)
16N40	0.66	0.00	0.66	2 - high clearance vehicles
16N41	1.43	0.00	1.43	2 - high clearance vehicles
16N41A	0.17	0.00	0.17	2 - high clearance vehicles
16N41B	0.09	0.00	0.09	2 - high clearance vehicles
16N41C	0.89	0.00	0.89	2 - high clearance vehicles
16N55	0.50	0.00	0.50	1 - basic custodial care (closed)
16N71	0.70	0.00	0.70	2 - high clearance vehicles
17N01	0.70	0.00	0.70	2 - high clearance vehicles
17N03	1.20	0.00	1.20	1 - basic custodial care (closed)
17N04	7.89	0.00	7.89	3 - suitable for passenger cars
17N04L	3.10	0.00	3.10	1 - basic custodial care (closed)

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
17N04R	0.59	0.00	0.59	1 - basic custodial care (closed)
17N04S	1.80	0.00	1.80	1 - basic custodial care (closed)
17N05	8.00	0.00	8.00	4 - moderate degree of user comfort
17N05	0.50	8.00	8.50	4 - moderate degree of user comfort
17N05	0.18	8.50	8.68	4 - moderate degree of user comfort
17N05	1.06	8.68	9.74	4 - moderate degree of user comfort
17N05A	1.04	0.00	1.04	2 - high clearance vehicles
17N05C	0.97	0.00	0.97	1 - basic custodial care (closed)
17N05E	0.71	0.00	0.71	1 - basic custodial care (closed)
17N05F	1.56	0.00	1.56	1 - basic custodial care (closed)
17N05G	0.67	0.00	0.67	1 - basic custodial care (closed)
17N05U	0.28	0.00	0.28	1 - basic custodial care (closed)
17N07	0.60	0.00	0.60	3 - suitable for passenger cars
17N07	9.79	0.60	10.39	3 - suitable for passenger cars
17N07G	1.67	0.00	1.67	2 - high clearance vehicles
17N07J	1.50	0.00	1.50	2 - high clearance vehicles
17N07K	0.80	0.00	0.80	2 - high clearance vehicles
17N07Q	0.22	0.00	0.22	2 - high clearance vehicles
17N07R	0.44	0.00	0.44	2 - high clearance vehicles
17N08	7.08	0.00	7.08	3 - suitable for passenger cars
17N08A	0.50	0.00	0.50	1 - basic custodial care (closed)
17N13	0.70	0.00	0.70	2 - high clearance vehicles
17N13A	0.38	0.00	0.38	2 - high clearance vehicles
17N14	0.39	0.00	0.39	2 - high clearance vehicles
17N15	0.90	0.00	0.90	2 - high clearance vehicles
17N15A	0.13	0.00	0.13	1 - basic custodial care (closed)
17N16	0.65	0.00	0.65	2 - high clearance vehicles
17N17	0.60	0.00	0.60	1 - basic custodial care (closed)
17N18	0.70	0.00	0.70	3 - suitable for passenger cars
17N18	2.94	0.70	3.64	3 - suitable for passenger cars
17N18	0.71	3.64	4.35	3 - suitable for passenger cars
17N18	2.92	4.35	7.27	3 - suitable for passenger cars
17N18	0.39	7.27	7.66	3 - suitable for passenger cars
17N18A	0.39	0.00	0.39	1 - basic custodial care (closed)
17N18A	0.55	0.39	0.94	1 - basic custodial care (closed)
17N18C	0.67	0.00	0.67	2 - high clearance vehicles
17N18E	0.42	0.00	0.42	1 - basic custodial care (closed)
17N18F	0.07	0.00	0.07	1 - basic custodial care (closed)
17N19	0.50	0.00	0.50	1 - basic custodial care (closed)
17N20	0.19	0.00	0.19	2 - high clearance vehicles
17N21	2.00	0.00	2.00	3 - suitable for passenger cars

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
17N21	1.80	2.00	3.80	3 - suitable for passenger cars
17N21A	0.20	0.00	0.20	2 - high clearance vehicles
17N21A	0.30	0.20	0.50	2 - high clearance vehicles
17N21B	0.31	0.00	0.31	2 - high clearance vehicles
17N21C	0.20	0.00	0.20	2 - high clearance vehicles
17N22	1.50	0.00	1.50	3 - suitable for passenger cars
17N22	2.89	1.50	4.39	3 - suitable for passenger cars
17N22A	0.79	0.00	0.79	2 - high clearance vehicles
17N22B	0.63	0.00	0.63	2 - high clearance vehicles
17N22C	0.16	0.00	0.16	2 - high clearance vehicles
17N22D	0.08	0.00	0.08	2 - high clearance vehicles
17N22G	0.29	0.00	0.29	2 - high clearance vehicles
17N22J	0.12	0.00	0.12	2 - high clearance vehicles
17N23	2.80	0.00	2.80	1 - basic custodial care (closed)
17N23	2.80	0.00	2.80	1 - basic custodial care (closed)
17N24	1.00	0.00	1.00	2 - high clearance vehicles
17N25	0.49	0.00	0.49	1 - basic custodial care (closed)
17N26	0.25	0.00	0.25	2 - high clearance vehicles
17N26A	0.37	0.00	0.37	2 - high clearance vehicles
17N27	1.70	0.00	1.70	3 - suitable for passenger cars
17N27	2.29	1.70	3.99	3 - suitable for passenger cars
17N27A	0.50	0.00	0.50	1 - basic custodial care (closed)
17N27B	0.40	0.00	0.40	1 - basic custodial care (closed)
17N27C	0.40	0.00	0.40	1 - basic custodial care (closed)
17N28	0.20	0.00	0.20	1 - basic custodial care (closed)
17N29	1.00	0.00	1.00	2 - high clearance vehicles
17N29B	0.20	0.00	0.20	2 - high clearance vehicles
17N30	1.30	0.00	1.30	2 - high clearance vehicles
17N30A	0.40	0.00	0.40	2 - high clearance vehicles
17N31	1.60	0.00	1.60	2 - high clearance vehicles
17N32	3.40	0.00	3.40	2 - high clearance vehicles
17N32B	0.80	0.00	0.80	2 - high clearance vehicles
17N32F	1.00	0.00	1.00	2 - high clearance vehicles
17N32G	2.00	0.00	2.00	2 - high clearance vehicles
17N35	0.50	0.00	0.50	2 - high clearance vehicles
17N36	2.50	0.00	2.50	2 - high clearance vehicles
17N36B	1.00	0.00	1.00	2 - high clearance vehicles
17N36C	0.43	0.00	0.43	1 - basic custodial care (closed)
17N36F	1.20	0.00	1.20	1 - basic custodial care (closed)
17N37	0.14	0.00	0.14	2 - high clearance vehicles
17N39	2.19	0.00	2.19	2 - high clearance vehicles

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
17N39A	0.95	0.00	0.95	1 - basic custodial care (closed)
17N39B	0.51	0.00	0.51	1 - basic custodial care (closed)
17N39C	0.12	0.00	0.12	1 - basic custodial care (closed)
17N40	1.00	0.00	1.00	2 - high clearance vehicles
17N40B	0.53	0.00	0.53	2 - high clearance vehicles
17N40C	0.51	0.00	0.51	2 - high clearance vehicles
17N40D	0.18	0.00	0.18	1 - basic custodial care (closed)
17N41	1.60	0.00	1.60	2 - high clearance vehicles
17N41A	0.30	0.00	0.30	1 - basic custodial care (closed)
17N41G	0.95	0.00	0.95	2 - high clearance vehicles
17N41H	0.90	0.00	0.90	2 - high clearance vehicles
17N42	1.51	0.00	1.51	2 - high clearance vehicles
17N42A	1.28	0.00	1.28	2 - high clearance vehicles
17N43	1.00	0.00	1.00	2 - high clearance vehicles
17N45	0.70	0.00	0.70	2 - high clearance vehicles
17N46	1.20	0.00	1.20	2 - high clearance vehicles
17N46A	0.16	0.00	0.16	1 - basic custodial care (closed)
17N48	1.66	0.00	1.66	2 - high clearance vehicles
17N48C	0.47	0.00	0.47	1 - basic custodial care (closed)
17N49	0.66	0.00	0.66	3 - suitable for passenger cars
17N49	1.16	0.66	1.81	3 - suitable for passenger cars
17N49	0.03	1.81	1.84	3 - suitable for passenger cars
17N49	0.52	1.84	2.36	3 - suitable for passenger cars
17N49	0.06	2.36	2.42	3 - suitable for passenger cars
17N49	0.54	2.42	2.96	3 - suitable for passenger cars
17N49	0.10	2.96	3.06	3 - suitable for passenger cars
17N49	0.37	3.06	3.43	3 - suitable for passenger cars
17N49	0.04	3.43	3.47	3 - suitable for passenger cars
17N49	0.10	3.47	3.57	3 - suitable for passenger cars
17N49	0.05	3.57	3.63	3 - suitable for passenger cars
17N49	2.31	3.63	5.93	3 - suitable for passenger cars
17N49	0.11	5.93	6.05	3 - suitable for passenger cars
17N49	1.02	6.05	7.07	3 - suitable for passenger cars
17N49	0.09	7.07	7.16	3 - suitable for passenger cars
17N49	0.09	7.16	7.25	3 - suitable for passenger cars
17N49	0.16	7.25	7.42	3 - suitable for passenger cars
17N49	0.19	7.42	7.61	3 - suitable for passenger cars
17N49	0.24	7.61	7.85	3 - suitable for passenger cars
17N53	0.30	0.00	0.30	4 - moderate degree of user comfort
17N53A	0.30	0.00	0.30	2 - high clearance vehicles
17N62	0.37	0.00	0.37	4 - moderate degree of user comfort

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
17N62A	0.41	0.00	0.41	4 - moderate degree of user comfort
17N62B	0.24	0.00	0.24	4 - moderate degree of user comfort
17N63	0.30	0.00	0.30	2 - high clearance vehicles
17N64	0.09	0.00	0.09	4 - moderate degree of user comfort
17N64A	0.25	0.00	0.25	5 - high degree of user comfort
17N64B	0.08	0.00	0.08	4 - moderate degree of user comfort
17N69	0.04	0.00	0.04	2 - high clearance vehicles
17N69	0.72	0.18	0.90	2 - high clearance vehicles
17N69	2.00	0.90	2.90	2 - high clearance vehicles
17N70	0.18	0.00	0.18	4 - moderate degree of user comfort
17N70A	0.09	0.00	0.09	4 - moderate degree of user comfort
17N70B	0.09	0.00	0.09	4 - moderate degree of user comfort
17N71	0.20	0.00	0.20	2 - high clearance vehicles
17N92	1.52	0.00	1.52	1 - basic custodial care (closed)
18N01	0.00	0.00	0.00	1 - basic custodial care (closed)
18N02	2.60	0.00	2.60	3 - suitable for passenger cars
18N03	1.91	0.00	1.91	1 - basic custodial care (closed)
18N04	5.35	0.00	5.35	2 - high clearance vehicles
18N04B	0.83	0.00	0.83	2 - high clearance vehicles
18N04E	0.86	0.00	0.86	2 - high clearance vehicles
18N05	2.00	0.00	2.00	1 - basic custodial care (closed)
18N06	0.88	0.00	0.88	2 - high clearance vehicles
18N06	0.45	0.88	1.33	2 - high clearance vehicles
18N06A	0.18	0.00	0.18	1 - basic custodial care (closed)
18N07	8.00	0.00	8.00	3 - suitable for passenger cars
18N07	5.53	8.00	13.53	3 - suitable for passenger cars
18N08	12.38	0.00	12.38	3 - suitable for passenger cars
18N08F	1.80	0.00	1.80	2 - high clearance vehicles
18N08G	1.12	0.00	1.12	1 - basic custodial care (closed)
18N08M	1.00	0.00	1.00	1 - basic custodial care (closed)
18N09	1.25	0.00	1.25	2 - high clearance vehicles
18N09	3.85	1.25	5.10	2 - high clearance vehicles
18N09	5.90	5.10	11.00	1 - basic custodial care (closed)
18N10	1.42	0.00	1.42	2 - high clearance vehicles
18N11	1.91	0.00	1.91	2 - high clearance vehicles
18N11	3.79	2.28	6.07	2 - high clearance vehicles
18N11A	0.80	0.00	0.80	1 - basic custodial care (closed)
18N11B	0.19	0.00	0.19	1 - basic custodial care (closed)
18N11C	0.20	0.00	0.20	1 - basic custodial care (closed)
18N11D	0.46	0.00	0.46	1 - basic custodial care (closed)
18N12	1.10	0.00	1.10	2 - high clearance vehicles

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
18N12A	0.43	0.00	0.43	1 - basic custodial care (closed)
18N13	7.51	0.24	7.75	1 - basic custodial care (closed)
18N13	0.24	0.00	0.24	2 - high clearance vehicles
18N14	1.00	0.00	1.00	1 - basic custodial care (closed)
18N15	1.20	0.00	1.20	2 - high clearance vehicles
18N15A	0.60	0.00	0.60	2 - high clearance vehicles
18N15D	0.23	0.00	0.23	2 - high clearance vehicles
18N16	5.33	0.00	5.33	2 - high clearance vehicles
18N16B	0.55	0.00	0.55	2 - high clearance vehicles
18N16E	0.38	0.00	0.38	1 - basic custodial care (closed)
18N16F	0.78	0.00	0.78	2 - high clearance vehicles
18N16G	0.70	0.00	0.70	1 - basic custodial care (closed)
18N16J	0.99	0.00	0.99	2 - high clearance vehicles
18N16W	0.17	0.00	0.17	2 - high clearance vehicles
18N17	5.90	0.00	5.90	2 - high clearance vehicles
18N17	2.20	5.90	8.10	2 - high clearance vehicles
18N17A	0.21	0.00	0.21	2 - high clearance vehicles
18N17B	0.87	0.00	0.87	2 - high clearance vehicles
18N17C	1.18	0.00	1.18	2 - high clearance vehicles
18N17D	0.25	0.00	0.25	2 - high clearance vehicles
18N17E	0.90	0.00	0.90	2 - high clearance vehicles
18N17F	0.54	0.00	0.54	2 - high clearance vehicles
18N17G	0.12	0.00	0.12	2 - high clearance vehicles
18N17H	0.15	0.00	0.15	2 - high clearance vehicles
18N18	1.43	0.00	1.43	2 - high clearance vehicles
18N18A	0.20	0.00	0.20	1 - basic custodial care (closed)
18N18B	0.15	0.00	0.15	1 - basic custodial care (closed)
18N18C	0.08	0.00	0.08	1 - basic custodial care (closed)
18N18D	0.13	0.00	0.13	1 - basic custodial care (closed)
18N19	3.44	0.00	3.44	2 - high clearance vehicles
18N19A	0.22	0.00	0.22	1 - basic custodial care (closed)
18N19B	0.20	0.00	0.20	1 - basic custodial care (closed)
18N19C	0.17	0.00	0.17	1 - basic custodial care (closed)
18N20	1.00	0.00	1.00	2 - high clearance vehicles
18N20A	0.40	0.00	0.40	2 - high clearance vehicles
18N21	0.10	0.00	0.10	2 - high clearance vehicles
18N22	2.00	0.00	2.00	2 - high clearance vehicles
18N22D	0.62	0.00	0.62	2 - high clearance vehicles
18N22E	0.14	0.00	0.14	2 - high clearance vehicles
18N23	0.10	0.00	0.10	1 - basic custodial care (closed)
18N24	1.10	0.00	1.10	1 - basic custodial care (closed)

Table 163. Alternative 1 existing National Forest Transportation System

Road Number	Total Miles	Beginning Mile Point	End Mile Point	Maintenance Level
18N26	1.75	0.00	1.75	1 - basic custodial care (closed)
18N26A	0.15	0.00	0.15	1 - basic custodial care (closed)
18N26B	0.08	0.00	0.08	1 - basic custodial care (closed)
18N27	0.10	0.00	0.10	3 - suitable for passenger cars
18N28	0.30	0.00	0.30	3 - suitable for passenger cars
18N30	0.03	0.00	0.03	2 - high clearance vehicles
18N30	2.74	0.03	2.77	2 - high clearance vehicles
18N30A	0.28	0.00	0.28	1 - basic custodial care (closed)
18N30B	0.46	0.00	0.46	1 - basic custodial care (closed)
18N31	0.60	0.00	0.60	1 - basic custodial care (closed)
18N46	0.39	0.00	0.39	2 - high clearance vehicles
18N47	0.44	0.00	0.44	1 - basic custodial care (closed)
18N48	0.31	0.00	0.31	1 - basic custodial care (closed)
18N50	0.24	0.00	0.24	2 - high clearance vehicles
18N51	0.70	0.00	0.70	1 - basic custodial care (closed)
18N56	0.88	0.00	0.88	2 - high clearance vehicles
18N57	0.56	0.00	0.56	1 - basic custodial care (closed)
18N58	0.86	0.00	0.86	2 - high clearance vehicles
18N58	0.45	0.86	1.31	1 - basic custodial care (closed)
18N58B	0.25	0.00	0.25	1 - basic custodial care (closed)
19N01	1.60	0.00	1.60	2 - high clearance vehicles
19N01E	0.47	0.00	0.47	2 - high clearance vehicles
Total	**482.87**			

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
13N35.5	0.14
13N37.1	0.11
14N15.1	3.80
14N32.1	0.26
14N33.3	0.52
14N46.2	0.13
15N01.102	0.48
15N01.102	0.48
15N01A.1	0.10
15N01A.2	0.05
15N01A.4	3.84
15N01U.1	0.58

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
15N01-x.101	0.13
15N02.101	0.81
15N02.103	0.58
15N02.106	0.48
15N02.107	0.42
15N02.108	1.14
15N02.108A	0.59
15N02.2	0.24
15N02.4	0.49
15N02.5	0.90
15N02.5A	0.05
15N11.2	0.32

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
15N11A.1	0.25
15N13.100	0.49
15N13.100	0.48
15N36.1	0.62
15N36N.1	0.90
15N36N.1A	0.16
15N36N.1B	0.21
15N36N.1C	0.03
15N39A.1	0.18
15N45.100	0.22
15N45.101	0.12
16N02.1	0.10
16N02.2	0.87
16N02.5	0.21
16N02S.1	0.21
16N02T.1	0.12
16N03.100	0.10
16N03.2	0.87
16N10.1	0.14
16N10.2	0.21
16N18.1	1.04
16N18.3	0.49
16N18.4	0.67
16N18B.1	0.66
16N19.1	0.05
16N19.2	0.08
16N19.3	0.30
16N19.4	0.87
16N19.5	0.19
16N19E.1	0.41
16N21.1	0.15
16N21.2	0.10
16N21F.1	0.09
16N23.100	0.64
16N23.2	0.22
16N23.4	0.69
16N23A.1	1.90
16N31A.1	0.22

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
16N31B.2	0.13
16N36.1	0.11
16N36.1	0.69
16N55.1	0.16
17N01.1	0.21
17N01.100	2.49
17N01.1A	0.02
17N01.1B	0.03
17N01.1C	0.09
17N01.1D	0.13
17N01.2	0.30
17N01.2B	0.03
17N01.3	0.13
17N01.3A	0.07
17N04.1	0.12
17N04.2	0.35
17N04.3	0.97
17N05.100	0.88
17N05.101	0.06
17N05.4	0.32
17N05.4A	1.36
17N05.5	0.14
17N07.1	0.25
17N07.101	0.09
17N07.102	3.07
17N07.2	0.51
17N07.4	0.21
17N07.5	0.32
17N07.5A	0.15
17N07.6	0.75
17N07.7	0.30
17N07R.1	0.16
17N07R.1A	0.25
17N08.3	0.30
17N16.1	0.17
17N16.100	0.07
17N17.1	1.98
17N18.2	0.39

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
17N18.3	0.74
17N18.4	0.15
17N21.1	0.41
17N22A.1	0.21
17N22A.2	0.25
17N22W.1	0.46
17N23C.1	2.24
17N27A.1	0.21
17N27D.1	0.36
17N29.100	0.04
17N31.3	0.17
17N31A.1	0.36
17N32.1	0.31
17N32.2	0.17
17N32B.1	0.07
17N35.100	0.35
17N36B.1	0.26
17N40B.1	0.19
17N40C.1	0.20
17N41.1	0.74
17N41.2	0.02
17N41G.1	0.17
17N41H.100	0.06
17N42A.100	0.48
17N43.1	0.04
17N48.1	0.33
17N48.3	0.16
17N48.4	0.46
17N49.1	0.04
17N49.100	0.12
17N49.100	3.88
17N49.100A	0.21
17N49.101	1.17
17N49.102	0.87
17N49.102A	0.71
17N49.102B	0.17
17N49.102C	0.20
17N49.103	0.26

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
17N49.104	3.82
17N49.104	0.86
17N49.104A	0.05
17N49.104B	0.08
17N49.105	1.43
17N49.105A	0.12
17N49.106	0.32
17N49.107	0.64
17N49.108	0.31
17N49.11	1.94
17N49.11	2.55
17N49.11M	0.17
17N49.11N	0.23
17N49.11P	0.21
17N49.12	2.10
17N49.13	0.30
17N49.14	0.54
17N49.15	0.62
17N49.15A	0.24
17N49.2	0.20
17N49.3	0.23
17N49.4	1.29
17N49.4	0.75
17N49.4A	1.06
17N49.7	3.06
17N49.7	0.29
17N49.7A	0.82
17N49.8	0.39
18N02.1	0.14
18N02.2	0.28
18N02.3	0.02
18N04.2	0.11
18N05.1	0.20
18N05.100	2.16
18N05.2	0.53
18N07.11	0.06
18N07.12	0.04
18N07.14	0.05

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
18N07.2	0.13
18N07.3	0.08
18N07.6	0.25
18N07.8	0.38
18N08.2	0.03
18N09.100	0.27
18N09.100A	0.16
18N09.102	1.84
18N09.103	0.04
18N09.104	0.05
18N09.105	0.12
18N09.106	0.02
18N09.107	0.01
18N09.108	0.03
18N10.1	0.70
18N11D.1	1.75
18N11D.2	0.25
18N11D.3	0.29
18N11D.4A	0.73
18N11D.5	2.11
18N13.100	0.21
18N13.101	0.08
18N16.100	2.60
18N16F.1	0.16
18N17.100	1.01
18N17.100A	0.08
18N17.101	0.05
18N17.102	0.06
18N17.103	0.21
18N17.104	0.20
18N17.104A	0.02
18N17C.1	0.05
18N20.100	0.28
18N20.100A	0.08
18N20.101	0.12
18N20.102	0.47
18N26A.2	0.06
18N30.100	0.04

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
18N31.1	0.16
18N31.2	0.23
18N31.3C	0.18
18N31.4	1.25
18N51.100	1.45
18N51.100A	0.46
18N56.100	0.04
18N58.1	0.13
199.102	0.13
199.103	0.10
199.104	0.11
199.105	0.03
199.106	0.18
199.107	0.10
199.108	0.24
199.109	0.10
199.111	0.09
199.111A	0.07
199.112	0.29
199.113	0.07
305.100	0.57
305.101	1.08
305.101A	0.04
305.101B	0.50
305.102	0.15
305.103	0.14
305.104	0.14
305.105	0.22
305.106	0.21
305.107	1.25
305.108	0.06
305.109	2.43
305.109A	1.02
305.113	0.12
305.114	0.63
305.115	1.74
305.115A	0.18
305.118	0.80

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
305.119	0.22
305.120	0.04
305.121	0.63
305.121A	0.28
305.121B	1.03
305.123	0.63
305.124	1.20
305.125	1.44
305.125A	0.21
305.126	1.56
305.128	0.70
305.129	0.40
305.130	1.72
305.131	0.09
305.133	0.01
305.134	0.14
314.1	1.21
314.102	0.80
314.107	0.26
314.108	0.06
315.100	1.68
315.102	0.48
315.103	0.26
315.104	0.82
315.106	0.25
315.107	0.30
315.108	0.46
315.109	0.50
315.110	0.07
315.111	0.03
315.2	0.51
315.3	0.98
315.3A	0.24
315.9A	1.22
316.1	0.26
316.10	0.03
316.11	0.04
316.12	0.03

Table 164. Alternative 1 inventoried unauthorized routes

Route Number	Miles
316.2	0.20
316.3	0.08
316.4	0.07
316.5	0.03
316.6	0.03
316.7	0.02
316.7A	0.02
316.8	0.05
316.9	0.06
316.9A	0.05
324.100	0.13
405.10	0.74
405.100	0.11
405.101	0.17
405.103	3.47
405.9	0.05
411.101	0.30
411.102	0.17
427.101	0.15
427.103	0.32
427.104	0.30
427.105	0.29
427.106	0.13
427.107	0.05
427.108	0.09
427.108A	0.04

Alternative 3

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
199.102	0.13	0.00	0.13	UAR	2	Add to road system. ML2. Administrative access only to water system for campground.
199.103	0.10	0.00	0.10	UAR	3	Add to road system. ML 3, Madrona Campground
199.104	0.11	0.00	0.11	UAR	3	Add to road system. ML 3, Madrona Campground
199.105	0.03	0.00	0.03	UAR	3	Add to road system. ML 3, Darlingtonia Trail head access
199.106	0.18	0.00	0.18	UAR	3	Add to road system. ML 3, Eighteen-mile river access site
199.109	0.10	0.00	0.10	UAR	Restore	Barricade to allow parking at turnout and hiking access to river.
199.111	0.09	0.00	0.09	UAR	2	Add to road system. Add road to creek as ML 2. Barricade at creek to provide nonmotorized access.
305.100	0.57	0.00	0.57	UAR	Restore	Barricade.
305.101	1.08	0.00	1.08	UAR	Restore	Barricade.
305.102	0.15	0.00	0.15	UAR	Restore	Barricade.
305.103	0.14	0.00	0.14	UAR	Restore	Barricade.
305.104	0.14	0.00	0.14	UAR	Restore	Barricade.
305.105	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
305.106	0.21	0.00	0.21	UAR	Restore	Barricade.
305.108	0.06	0.00	0.06	UAR	Restore	Barricade.
305.109	2.43	0.00	2.43	UAR	M. Trail	Add to trail system. Motorized Trail; Install drains and gravel at wet areas to keep vehicles on the roadway (near mp 1.00 and 1.5). Improve surface drainage, place boulders strategically, increase enforcement.
305.111	0.13	0.00	0.13	UAR	Restore	Barricade.
305.113	0.12	0.00	0.12	UAR	Restore	Barricade.
305.114	0.63	0.00	0.63	UAR	Restore	Outslope or rolling dips as needed and barricade.
305.115	1.74	0.00	1.74	UAR	Restore	Outslope or rolling dips as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
305.118	0.80	0.00	0.80	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - seasonal closure required at beginning of route. Gate mid-October through early June; need culvert in at POC site, barricade end of route.
305.118	0.76	0.80	1.56	UAR	Restore	Outslope or rolling dips as needed.
305.121	0.63	0.00	0.63	UAR	Restore	Barricade.
305.123	0.63	0.00	0.63	UAR	Restore	Barricade.
305.124	1.20	0.00	1.20	UAR	Restore	Outslope or rolling dips as needed and barricade.
305.125	1.44	0.00	1.44	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
305.126	1.56	0.00	1.56	UAR	Restore	Barricade.
305.128	0.69	0.00	0.70	UAR	Restore	Barricade.
305.129	0.27	0.00	0.27	UAR	Restore	Barricade.
305.131	0.09	0.00	0.09	UAR	Restore	Barricade.
314.1	1.21	0.00	1.21	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - Barricade at mp 1.21.
314.107	0.26	0.00	0.26	UAR	2	Add to road system. ML 2; Delineate route. Three Ponds camping area. POC mitigation - Rock/gravel length of motorized trail.
315.100	1.68	0.00	1.68	UAR	Restore	Barricade.
315.102	0.48	0.00	0.48	UAR	Restore	Barricade.
315.106	0.25	0.00	0.25	UAR	Restore	Barricade.
315.107	0.30	0.00	0.30	UAR	Restore	Barricade.
315.108	0.46	0.00	0.46	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
315.2	0.51	0.00	0.51	UAR	Restore	Outslope or rolling dips as needed. Remove culverts at mp 0.07 0.13 and 0.18 to improve drainage.
315.3	0.98	0.00	0.98	UAR	Restore	Remove all culverts. Outslope as needed.
316.1	0.26	0.00	0.26	UAR	2	Add to road system. ML 2 administrative use only; add rolling dips. POC mitigation - rock/gravel length of road.
324.100	0.13	0.00	0.13	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
405.10	0.74	0.00	0.74	UAR	M. Trail	Add driveable portion to trail system. Motorized trail. Delineate route. Route delineation at .36mp.
405.100	0.11	0.00	0.11	UAR	Restore	Barricade.
405.101	0.17	0.00	0.17	UAR	Restore	Barricade.
405.103	3.47	0.00	3.47	UAR	M. Trail	Add to trail system. Motorized trail. Improve surface drainage near creek; repair culvert.
405.9	0.05	0.00	0.05	UAR	Restore	Barricade.
411.101	0.30	0.00	0.30	UAR	Restore	Barricade.
411.102	0.17	0.00	0.17	UAR	Restore	Barricade.
427.101	0.15	0.00	0.15	UAR	1	Add to road system. ML 1.
427.103	0.32	0.00	0.32	UAR	2	Add to road system. ML 2. Delineate Route.
427.105	0.29	0.00	0.29	UAR	2	Add to road system. ML 2, County disposal site; may be gated periodically for administrative purposes.
427.106	0.13	0.00	0.13	UAR	M. Trail	Add to trail system. Motorized Trail; install rolling dips to improve drainage.
13N35	0.10	0.18	0.28	2	Deco	Remove from System. (corrected road name from 13N35K)
13N35.5	0.14	0.00	0.14	UAR	Restore	Barricade.
13N37	2.00	0.00	2.00	2	1	Remove all culverts and associated fill. Outslope or waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
13N37.1	0.11	0.00	0.11	UAR	Restore	Barricade.
13N37A	0.77	0.00	0.77	2	Deco	Remove from System; Remove culverts and associated fill as needed. Outslope as needed and barricade.
13N37B	0.27	0.00	0.27	2	Deco	Remove from System; Remove culverts and associated fill as needed. Outslope as needed and barricade.
14N01D	1.80	0.00	1.80	2	2	Maintain, repair, or replace each culvert; improve surface drainage.
14N08T	0.11	0.00	0.11	1	Deco	Remove from System; Remove all culverts and associated fill. Outslope or waterbars as needed and barricade.
14N15	0.50	0.00	0.50	2	2	Maintain, repair, or replace each culvert; improve surface drainage.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
14N15.1	3.80	0.00	3.80	UAR	2	Add to road system. ML 2. Replace culverts and repair road surface.
14N29A	0.80	0.00	0.80	2	Deco	Remove from System; Remove all culverts and associated fill. Outslope or waterbars as needed and barricade.
14N32.1	0.26	0.00	0.26	UAR	Restore	Barricade.
14N33	1.60	0.18	1.78	2	Deco	Remove from system. Remove culverts and associated fill from stream channels. Outslope and barricade.
14N33.3	0.52	0.00	0.52	UAR	Restore	Remove culverts and associated fill from stream channels as on 14N33. Outslope as needed.
14N33A	0.22	0.00	0.22	1	Deco	Remove from System; Remove all culverts and associated fill. Outslope or waterbars as needed and barricade.
14N38	0.60	0.00	0.60	2	2	Improve surface drainage and maintain as ML 2. Seasonal closure to protect POC.
14N46	2.70	0.00	2.70	2	1	Remove 2 culverts and associated fill. Outslope or waterbars as needed and barricade. Downgrade to ML 1. (corrected existing ML)
14N46.2	0.13	0.00	0.13	UAR	Restore	Outslope and barricade.
14N46B	0.37	0.00	0.37	1	Deco	Remove from System; Outslope as needed and barricade.
15N01.102	0.48	0.00	0.48	UAR	2	Add to road system. ML 2. POC mitigation - Seasonal closure- gate at right spur (mp 0.09)
15N01A.1	0.10	0.00	0.10	UAR	Restore	Barricade.
15N01A.2	0.05	0.00	0.05	UAR	Restore	Barricade.
15N01A.4	3.84	0.00	3.84	UAR	1	Replace culverts and repair road surface. Manage as ML1.
15N01P	0.09	0.79	0.88	1	Deco	Remove from System; Remove all culverts and associated fill. Outslope or waterbars as needed and barricade. (corrected miles)
15N01R	0.10	0.00	0.10	1	1	Outslope or waterbars as needed and barricade.
15N01S	0.10	0.00	0.10	1	1	Outslope or waterbars as needed and barricade.
15N01U	0.70	0.00	0.70	1	Deco	Remove from System; Remove all culverts and associated fill. Outslope or waterbars as needed and barricade.
15N01U.1	0.58	0.00	0.58	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
15N02	11.10	0.00	11.10	2	2	Replace 3 priority culverts.
15N02.101	0.81	0.00	0.81	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - Barricade at mp 0.81
15N02.103	0.58	0.00	0.58	UAR	M. Trail	Add to trail system. Motorized trail
15N02.104	1.14	0.00	1.14	UAR	M. Trail	Add to trail system. Motorized trail
15N02.106	0.48	0.00	0.48	UAR	M. Trail	Add to trail system. Motorized Trail.
15N02.107	0.42	0.00	0.42	UAR	M. Trail	Add to trail system. Motorized trail
15N02.2	0.24	0.00	0.24	UAR	Restore	Barricade
15N02.4	0.49	0.00	0.49	UAR	M. Trail	Add to trail system. Motorized trail
15N02.5	0.90	0.00	0.90	UAR	Restore	Outslope or rolling dips as needed and barricade.
15N11.2	0.32	0.00	0.32	UAR	Restore	Barricade.
15N11A	1.70	0.00	1.70	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N11A.1	0.25	0.00	0.25	UAR	Restore	Remove all culverts and associated fill from stream channels. Outslope as needed.
15N11B	1.39	0.00	1.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channels . Outslope and barricade.
15N13	3.80	0.00	3.80	2	2	Improve maintenance or repair/replace all culverts and drainage structures as needed. Manage as ML 2.
15N33	0.90	0.00	0.90	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N35A	0.24	0.00	0.24	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N35B	0.57	0.00	0.57	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N35C	0.57	0.00	0.57	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N36.1	0.62	0.00	0.62	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Outslope as needed and barricade.
15N36C	0.55	0.00	0.55	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
15N36N	1.30	0.00	1.30	2	2	Keep first 1.3 miles; Maintain, repair, or replace each culvert. Improve surface drainage with waterbars and rolling dips as needed.
15N36N	1.30	1.30	2.60	2	Deco	Decommission from 1.3 to 2.6 (corrected miles)
15N36N.1	0.90	0.00	0.90	UAR	2	Add to road system as ML 2. Access to Blackhawk Bar. Keep; Maintain, repair, or replace each culvert. Improve surface drainage with outsloping and rolling dips as needed. Rock/gravel. (corrected miles)
15N38	2.90	0.00	2.90	2	2	Improve surface drainage and install culvert at stream ford on road near private land.
15N39A	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N39A.1	0.18	0.00	0.18	UAR	Restore	Barricade
15N39B	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N42	1.06	0.00	1.06	2	1	Remove all 3 culverts and associated fill. Outslope or waterbars as needed and barricade. Downgrade to ML 1.
15N42A	0.44	0.00	0.44	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
15N45	1.13	0.00	1.13	1	1	Excavate culverts and associated fill. Outslope roadbed and barricade.
15N45.100	0.22	0.00	0.22	UAR	Restore	Barricade.
15N45.101	0.12	0.00	0.12	UAR	Restore	Barricade.
15N63	0.30	0.00	0.30	2	2	Manage as ML 2. (Corrected Existing ML to 2)
16N02.1	0.10	0.00	0.10	UAR	2	Add to road system. ML 2; Bear Basin water source
16N02.2	0.87	0.00	0.87	UAR	Restore	Barricade.
16N02.5	0.21	0.00	0.21	UAR	Restore	Outslope or rolling dips as needed and barricade.
16N02D	0.61	0.00	0.61	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N02H	0.40	0.00	0.40	1	1	Outslope or rolling dips as needed.
16N02L	1.70	0.00	1.70	2	2	Upsize culverts, install waterbars or rolling dips.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
16N02S	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill as needed. Outslope as needed and barricade.
16N02S.1	0.21	0.00	0.21	UAR	Restore	Barricade.
16N02T	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill as needed. Outslope as needed and barricade.
16N02T.1	0.12	0.00	0.12	UAR	Restore	Barricade.
16N03.100	0.10	0.00	0.10	UAR	Restore	Barricade.
16N03.2	0.87	0.00	0.87	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Outslope as needed and barricade.
16N03D	0.63	0.00	0.63	1	1	Outslope or waterbars as needed and barricade.
16N03F	0.70	0.00	0.70	2	1	Remove all 4 culverts and associated fill. Outslope or waterbars as needed and barricade. Downgrade to ML 1.
16N03G	0.08	0.00	0.08	1	Deco	Remove from System; Outslope landing as needed and barricade.
16N03H	0.30	0.00	0.30	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N03K	1.50	0.00	1.50	2	2	Repair culverts at mp 1.08 and 1.14.
16N03L	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill as needed. Outslope as needed and barricade.
16N10.1	0.14	0.00	0.14	UAR	Restore	Barricade.
16N15A	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N16	1.50	0.00	1.50	2	2	Repair or replace plugged culverts.
16N16	0.60	1.50	2.10	2	2	Remove all 4 culverts and associated fill. Outslope and barricade.
16N18.1	1.04	0.00	1.04	UAR	Restore	Barricade.
16N18.3	0.49	0.00	0.49	UAR	Restore	Barricade.
16N18.4	0.67	0.00	0.67	UAR	Restore	Barricade.
16N18A	1.35	0.00	1.35	2	2	Repair or replace 8 culverts on section up to MP 1.35 at bridge.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
16N18A	0.95	1.35	2.30	2	Deco	Remove 5 culverts and decommission (corrected miles)
16N18B.1	0.66	0.00	0.66	UAR	Restore	Barricade.
16N18C	0.39	0.00	0.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N18E	0.96	0.00	0.96	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N18K	1.10	0.00	1.10	1	1	Outslope or rolling dips as needed.
16N19	8.28	0.00	8.28	2	2	Improve maintenance on, repair, or replace each of the 17 culverts.
16N19.1	0.05	0.00	0.05	UAR	2	Add to road system. ML 2; water source; POC mitigation - rock/gravel length of road.
16N19.2	0.08	0.00	0.08	UAR	Restore	Outslope or rolling dips as needed and barricade.
16N19.3	0.30	0.00	0.30	UAR	Restore	Barricade.
16N19.4	0.87	0.00	0.87	UAR	Restore	Barricade.
16N19.5	0.19	0.00	0.19	UAR	Restore	Remove fill from culvert. Outslope as needed and barricade.
16N19A	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N19B	1.40	0.00	1.40	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.
16N19E	0.95	0.00	0.95	2	1	Remove all 7 culverts and associated fill. Outslope or waterbars as needed and barricade. Downgrade to ML 1.
16N19E.1	0.41	0.00	0.41	UAR	Restore	Barricade.
16N19F	0.76	0.00	0.76	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N19G	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N21.1	0.15	0.00	0.15	UAR	Restore	Outslope or rolling dips as needed and barricade.
16N21.2	0.10	0.00	0.10	UAR	Restore	Barricade.
16N21F.1	0.09	0.00	0.09	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
16N23	7.40	0.00	7.40	2	2	Improve road drainage at all culverts.`
16N23.100	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized trail
16N23.2	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized trail
16N23.4	0.69	0.00	0.69	UAR	M. Trail	Add to trail system. Motorized trail
16N23A.1	1.90	0.00	1.90	UAR	M. Trail	Add to trail system. Motorized trail
16N24A	0.65	0.00	0.65	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N27	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N30	0.24	0.00	0.24	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N31A.1	0.22	0.00	0.22	UAR	Restore	Barricade.
16N31B.2	0.13	0.00	0.13	UAR	Restore	Barricade.
16N32	3.94	0.00	3.94	2	2	Improve maintenance, repair, or replace each of the 16 culverts.
16N32A	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channels . Outslope as needed and barricade.
16N32C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N33	0.70	0.00	0.70	2	1	Downgrade to ML 1.
16N34	0.90	0.00	0.90	2	2	Add culvert at mp .34. Remove last culvert at mp .9 switchback.
16N34A	0.50	0.00	0.50	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.
16N35A	0.14	0.00	0.14	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N35C	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N36	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the culverts.
16N36.1	0.11	0.00	0.11	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
16N36B	0.80	0.00	0.82	2	2	Clean blocked culverts and install 2 additional culverts.
16N37	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the 6 culverts.
16N37B	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N39A	0.22	0.00	0.22	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N41	1.43	0.00	1.43	2	2	Replace culvert at mp .56.
16N41A	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N41B	0.09	0.00	0.09	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
16N55	0.50	0.00	0.50	1	2	Upgrade to ML 2
16N55.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N01.1	0.21	0.00	0.21	UAR	2	Add to road system. ML 2. POC mitigation - rock/gravel length of road.
17N01.100	2.49	0.00	2.49	UAR	Restore	Remove all culverts and associated fill from stream channels. Outslope and barricade.
17N01.2	0.30	0.00	0.30	UAR	Restore	Barricade.
17N03	1.20	0.00	1.20	1	1	Outslope or waterbars as needed and barricade.
17N04.1	0.12	0.00	0.12	UAR	Restore	Barricade.
17N04.3	0.97	0.00	0.97	UAR	Restore	Remove culvert and associated fill. Outslope or rolling dips as needed and barricade.
17N04S	1.80	0.00	1.80	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N05.100	0.88	0.00	0.88	UAR	Restore	Barricade.
17N05.101	0.06	0.00	0.06	UAR	Restore	Barricade.
17N05.4	0.32	0.00	0.32	UAR	Restore	Barricade.
17N05.4A	1.36	0.00	1.36	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N05.5	0.14	0.00	0.14	UAR	Restore	Outslope or rolling dips as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
17N05C	0.97	0.00	0.97	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N05G	0.67	0.00	0.67	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N05U	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N07.1	0.25	0.00	0.25	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N07.102	3.07	0.00	3.07	UAR	Restore	Road not stable; failing. Remove all culverts and associated fill from stream channels. Outslope as needed and barricade.
17N07.2	0.51	0.00	0.51	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N07.4	0.21	0.00	0.21	UAR	Restore	Outslope as needed.
17N07.5	0.32	0.00	0.32	UAR	Restore	Barricade.
17N07.5A	0.15	0.00	0.15	UAR	Restore	Barricade.
17N07.6	0.75	0.00	0.75	UAR	Restore	Barricade.
17N07.7	0.30	0.00	0.30	UAR	Restore	Barricade.
17N07J	1.64	0.00	1.64	2	2	Repair culvert at mp 1.25
17N07K	0.80	0.00	0.80	2	1	Remove all 3 culverts and associated fill. Outslope or waterbars as needed and barricade. Downgrade to ML 1.
17N07Q	0.22	0.00	0.22	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N07R	0.44	0.00	0.44	2	Deco	Remove from System; Remove culvert and associated fill. Barricade.
17N07R.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N07R.1A	0.25	0.00	0.25	UAR	Restore	Barricade.
17N08.3	0.30	0.00	0.30	UAR	Restore	Barricade.
17N08A	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N13A	0.38	0.00	0.38	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
17N15	0.90	0.00	0.90	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.
17N15A	0.13	0.00	0.13	1	Deco	Remove from System; Outslope as needed and barricade.
17N16	0.65	0.00	0.65	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.
17N16.1	0.17	0.00	0.17	UAR	Restore	Barricade.
17N16.100	0.07	0.00	0.07	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N17	0.60	0.00	0.60	1	Deco	Remove from System; Remove culvert and associated fill from stream channel. Outslope as needed and barricade.
17N17.1	1.98	0.00	1.98	UAR	M. Trail	Add to trail system. Motorized trail
17N18.2	0.39	0.00	0.39	UAR	Restore	Remove 2 culverts and associated fill from stream channels. Outslope as needed and barricade.
17N18.3	0.74	0.00	0.74	UAR	Restore	Barricade.
17N18.4	0.15	0.00	0.15	UAR	Restore	Barricade.
17N18A	0.94	0.00	0.94	1	2	Upgrade to ML 2.
17N18C	0.67	0.00	0.67	2	2	Improve maintenance, repair, or replace each of the 3 culverts.
17N18E	0.42	0.00	0.42	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N18F	0.07	0.00	0.07	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N20	0.19	0.00	0.19	2	2	Improve maintenance, repair, or replace each of the 3 culverts.
17N21.1	0.41	0.00	0.41	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N22A	0.79	0.00	0.79	2	2	Improve maintenance on, repair, or replace culvert at mp 0.7.
17N22A.1	0.21	0.00	0.21	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N22A.2	0.25	0.00	0.25	UAR	Restore	Barricade.
17N22D	0.08	0.00	0.08	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
17N22J	0.12	0.00	0.12	2	2	Outslope or rolling dips as needed.
17N22W	0.15	0.00	0.15	0	Deco	Outslope or rolling dips as needed. (ML Status Corrected to O)
17N22W.1	0.46	0.00	0.46	UAR	1	Add to system as ML 1. Outslope or rolling dips as needed.
17N23	1.30	1.50	2.80	1	Deco	Remove from System; Outslope as needed, remove culverts, barricade. Remove from MP 0.42 to end. (corrected miles)
17N23	1.15	0.35	1.50	1	Deco	Remove from System. (corrected miles)
17N23C.1	2.24	0.00	2.24	UAR	1	Add to road system. ML 1.
17N23C.2	0.59	0.00	0.59	UAR	1	Add to road system. ML 1
17N27B	0.40	0.00	0.40	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N27C	0.40	0.00	0.40	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N27D.1	0.36	0.00	0.36	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N28	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N29	1.00	0.00	1.00	2	2	Pull fill back from landing.
17N29B	0.20	0.00	0.20	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N30	0.88	0.00	0.89	2	1	Remove all culverts and associated fill. Outslope or waterbars as needed. Downgrade to ML 1.
17N30	0.55	0.89	1.44	2	Deco	Remove from system. Outslope or waterbars as needed.
17N30A	0.40	0.00	0.40	2	1	Downgrade to ML1
17N31	1.60	0.00	1.60	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.
17N31.3	0.17	0.00	0.17	UAR	Restore	Barricade.
17N31A.1	0.36	0.00	0.36	UAR	Restore	Barricade.
17N32.1	0.31	0.00	0.31	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
17N32B	0.80	0.00	0.80	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N32F	1.00	0.00	1.00	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
17N32G	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace culverts.
17N35	0.50	0.00	0.50	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N35.100	0.35	0.00	0.35	UAR	Restore	Barricade.
17N36	2.50	0.00	2.50	2	2	Improve maintenance, repair, or replace each of the 14 culverts.
17N36B.1	0.26	0.00	0.26	UAR	Restore	Barricade.
17N36C	0.43	0.00	0.43	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N36F	1.20	0.00	1.20	1	2	Upgrade to ML 2.
17N39	2.19	0.00	2.19	2	2	Improve maintenance, repair, or replace each of the 25 culverts.
17N39A	0.95	0.00	0.95	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N39B	0.51	0.00	0.51	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N39C	0.12	0.00	0.12	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N40	0.35	0.65	1.00	2	1	Outslope or waterbars as needed, barricade, and downgrade to ML 1.
17N40B	0.53	0.00	0.53	2	1	Outslope or waterbars as needed and barricade. Downgrade to ML 1.
17N40B.1	0.19	0.00	0.19	UAR	Restore	Barricade.
17N40C.1	0.20	0.00	0.20	UAR	Restore	Barricade.
17N40D	0.18	0.00	0.18	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
17N41	1.60	0.00	1.60	2	2	Improve maintenance on, repair, or replace/upgrade each of the 13 culverts and Outslope or waterbars as needed.
17N41G.1	0.17	0.00	0.17	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N46A	0.16	0.00	0.16	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N48.1	0.33	0.00	0.33	UAR	Restore	Barricade.
17N48.3	0.16	0.00	0.16	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N48.4	0.46	0.00	0.46	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N48C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
17N49	3.52	2.96	6.48	3	Mixed-Use	Designate as mixed use.
17N49.100	0.12	0.00	0.12	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.100	3.88	0.12	4.00	UAR	Restore	Barricade. (corrected miles)
17N49.100A	0.21	0.00	0.21	UAR	Restore	Barricade.
17N49.101	1.17	0.00	1.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate near mp 0.88
17N49.102	0.87	0.00	0.87	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102A	0.71	0.00	0.71	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102B	0.17	0.00	0.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102C	0.20	0.00	0.20	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.103	0.26	0.00	0.26	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N49.104	3.82	0.00	3.82	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.104	0.86	3.82	4.68	UAR	Restore	Barricade.
17N49.104A	0.05	0.00	0.05	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.104B	0.08	0.00	0.08	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.105	1.43	0.00	1.43	UAR	Restore	Barricade.
17N49.105A	0.12	0.00	0.12	UAR	Restore	Barricade.
17N49.106	0.32	0.00	0.32	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
17N49.107	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.108	0.31	0.00	0.31	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11	4.49	0.00	4.49	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate mid-slope near longitude 124.0119W and latitude 41.88593.
17N49.11M	0.17	0.00	0.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11N	0.23	0.00	0.23	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11P	0.21	0.00	0.21	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.12	2.10	0.00	2.10	UAR	Restore	Barricade.
17N49.13	0.30	0.00	0.30	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.14	0.54	0.00	0.54	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.15	0.62	0.00	0.62	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal closure - gate before junction with 17N49.15A (mp 0.51)
17N49.15A	0.24	0.00	0.24	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.4	2.04	0.00	2.04	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Gravel two POC creek crossings west and south of 17N49.101 junction.
17N49.4A	1.06	0.00	1.06	UAR	Restore	Barricade.
17N49.7	3.06	0.00	3.06	UAR	M. Trail	Add to trail system. Motorized trail; repair road drainage at spring area and 2 culverts; Delineate Route. POC mitigation - Seasonal Closure - Gate near mp 0.23, before POC in first draw.
17N49.7	0.29	3.06	3.35	UAR	Restore	Barricade.
17N49.7A	0.82	0.00	0.82	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.8	0.39	0.00	0.39	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N69.100	0.18	0.00	0.18	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
17N69.2	0.16	0.00	0.16	UAR	Restore	Outslope or rolling dips as needed and barricade.
17N69.4	0.26	0.00	0.26	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
18N01	0.10	0.00	0.10	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N03	1.91	0.00	1.91	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N04E	0.21	0.65	0.86	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope or rolling dips as needed and barricade.
18N05.1	0.20	0.00	0.20	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N05.100	2.16	0.00	2.16	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N05.2	0.53	0.00	0.53	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N06A	0.18	0.00	0.18	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N07.2	0.13	0.00	0.13	UAR	2	Add to road system. Manage as ML 2
18N07.3	0.08	0.00	0.08	UAR	2	Add to road system. Manage as ML 2.
18N07.6	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N07.8	0.38	0.00	0.38	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N08.2	0.03	0.00	0.03	UAR	2	Add to road system. ML 2
18N08G	1.12	0.00	1.12	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N09.100	0.27	0.00	0.27	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N09.100A	0.16	0.00	0.16	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N09.101	0.16	0.00	0.16	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N09.102	1.84	0.00	1.84	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N09.103	0.04	0.00	0.04	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N09.104	0.05	0.00	0.05	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N09.105	0.12	0.00	0.12	UAR	Restore	Outslope or rolling dips as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
18N11	1.92	4.15	6.07	2	2	Replace culvert at mp 5.78.
18N11A	0.80	0.00	0.80	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N11B	0.19	0.00	0.19	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N11C	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N11D	0.46	0.00	0.46	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N11D.2	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N11D.3	0.29	0.00	0.29	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N11D.4A	0.73	0.00	0.73	UAR	Restore	Barricade.
18N11D.5	2.11	0.00	2.11	UAR	Restore	Remove culverts and fill from stream channels. Outslope as needed.
18N12A	0.43	0.00	0.43	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N15	1.20	0.00	1.20	2	2	Upsize culverts, install waterbars or rolling dips.
18N15D	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N16.100	2.60	0.00	2.60	UAR	Restore	Barricade.
18N16E	0.38	0.00	0.38	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N16F.1	0.16	0.00	0.16	UAR	Restore	Barricade.
18N16W	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N17	8.10	0.00	8.10	2	2	Improve maintenance on, repair, or replace/upgrade each of the 19 culverts and Outslope or waterbars as needed.
18N17.100	1.01	0.00	1.01	UAR	Restore	Barricade.
18N17.100A	0.08	0.00	0.08	UAR	Restore	Barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
18N17.103	0.21	0.00	0.21	UAR	Restore	Barricade.
18N17.104	0.20	0.00	0.20	UAR	Restore	Barricade.
18N17B	0.87	0.00	0.87	2	2	Install culvert at mp 0.5
18N17C	1.18	0.00	1.18	2	2	Replace culverts at mp 0.35 and 0.77; and maintain, repair or upgrade remaining 4 culverts and improve surface drainage.
18N17G	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N17H	0.15	0.00	0.15	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N18A	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N18B	0.15	0.00	0.15	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N18C	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N18D	0.13	0.00	0.13	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N19A	0.22	0.00	0.22	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N19B	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N19C	0.17	0.00	0.17	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N20	1.00	0.00	1.00	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N20.100	0.28	0.00	0.28	UAR	Restore	Barricade.
18N20.100A	0.08	0.00	0.08	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.
18N20.101	0.12	0.00	0.12	UAR	Restore	Barricade.
18N20.102	0.47	0.00	0.47	UAR	Restore	Remove culverts and associated fill. Outslope as needed.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
18N20A	0.40	0.00	0.40	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N22	2.00	0.00	2.00	2	1	Remove all culverts. Outslope or waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
18N22D	0.62	0.00	0.62	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N22E	0.14	0.00	0.14	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N23	0.10	0.00	0.10	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N24	1.10	0.00	1.10	1	1	Remove all culverts. Outslope or waterbars/rolling dips as needed and barricade.
18N26	1.75	0.00	1.75	1	1	Remove all culverts. Outslope or waterbars/rolling dips as needed and barricade.
18N26A	0.15	0.00	0.15	1	1	Remove all culverts. Outslope or waterbars/rolling dips as needed and barricade.
18N26B	0.08	0.00	0.08	1	1	Remove all culverts. Outslope or waterbars/rolling dips as needed and barricade.
18N30A	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N30B	0.46	0.00	0.46	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N31	0.60	0.00	0.60	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Outslope as needed and barricade.
18N31.2	0.23	0.00	0.23	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N31.3C	0.18	0.00	0.18	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N31.4	1.25	0.00	1.25	UAR	Restore	Outslope or rolling dips as needed and barricade.
18N46	0.39	0.00	0.39	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N47	0.44	0.00	0.44	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.

Table 165. Alternative 3

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Action
18N48	0.31	0.00	0.31	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N51.100	1.45	0.00	1.45	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
18N51.100A	0.46	0.00	0.46	UAR	Restore	Barricade.
18N56	0.88	0.00	0.88	2	2	Replace culverts; install rolling dips as needed.
18N57	0.56	0.00	0.56	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
18N58.1	0.13	0.00	0.13	UAR	Restore	Barricade.
18N58B	0.25	0.00	0.25	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
19N34	1.95	0.00	1.95	2	Deco	Remove from System; Remove culvert and associated fill as needed. Outslope as needed and barricade.
19N34A	0.28	0.00	0.28	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
19N34B	0.29	0.00	0.29	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
19N34C	0.08	0.00	0.08	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Outslope as needed and barricade.
305.101A	0.04	0.00	0.04	UAR	Restore	Barricade.
305.101B	0.50	0.00	0.50	UAR	Restore	Barricade.
305.109A	1.02	0.00	1.02	UAR	Restore	Barricade.
305.115A	0.18	0.00	0.18	UAR	Restore	Outslope or rolling dips as needed and barricade.
305.121A	0.28	0.00	0.28	UAR	Restore	Barricade.
305.121B	1.03	0.00	1.03	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
315.3A	0.24	0.00	0.24	UAR	Restore	Remove all culverts. Outslope as needed.
315.9A	1.22	0.00	1.22	UAR	Restore	Remove culverts and associated fill from stream channels. Outslope as needed.

Alternative 4

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
13N35	0.10	0.18	0.28	2	Deco	Remove from System.
13N35.5	0.14	0.00	0.14	UAR	Restore	Barricade.
13N37	2.00	0.00	2.00	2	1	Remove all culverts and associated fill. Waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
13N37.1	0.11	0.00	0.11	UAR	Restore	Barricade.
13N37A	0.77	0.00	0.77	2	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
13N37B	0.27	0.00	0.27	2	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
14N01D	1.80	0.00	1.80	2	2	Maintain, repair, or replace each culvert; improve surface drainage.
14N08T	0.11	0.00	0.11	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N15	0.50	0.00	0.50	2	2	Maintain, repair, or replace each culvert; improve surface drainage.
14N15.1	3.80	0.00	3.80	UAR	2	Add to road system. ML 2. Replace culverts and repair road surface.
14N29A	0.80	0.00	0.80	0	Deco	Remove all culverts and associated fill. Waterbars as needed and barricade.
14N32.1	0.26	0.00	0.26	UAR	Restore	Barricade.
14N33	1.60	0.18	1.78	2	Deco	Remove from system. Remove culverts and associated fill from stream channels. Waterbars and barricade.
14N33.3	0.52	0.00	0.52	UAR	Restore	Remove culverts and associated fill from stream channels as on 14N33. Waterbars as needed.
14N33A	0.22	0.00	0.22	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N38	0.41	0.00	0.41	2	2	Improve surface drainage and maintain as ML 2.
14N38	0.19	0.41	0.60	2	1	POC Mitigation - Downgrade to ML 1. Remove culverts, Waterbar as needed and barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
14N46	2.70	0.00	2.70	2	1	Remove 2 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
14N46.2	0.13	0.00	0.13	UAR	Restore	Waterbar and barricade.
14N46B	0.37	0.00	0.37	1	Deco	Remove from System; Waterbars as needed and barricade.
15N01.102	0.48	0.00	0.48	UAR	2	Add to road system. ML 2. POC mitigation - Seasonal closure-gate at right spur (mp 0.09). Add gravel at terminus of rd where water accumulates.'
15N01A.1	0.10	0.00	0.10	UAR	Restore	Barricade.
15N01A.2	0.05	0.00	0.05	UAR	Restore	Barricade.
15N01A.4	3.84	0.00	3.84	UAR	2	Add as ML 2. POC Mitigation - Seasonal gate before approach to first POC stand about 2.2 miles from start.
15N01P	0.09	0.79	0.88	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
15N01Q	0.29	0.00	0.29	1	M. Trail	Convert to Motorized Trail to Marlow Campsite
15N01R	0.10	0.00	0.10	1	1	Waterbar as needed and barricade.
15N01S	0.10	0.00	0.10	1	1	Waterbar as needed and barricade.
15N01U	0.70	0.00	0.70	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
15N01U.1	0.58	0.00	0.58	UAR	Restore	Barricade.
15N02	11.10	0.00	11.10	2	2	Replace 3 priority culverts. POC mitigation- Gravel at culverts and wet areas.
15N02.101	0.51	0.00	0.51	UAR	M. Trail	Add to trail system. Motorized trail.
15N02.101	0.30	0.51	0.81	UAR	Restore	Barricade.
15N02.103	0.58	0.00	0.58	UAR	M. Trail	Add to trail system. Motorized trail
15N02.106	0.48	0.00	0.48	UAR	M. Trail	Add to trail system. Motorized Trail
15N02.107	0.42	0.00	0.42	UAR	M. Trail	Add to trail system. Motorized trail. Barricade at mp 0.37, about 0.05 mile before end of road.
15N02.2	0.24	0.00	0.24	UAR	Restore	Barricade
15N02.4	0.49	0.00	0.49	UAR	M. Trail	Add to trail system. Motorized trail
15N02.5	0.71	0.19	0.90	UAR	Restore	Waterbar or rolling dips as needed and barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
15N02.5	0.19	0.00	0.19	UAR	M. Trail	Add as Motorized Trail.
15N02.5A	0.05	0.00	0.05	UAR	M. Trail	Add as Motorized Trail
15N11.2	0.32	0.00	0.32	UAR	Restore	Barricade.
15N11A	1.70	0.00	1.70	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N11A.1	0.25	0.00	0.25	UAR	Restore	Remove all culverts and associated fill from stream channels. Waterbars as needed.
15N11B	1.39	0.00	1.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbars and barricade.
15N13	3.80	0.00	3.80	2	2	Improve maintenance or repair/replace all culverts and drainage structures as needed. Manage as ML 2.
15N33	0.90	0.00	0.90	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N35A	0.24	0.00	0.24	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N35B	0.57	0.00	0.57	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N35C	0.57	0.00	0.57	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N36.1	0.62	0.00	0.62	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N36C	0.55	0.00	0.55	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N36N	1.30	0.00	1.30	1	2	Upgrade first 1.3 miles; Maintain, repair, or replace each culvert. Improve surface drainage with waterbars and rolling dips as needed.
15N36N	1.30	1.30	2.60	1	Deco	Decommission from 1.3 to 2.6
15N36N.1	0.90	0.00	0.90	UAR	2	Add to road system as ML 2. Access to Blackhawk Bar. Keep; Maintain, repair or replace each culvert. Improve surface draining with water bars and rolling dips as needed. Rock/gravel as needed.
15N36N.1A	0.16	0.00	0.16	UAR	M. Trail	Add as Motorized Trail

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
15N36N.1B	0.21	0.00	0.21	UAR	2	Add as ML 2
15N36N.1C	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
15N38	2.90	0.00	2.90	2	2	Improve surface drainage and install culvert at stream ford on road near private land. POC Mitigation - Barricade last 300' of road, before bottom of POC stand.
15N39A	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
15N39A.1	0.18	0.00	0.18	UAR	Restore	Barricade.
15N39B	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
15N42	1.06	0.00	1.06	2	2	Manage as ML 2.
15N42A	0.44	0.00	0.44	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N45	1.13	0.00	1.13	1	1	Excavate culverts and associated fill. Barricade.
15N45.100	0.22	0.00	0.22	UAR	Restore	Barricade.
15N45.101	0.12	0.00	0.12	UAR	Restore	Barricade.
15N63	0.30	0.00	0.30	2	2	Manage as ML 2.
16N02.1	0.10	0.00	0.10	UAR	2	Add to road system. ML 2; Bear Basin water source
16N02.2	0.87	0.00	0.87	UAR	Restore	Barricade.
16N02.5	0.21	0.00	0.21	UAR	Restore	Waterbar or rolling dips as needed and barricade.
16N02D	0.61	0.00	0.61	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N02H	0.40	0.00	0.40	1	1	Waterbar or rolling dips as needed.
16N02L	1.70	0.00	1.70	2	2	Upsize culverts, install waterbars or rolling dips.
16N02S	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars and barricade.
16N02S.1	0.21	0.00	0.21	UAR	Restore	Barricade.
16N02T	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
16N02T.1	0.12	0.00	0.12	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
16N03.100	0.10	0.00	0.10	UAR	Restore	Barricade.
16N03.2	0.87	0.00	0.87	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Water bar as needed and barricade.
16N03A	0.06	0.00	0.06	1	M. Trail	Convert to motorized trail for access to a small peak on Hurdygurdy Butte.
16N03D	1.40	0.00	1.40	1	2	Upgrade to ML 2.
16N03F	0.70	0.00	0.70	2	1	Remove all 4 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
16N03G	0.08	0.00	0.08	1	Deco	Remove from System; Waterbar landing as needed and barricade.
16N03H	0.30	0.00	0.30	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N03K	0.87	0.00	0.87	2	2	Repair culverts at mp 1.08 and 1.14. POC Mitigation - Seasonal gate at beginning.
16N03L	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
16N10.1	0.14	0.00	0.14	UAR	Restore	Barricade.
16N10.2	0.21	0.00	0.21	UAR	Restore	
16N15A	0.17	0.00	0.17	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N16	1.50	0.00	1.50	2	2	Repair or replace plugged culverts.
16N16	0.60	1.50	2.10	2	2	Remove all 4 culverts and associated fill. Waterbars and barricade.
16N18.1	1.04	0.00	1.04	UAR	Restore	Barricade.
16N18.3	0.49	0.00	0.49	UAR	Restore	Barricade.
16N18.4	0.67	0.00	0.67	UAR	Restore	Barricade.
16N18A	1.35	0.00	1.35	2	2	Repair or replace 8 culverts on section up to MP 1.35 at bridge. POC Mitigation - Gravel and install culverts creek crossings.
16N18A	0.95	1.35	2.30	2	Deco	Remove 5 culverts and decommission and barricade.
16N18B.1	0.66	0.00	0.66	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
16N18C	0.39	0.00	0.39	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N18E	0.96	0.00	0.96	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N18K	1.10	0.00	1.10	1	1	Waterbar or rolling dips as needed.
16N19	8.28	0.00	8.28	2	2	Improve maintenance on, repair, or replace each of the 17 culverts. POC Mitigation - reinforce creek x'ings with gravel and sections of road with POC 0.29-0.46 miles west of 16N19E intersection as needed.
16N19.1	0.05	0.00	0.05	UAR	2	Add to road system. ML 2; water source; POC mitigation - rock/gravel length of road as needed.
16N19.2	0.08	0.00	0.08	UAR	2	Add as ML2 for access to Coon Creek. POC mitigation- rock/gravel length of road as needed.
16N19.3	0.30	0.00	0.30	UAR	Restore	Barricade.
16N19.4	0.87	0.00	0.87	UAR	Restore	Barricade.
16N19.5	0.19	0.00	0.19	UAR	Restore	Remove fill from culvert. Barricade.
16N19A	0.23	0.00	0.23	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N19B	1.40	0.00	1.40	2	1	Waterbar as needed and barricade. Downgrade to ML 1.
16N19E	0.95	0.00	0.95	2	1	Remove all 7 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
16N19E.1	0.41	0.00	0.41	UAR	Restore	Barricade.
16N19F	0.76	0.00	0.76	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N19G	0.23	0.00	0.23	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N21.1	0.15	0.00	0.15	UAR	Restore	Waterbar or rolling dips as needed and barricade.
16N21.2	0.10	0.00	0.10	UAR	Restore	Barricade.
16N21F.1	0.09	0.00	0.09	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
16N23	7.40	0.00	7.40	2	2	Improve road drainage at all culverts. POC Mitigation - Seasonal gate closure and add gravel in areas with POC within 50' of road.
16N23.100	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized trail
16N23.2	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - Gravel and rock route as needed.
16N23.4	0.69	0.00	0.69	UAR	M. Trail	Add to trail system. Motorized trail
16N23A.1	1.90	0.00	1.90	UAR	M. Trail	Add to trail system. Motorized trail.
16N24A	0.65	0.00	0.65	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N27	0.50	0.00	0.50	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N30	0.24	0.00	0.24	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and Barricade.
16N31	0.35	0.00	0.35	1	2	Upgrade to ML 2.
16N31A.1	0.22	0.00	0.22	UAR	Restore	Barricade.
16N31B	1.00	0.00	1.00	1	M. Trail	Convert to motorized trail.
16N31B.2	0.13	0.00	0.13	UAR	Restore	Barricade.
16N32	3.12	0.82	3.94	2	2	Improve maintenance, repair, or replace each of the 16 culverts.
16N32A	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N32C	0.47	0.00	0.47	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
16N33	0.70	0.00	0.70	2	2	POC Mitigation- Seasonal Gate Closure. Rock/gravel POC crossing as needed.
16N33	3.70	0.70	4.40	1	1	POC Mitigation - Barricade.
16N34	0.60	0.00	0.60	2	2	Add culvert at mp .34.
16N34	0.30	0.60	0.90	2	1	Downgrade to ML 1. Remove last culvert at mp .9 switchback. POC mitigation - Barricade.
16N34A	0.50	0.00	0.50	2	1	Waterbar as needed and barricade. Downgrade to ML 1.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
16N35A	0.14	0.00	0.14	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N35C	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
16N36	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the culverts.
16N36.1	0.11	0.69	0.80	UAR	Restore	Barricade.
16N36.1	0.69	0.00	0.69	UAR	2	Add to NFTS as ML 2, repair or replace each of the culverts.
16N36B	0.82	0.00	0.82	2	2	Clean blocked culverts and install 2 additional culverts.
16N37	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the 6 culverts. POC mitigation - Gravel culverted creek crossings.
16N37B	0.17	0.00	0.17	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N38	1.32	0.28	1.60	2	2	POC Mitigation - Reinforce POC crossing with gravel, about 170' west of 16N21 junction.
16N39A	0.22	0.00	0.22	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N41	1.43	0.00	1.43	2	2	Replace culvert at mp .56. POC Mitigation - Reinforce POC crossing with gravel and install culvert, about 200' east of 16N37 junction.
16N41A	0.17	0.00	0.17	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N41B	0.09	0.00	0.09	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N55	0.50	0.00	0.50	1	2	Upgrade to ML 2
16N55.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N01	0.70	0.00	0.70	2	2	POC Mitigation - Rock/gravel road as needed.
17N01.1	0.21	0.00	0.21	UAR	2	Add to road system. ML 2. POC mitigation - rock/gravel length of road as needed.
17N01.100	2.49	0.00	2.49	UAR	Restore	Remove all culverts and associated fill from stream channels. Barricade.
17N01.1A	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N01.1B	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
17N01.1C	0.09	0.00	0.09	UAR	Restore	Barricade. Waterbars as needed.
17N01.2	0.30	0.00	0.30	UAR	2	Add as ML 2. POC Mitigation - Rock and gravel entire length as needed.
17N01.2B	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
17N01.3	0.13	0.00	0.13	UAR	M. Trail	Add as Motorized Trail. Rolling dips as needed.
17N01.3A	0.07	0.00	0.07	UAR	Restore	Barricade
17N03	1.20	0.00	1.20	1	M. Trail	Convert to motorized trail.
17N04.1	0.12	0.00	0.12	UAR	Restore	Barricade.
17N04.3	0.97	0.00	0.97	UAR	Restore	Remove culvert and associated fill. Rolling dips as needed and barricade.
17N04L	3.10	0.00	3.10	1	2	Upgrade to ML 2.
17N04S	1.80	0.00	1.80	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N05.100	0.88	0.00	0.88	UAR	Restore	Barricade.
17N05.101	0.06	0.00	0.06	UAR	Restore	Barricade.
17N05.4	0.32	0.00	0.32	UAR	Restore	Barricade.
17N05.4A	1.36	0.00	1.36	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N05.5	0.14	0.00	0.14	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N05C	0.97	0.00	0.97	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N05F	1.56	0.00	1.56	1	2	Upgrade to ML2.
17N05G	0.67	0.00	0.67	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N05U	0.28	0.00	0.28	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N07.1	0.25	0.00	0.25	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N07.102	3.07	0.00	3.07	UAR	Restore	Road not stable; failing. Remove all culverts and associated fill from stream channels. Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N07.2	0.51	0.00	0.51	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N07.4	0.21	0.00	0.21	UAR	Restore	Waterbar as needed.
17N07.5	0.32	0.00	0.32	UAR	Restore	Barricade.
17N07.5A	0.15	0.00	0.15	UAR	Restore	Barricade.
17N07.6	0.75	0.00	0.75	UAR	Restore	Barricade.
17N07.7	0.30	0.00	0.30	UAR	Restore	Barricade.
17N07G	1.67	0.00	1.67	2	2	POC Mitigation - Rock /gravel stretch with infected POC as needed, ~ milepost 0.2 - 0.22.
17N07J	1.64	0.00	1.64	2	2	Repair culvert at mp 1.25
17N07K	0.80	0.00	0.80	2	1	Remove all 3 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
17N07Q	0.22	0.00	0.22	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N07R	0.44	0.00	0.44	2	Deco	Remove from System; Remove culvert and associated fill. Barricade.
17N07R.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N07R.1A	0.25	0.00	0.25	UAR	Restore	Barricade.
17N08.3	0.30	0.00	0.30	UAR	Restore	Barricade.
17N08A	0.50	0.00	0.50	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N13	0.70	0.00	0.70	2	2	POC Mitigation - Rock /gravel POC crossing as needed, approximately milepost 0.30-0.43.
17N13A	0.38	0.00	0.38	2	1	Waterbar as needed and barricade. Downgrade to ML 1.
17N14	0.39	0.00	0.39	2	2	POC Mitigation - Rock and gravel infested POC site as needed, approximately milepost 0.14 - 0.16.
17N15	0.90	0.00	0.90	2	1	Waterbar as needed and barricade. Downgrade to ML 1.
17N15A	0.13	0.00	0.13	1	Deco	Remove from System; Waterbars as needed and barricade.
17N16	0.65	0.00	0.65	2	2	Manage as ML 2. Rolling dips as needed.
17N16.1	0.17	0.00	0.17	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N16.100	0.07	0.00	0.07	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N17	0.60	0.00	0.60	1	Deco	Remove from System; Remove culvert and associated fill from stream channel. Waterbars as needed and barricade.
17N17.1	1.98	0.00	1.98	UAR	Restore	
17N18.2	0.39	0.00	0.39	UAR	Restore	Remove 2 culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N18.3	0.74	0.00	0.74	UAR	Restore	Barricade.
17N18.4	0.15	0.00	0.15	UAR	Restore	Barricade.
17N18A	0.94	0.00	0.94	1	2	Upgrade to ML 2.
17N18C	0.67	0.00	0.67	2	2	Improve maintenance, repair, or replace each of the 3 culverts. POC Mitigation Rock/gravel length of road as needed.
17N18E	0.42	0.00	0.42	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N18F	0.07	0.00	0.07	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N20	0.19	0.00	0.19	2	2	Improve maintenance, repair, or replace each of the 3 culverts.
17N21.1	0.41	0.00	0.41	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N22A	0.79	0.00	0.79	2	2	Improve maintenance on, repair, or replace culvert at mp 0.7.
17N22A.1	0.21	0.00	0.21	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N22A.2	0.25	0.00	0.25	UAR	Restore	Barricade.
17N22D	0.08	0.00	0.08	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N22J	0.12	0.00	0.12	2	2	Waterbar or rolling dips as needed.
17N22W	0.15	0.00	0.15	0	Deco	Waterbar as needed.
17N22W.1	0.46	0.00	0.46	UAR	Restore	Waterbar as needed.
17N23	1.30	1.50	2.80	1	Deco	Remove from System. Waterbars as needed, remove culverts, barricade.
17N23	1.15	0.35	1.50	1	Deco	Remove from System.
17N23	1.15	0.35	1.50	1	Deco	Remove from System.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N23	1.15	0.35	1.50	1	Deco	Remove from System.
17N23C.1	1.04	0.05	1.09	UAR	1	Add to road system. ML 1.
17N23C.1	0.05	0.00	0.05	UAR	1	Add to road system. ML 1.
17N23C.1	1.15	1.09	2.24	UAR	1	Add to road system. ML 1.
17N26	0.25	0.00	0.25	2	2	POC Mitigation - Rock /gravel entire length of road as needed.
17N26A	0.37	0.00	0.37	2	2	POC Mitigation - Rock and gravel entire length of road as needed, infested POC.
17N27B	0.40	0.00	0.40	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N27C	0.40	0.00	0.40	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N27D.1	0.36	0.00	0.36	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N28	0.20	0.00	0.20	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N29	1.00	0.00	1.00	2	2	Pull fill back from landing.
17N29B	0.20	0.00	0.20	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N30	0.89	0.00	0.89	2	1	Remove all culverts and associated fill. Waterbars as needed. Downgrade to ML 1.
17N30	0.55	0.89	1.44	2	Deco	Remove from system. Waterbars as needed.
17N30A	0.40	0.00	0.40	2	1	Downgrade to ML1.
17N31	1.60	0.00	1.60	2	2	Manage as ML 2. Rolling dips as needed.
17N31.3	0.17	0.00	0.17	UAR	Restore	Barricade.
17N31A.1	0.36	0.00	0.36	UAR	Restore	Barricade.
17N32	2.22	0.00	2.22	2	2	POC Mitigation - Seasonal Gate Closure. Rock/gravel POC crossing as needed.
17N32.1	0.31	0.00	0.31	UAR	Restore	Barricade.
17N32B	0.80	0.00	0.80	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N32F	1.00	0.00	1.00	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N32G	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace culverts.
17N35	0.50	0.00	0.50	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N35.100	0.35	0.00	0.35	UAR	Restore	Barricade.
17N36	2.50	0.00	2.50	2	2	Improve maintenance, repair, or replace each of the 14 culverts.
17N36B.1	0.26	0.00	0.26	UAR	Restore	Barricade.
17N36C	0.43	0.00	0.43	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N36F	1.20	0.00	1.20	1	2	Upgrade to ML 2.
17N39	2.19	0.00	2.19	2	2	Improve maintenance, repair, or replace each of the 25 culverts. POC Mitigation - Rock and gravel stretch with infected POC as needed, from junction with 411 to ~ milepost 0.65
17N39A	0.95	0.00	0.95	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N39B	0.51	0.00	0.51	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
17N39C	0.12	0.00	0.12	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N40	0.35	0.65	1.00	2	1	Waterbars as needed, barricade, and downgrade to ML 1.
17N40	0.65	0.00	0.65	2	2	POC Mitigation - Seasonal Gate Closure
17N40B	0.53	0.00	0.53	2	M. Trail	Convert to motorized trail.
17N40B.1	0.19	0.00	0.19	UAR	Restore	Barricade.
17N40C.1	0.20	0.00	0.20	UAR	Restore	Barricade.
17N40D	0.18	0.00	0.18	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N41	1.60	0.00	1.60	2	2	Improve maintenance on, repair, or replace/upgrade each of the 13 culverts and waterbar as needed. POC Mitigation - Rock and gravel with infected POC, from junction with 411 to ~ milepost 1.05.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N41A	0.30	0.00	0.30	1	1	POC Mitigation - Barricade.
17N41G.1	0.17	0.00	0.17	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N41H	0.90	0.00	0.90	2	2	POC Mitigation - Rock and gravel stretch with infected POC as needed, first 0.23 mile.
17N42A.100	0.48	0.00	0.48	UAR	M. Trail	Add as motorized trail.
17N43	1.00	0.00	1.00	2	2	POC Mitigation - Rock /gravel stretch with infected POC as needed, ~ milepost 0.47-0.68.
17N46	1.20	0.00	1.20	2	2	POC Mitigation - Gate on 17N40 restricts access to road.
17N46A	0.16	0.00	0.16	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
17N48	1.66	0.00	1.66	2	2	POC Mitigation - Rock and gravel entire length of road as needed, infested POC throughout.
17N48.1	0.33	0.00	0.33	UAR	Restore	Barricade.
17N48.3	0.16	0.00	0.16	UAR	Restore	POC Mitigation - Barricade.
17N48.4	0.46	0.00	0.46	UAR	Restore	Rolling dips as needed and barricade.
17N48C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
17N49	1.75	2.96	4.71	3	3	POC Mitigation - Rock and gravel stretch with infected POC as needed, ~ milepost 3.8, just north of 17N49.101 junction, for 100'.
17N49	0.90	5.15	6.05	3	3	
17N49	0.44	4.71	5.15	3	Mixed-use	Designate as mixed use.
17N49.100	0.12	0.00	0.12	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.100	3.66	0.12	3.78	UAR	M. Trail	Add as Motorized Trail
17N49.100	0.22	3.78	4.00	UAR	Restore	
17N49.100A	0.21	0.00	0.21	UAR	Restore	Barricade.
17N49.101	1.17	0.00	1.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate near mp 0.88.
17N49.102	0.87	0.00	0.87	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102A	0.71	0.00	0.71	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N49.102B	0.17	0.00	0.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102C	0.20	0.00	0.20	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.103	0.26	0.00	0.26	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N49.104	3.82	0.00	3.82	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.104	0.86	3.82	4.68	UAR	M. Trail	Add as Motorized Trail
17N49.104A	0.05	0.00	0.05	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.104B	0.08	0.00	0.08	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.105	1.43	0.00	1.43	UAR	Restore	Barricade.
17N49.105A	0.12	0.00	0.12	UAR	Restore	Barricade.
17N49.106	0.32	0.00	0.32	UAR	Restore	Barricade.
17N49.107	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.108	0.31	0.00	0.31	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11	1.94	0.00	1.94	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11	2.55	1.94	4.49	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate mid-slope near longitude 124.0119W and latitude 41.88593. Seasonal POC gate ~ 124.00726W 41.88399N (NAD83)
17N49.11M	0.17	0.00	0.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11N	0.23	0.00	0.23	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11P	0.18	0.00	0.18	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11P	0.03	0.18	0.21	UAR	Restore	POC Mitigation - Barricade.
17N49.12	2.10	0.00	2.10	UAR	M. Trail	Add as motorized trail. POC Mitigation - Seasonal closure gate at beginning.
17N49.13	0.30	0.00	0.30	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.14	0.54	0.00	0.54	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.15	0.62	0.00	0.62	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.15A	0.24	0.00	0.24	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.4	1.29	0.00	1.29	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
17N49.4	0.75	1.29	2.04	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - seasonal closure - just to east of 17N49.102.
17N49.4A	1.06	0.00	1.06	UAR	Restore	Barricade.
17N49.7	2.15	0.91	3.06	UAR	M. Trail	Add to trail system. Motorized trail; repair road drainage at spring area and 2 culverts; Delineate Route. POC mitigation - Seasonal Closure - Gate north of 17N49.15
17N49.7	0.29	3.06	3.35	UAR	Restore	Barricade.
17N49.7	0.91	0.00	0.91	UAR	M. Trail	Add to trail system. Motorized trail; repair road drainage at spring area and 2 culverts; Delineate Route.
17N49.7A	0.82	0.00	0.82	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.8	0.39	0.00	0.39	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N63	0.30	0.00	0.30	2	2	POC Mitigation - Rock /gravel entire length of road as needed.
17N85	1.20	0.00	1.20	UAR	1	Add to NFTS as ML 1, remove or replace failing culverts. POC Mitigation - Barricade.
18N01	0.10	0.00	0.10	2	2	Maintain as ML 2.
18N01	0.06	0.10	0.16	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N02	2.60	0.00	2.60	3	3	POC Mitigation - rock/gravel as needed the road segment 100' either side of Sanger Lake outlet, and the road segment through the POC stand south of the 18N07 intersection.
18N02.1	0.14	0.00	0.14	UAR	Restore	Barricade.
18N02.2	0.08	0.00	0.08	UAR	M. Trail	Add as Motorized Trail
18N02.3	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail; POC Mitigation - Rock/gravel length of route as needed.
18N03	1.91	0.00	1.91	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N04E	0.21	0.65	0.86	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars or rolling dips as needed and barricade.
18N05	2.00	0.00	2.00	1	M. Trail	Convert to motorized trail.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
18N05.1	0.20	0.00	0.20	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N05.100	2.16	0.00	2.16	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
18N05.2	0.53	0.00	0.53	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N06A	0.18	0.00	0.18	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N07.12	0.04	0.00	0.04	UAR	M. Trail	Add as Motorized Trail
18N07.14	0.05	0.00	0.05	UAR	M. Trail	Add as Motorized Trail
18N07.2	0.13	0.00	0.13	UAR	2	Add as ML 2
18N07.3	0.08	0.00	0.08	UAR	2	Add to road system. Manage as ML 2. POC Mitigation - Rock/gravel entire route as needed.
18N07.6	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N07.8	0.38	0.00	0.38	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
18N08.2	0.03	0.00	0.03	UAR	2	Add to road system. ML 2
18N08F	1.10	0.70	1.80	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbars as needed. POC Mitigation - barricade.
18N08G	1.12	0.00	1.12	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N09	5.10	0.00	5.10	2	2	POC Mitigation - Seasonal Gate closure
18N09.100	0.21	0.00	0.21	UAR	M. Trail	Add as Motorized Trail
18N09.100	0.06	0.21	0.27	UAR	Restore	Waterbars/Rolling dips as needed and barricade at 18N09.
18N09.100A	0.16	0.21	0.37	UAR	Restore	Waterbar as needed and Barricade.
18N09.102	1.84	0.00	1.84	UAR	Restore	Barricade.
18N09.103	0.04	0.00	0.04	UAR	Restore	Waterbar or rolling dips as needed and barricade.
18N09.104	0.05	0.00	0.05	UAR	Restore	Barricade.
18N09.105	0.12	0.00	0.12	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
18N09.106	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail
18N09.107	0.01	0.00	0.01	UAR	M. Trail	Add as Motorized Trail
18N09.108	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
18N11	1.92	4.15	6.07	2	2	Replace culvert at mp 5.78.
18N11A	0.80	0.00	0.80	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N11B	0.19	0.00	0.19	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N11C	0.20	0.00	0.20	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N11D	0.46	0.00	0.46	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N11D.2	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N11D.3	0.29	0.00	0.29	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N11D.4A	0.73	0.00	0.73	UAR	Restore	Barricade.
18N11D.5	2.11	0.00	2.11	UAR	Restore	Remove culverts and fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
18N12A	0.43	0.00	0.43	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N15	1.20	0.00	1.20	2	2	Upsize culverts, install waterbars or rolling dips.
18N15D	0.23	0.00	0.23	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N16	5.33	0.00	5.33	2	2	POC Mitigation - Rock/gravel first 0.28 miles within infected POC as needed
18N16.100	2.60	0.00	2.60	UAR	Restore	Barricade.
18N16E	0.38	0.00	0.38	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N16F.1	0.16	0.00	0.16	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
18N16W	0.17	0.00	0.17	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N17	8.10	0.00	8.10	2	2	Improve maintenance on, repair, or replace/upgrade each of the 19 culverts and Outslope or waterbars as needed. POC Mitigation - Seasonal road closure.
18N17.100	1.01	0.00	1.01	UAR	Restore	Barricade.
18N17.100A	0.08	0.00	0.08	UAR	Restore	Barricade.
18N17.103	0.21	0.00	0.21	UAR	Restore	Barricade.
18N17.104	0.20	0.00	0.20	UAR	Restore	Barricade.
18N17B	0.87	0.00	0.87	2	2	Install culvert at mp 0.5
18N17C	1.18	0.00	1.18	2	2	Replace culverts at mp 0.35 and 0.77; and maintain, repair or upgrade remaining 4 culverts and improve surface drainage.
18N17D	0.25	0.00	0.25	2	2	POC Mitigation - Seasonal Gate Closure
18N17E	0.90	0.00	0.90	2	2	POC Mitigation - Seasonal Gate Closure
18N17F	0.15	0.00	0.15	2	2	POC Mitigation - Seasonal Gate Closure
18N17G	0.12	0.00	0.12	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N17H	0.15	0.00	0.15	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N18A	0.20	0.00	0.20	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N18B	0.15	0.00	0.15	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N18C	0.08	0.00	0.08	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N18D	0.13	0.00	0.13	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N19A	0.22	0.00	0.22	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N19B	0.20	0.00	0.20	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
18N19C	0.17	0.00	0.17	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N20	1.00	0.00	1.00	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N20.100	0.28	0.00	0.28	UAR	Restore	Barricade.
18N20.100A	0.08	0.00	0.08	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N20.101	0.12	0.00	0.12	UAR	Restore	Barricade.
18N20.102	0.47	0.00	0.47	UAR	Restore	Remove culverts and associated fill. Waterbars as needed.
18N20A	0.40	0.00	0.40	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N22	2.00	0.00	2.00	2	1	Remove all culverts. Waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
18N22D	0.62	0.00	0.62	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N22E	0.14	0.00	0.14	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N23	0.10	0.00	0.10	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N24	1.10	0.00	1.10	1	M. Trail	Convert to motorized trail.
18N26	1.75	0.00	1.75	1	M. Trail	Convert to motorized trail.
18N26A	0.15	0.00	0.15	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N26B	0.08	0.00	0.08	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N30A	0.28	0.00	0.28	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N30B	0.46	0.00	0.46	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N31	0.60	0.00	0.60	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
18N31.2	0.23	0.00	0.23	UAR	Restore	Waterbar or rolling dips as needed and barricade.
18N31.3C	0.18	0.00	0.18	UAR	Restore	Waterbar or rolling dips as needed and barricade.
18N31.4	1.25	0.00	1.25	UAR	Restore	Waterbar or rolling dips as needed and barricade.
18N46	0.39	0.00	0.39	2	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N47	0.44	0.00	0.44	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N48	0.31	0.00	0.31	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N51	0.27	0.00	0.27	1	2	Upgrade to ML 2.
18N51	0.43	0.27	0.70	1	2	Upgrade to ML2.
18N51.100	1.45	0.00	1.45	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
18N51.100A	0.46	0.00	0.46	UAR	Restore	Barricade.
18N56	0.88	0.00	0.88	2	2	Replace culverts; install rolling dips as needed. POC Mitigation - Rock/gravel 100' either side of infected creek crossing near milepost 0.15.
18N57	0.56	0.00	0.56	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
18N58.1	0.13	0.00	0.13	UAR	Restore	Barricade.
18N58B	0.25	0.00	0.25	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
199.102	0.13	0.00	0.13	UAR	2	Add to road system. ML2. Administrative access only to water system for campground.
199.103	0.10	0.00	0.10	UAR	3	Add to road system. ML 3, Madrona Campground. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.104	0.11	0.00	0.11	UAR	3	Add to road system. ML 3, Madrona Campground. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.105	0.03	0.00	0.03	UAR	3	Add to road system. ML 3, Darlingtonia Trail head access
199.106	0.18	0.00	0.18	UAR	3	Add to road system. ML 3, Eighteen-mile river access site. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.109	0.10	0.00	0.10	UAR	Restore	Barricade to allow parking at turnout and hiking access to river.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
199.111	0.09	0.00	0.09	UAR	2	Add to road system. Add road to creek as ML 2. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.111A	0.07	0.00	0.07	UAR	Restore	Barricade.
199.113	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail
19N34	1.95	0.00	1.95	1	Deco	Remove from System; Remove culvert and associated fill as needed. Waterbars as needed and barricade.
19N34A	0.28	0.00	0.28	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
19N34B	0.29	0.00	0.29	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
19N34C	0.08	0.00	0.08	1	Deco	Remove from System. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
305.100	0.57	0.00	0.57	UAR	Restore	Barricade.
305.101	1.08	0.00	1.08	UAR	Restore	Barricade.
305.101A	0.04	0.00	0.04	UAR	Restore	Barricade.
305.101B	0.50	0.00	0.50	UAR	Restore	Barricade.
305.102	0.15	0.00	0.15	UAR	Restore	Barricade.
305.103	0.14	0.00	0.14	UAR	Restore	Barricade.
305.104	0.14	0.00	0.14	UAR	Restore	Barricade.
305.105	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
305.106	0.21	0.00	0.21	UAR	Restore	Barricade.
305.107	1.25	0.00	1.25	UAR	Restore	
305.108	0.06	0.00	0.06	UAR	Restore	Barricade.
305.109	2.43	0.00	2.43	UAR	M. Trail	Add to trail system Motorized Trail; POC Mitigation - Install drains gravel at wet areas to keep vehicles on rdway (near mp 1and 1.5), install culvert. Improve surface drainage, place boulders strategically, increase enforcement.
305.109A	1.02	0.00	1.02	UAR	Restore	Barricade.
305.113	0.12	0.00	0.12	UAR	Restore	Barricade.
305.114	0.63	0.00	0.63	UAR	Restore	Waterbar or rolling dips as needed and barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
305.115	1.74	0.00	1.74	UAR	Restore	Waterbar or rolling dips as needed and barricade.
305.115A	0.18	0.00	0.18	UAR	Restore	Waterbar or rolling dips as needed and barricade.
305.118	0.80	0.00	0.80	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - seasonal closure required at beginning of route. Gate mid-October through early June; need culvert in at POC site, barricade end of route. gravel and culvert placement in seepy areas as needed.
305.118	0.76	0.80	1.56	UAR	Restore	Waterbar/rolling dips as needed. Barricade.
305.121	0.63	0.00	0.63	UAR	M. Trail	Add as motorized trail. POC Mitigation - Seasonal gate closure.
305.121A	0.28	0.00	0.28	UAR	Restore	POC Mitigation - Barricade.
305.121B	1.03	0.00	1.03	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
305.123	0.63	0.00	0.63	UAR	M. Trail	Add as Motorized trail.
305.124	1.20	0.00	1.20	UAR	Restore	Rolling dips as needed and barricade.
305.125	1.44	0.00	1.44	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC Mitigation - Seasonal closure - gate at both ends.
305.126	1.56	0.00	1.56	UAR	M. Trail	Add as Motorized trail.
305.128	0.70	0.00	0.70	UAR	Restore	Barricade.
305.129	0.40	0.00	0.40	UAR	Restore	Barricade.
305.130	1.72	0.00	1.72	UAR	M. Trail	Add as motorized trail.
305.131	0.09	0.00	0.09	UAR	Restore	Restore
305.133	0.01	0.00	0.01	UAR	M. Trail	Add as Motorized Trail.
305.134	0.14	0.00	0.14	UAR	Restore	Barricade
314.1	1.21	0.00	1.21	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - Barricade at mp 1.21.
314.107	0.26	0.00	0.26	UAR	2	Add to road system. ML 2; Delineate route. Three Ponds camping area. POC mitigation - Rock/gravel as needed.
315.100	1.68	0.00	1.68	UAR	M. Trail	Add as Motorized Trail
315.102	0.48	0.00	0.48	UAR	Restore	Barricade.
315.104	0.82	0.00	0.82	UAR	M. Trail	Add as motorized trail.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
315.106	0.25	0.00	0.25	UAR	Restore	Barricade.
315.107	0.30	0.00	0.30	UAR	Restore	Barricade.
315.108	0.46	0.00	0.46	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
315.110	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail
315.111	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
315.2	0.51	0.00	0.51	UAR	Restore	Rolling dips as needed. Remove culverts at mp 0.07 0.13 and 0.18 to improve drainage. POC Mitigation - Barricade.
315.3	0.98	0.00	0.98	UAR	M. Trail	Add as motorized trail. POC Mitigation - Rock/gravel creek crossing and place culvert as needed.
315.3A	0.24	0.00	0.24	UAR	Restore	Remove all culverts. Waterbars as needed.
315.9A	1.22	0.00	1.22	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed. POC Mitigation - barricade.
316.10	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.11	0.04	0.00	0.04	UAR	M. Trail	Add as Motorized Trail
316.12	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.2	0.20	0.00	0.20	UAR	M. Trail	Add as Motorized Trail
316.3	0.08	0.00	0.08	UAR	M. Trail	Add as Motorized Trail
316.4	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail; route delineation
316.5	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.6	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.7	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trial; route delineation
316.7A	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail; route delineation
316.8	0.05	0.00	0.05	UAR	M. Trail	Add as Motorized Trail; route delineation; waterbars
316.9	0.06	0.00	0.06	UAR	M. Trail	Add as Motorized Trail
316.9A	0.05	0.00	0.05	UAR	Restore	Barricade
324.100	0.13	0.00	0.13	UAR	Restore	Barricade.
405.10	0.74	0.00	0.74	UAR	M. Trail	Add driveable portion to trail system. Motorized trail. Delineate route. Route delineation at .36mp.
405.100	0.11	0.00	0.11	UAR	Restore	Barricade.

Table 166. Alternative 4

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Proposed Actions
405.101	0.17	0.00	0.17	UAR	Restore	Barricade.
405.103	3.47	0.00	3.47	UAR	M. Trail	Add to trail system. Motorized trail. Improve surface drainage near creek; repair culvert.
405.9	0.05	0.00	0.05	UAR	Restore	Barricade.
411.101	0.30	0.00	0.30	UAR	Restore	Barricade.
411.102	0.17	0.00	0.17	UAR	Restore	Barricade.
427.101	0.15	0.00	0.15	UAR	1	Add to road system. ML 1.
427.103	0.32	0.00	0.32	UAR	2	Add to road system. ML 2. Delineate Route.
427.104	0.30	0.00	0.30	UAR	M. Trail	Add as Motorized Trail
427.105	0.29	0.00	0.29	UAR	2	Add to road system. ML 2, County disposal site; may be gated periodically for administrative purposes.
427.106	0.13	0.00	0.13	UAR	M. Trail	Add to trail system. Motorized Trail; install rolling dips to improve drainage.
427.107	0.05	0.00	0.05	UAR	2	Add as ML 2
427.108	0.09	0.00	0.09	UAR	M. Trail	Add as Motorized Trail
427.108A	0.04	0.00	0.04	UAR	Restore	Barricade

Alternative 5

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
13N35	0.10	0.18	0.28	2	Deco	Remove from System. Barricade.
13N35.5	0.14	0.00	0.14	UAR	Restore	Barricade.
13N37	2.00	0.00	2.00	2	1	Remove all culverts and associated fill. Waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
13N37.1	0.11	0.00	0.11	UAR	Restore	Barricade.
13N37A	0.77	0.00	0.77	2	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
13N37B	0.27	0.00	0.27	2	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
14N01D	1.80	0.00	1.80	2	1	Downgrade to ML 1. Remove culverts. Waterbars and rolling dips as needed. Barricade.
14N06A.1	0.18	0.00	0.18	UAR	Restore	Barricade.
14N08T	0.11	0.00	0.11	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N15	0.50	0.00	0.50	2	1	Downgrade to ML 1. Remove culverts. Waterbars and rolling dips as needed. Barricade.
14N15.1	3.80	0.00	3.80	UAR	Restore	Remove culverts and associated fill. Waterbar as needed and barricade.
14N29A	0.80	0.00	0.80	0	Deco	Remove all culverts and associated fill. Waterbars as needed and barricade.
14N32.1	0.26	0.00	0.26	UAR	Restore	Barricade.
14N33	1.60	0.18	1.78	2	Deco	Remove from system. Remove culverts and associated fill from stream channels. Waterbars and barricade.
14N33.3	0.52	0.00	0.52	UAR	Restore	Remove culverts and associated fill from stream channels as on 14N33. Waterbar as needed.
14N33A	0.22	0.00	0.22	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N38	0.60	0.00	0.60	2	1	Downgrade to ML 1. Remove culverts. Waterbars and rolling dips as needed. Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
14N39	1.90	0.00	1.90	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed and barricade.
14N46	2.70	0.00	2.70	2	1	Remove 2 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
14N46.2	0.13	0.00	0.13	UAR	Restore	Waterbars and barricade.
14N46B	0.37	0.00	0.37	1	Deco	Remove from System; Waterbars as needed and barricade.
15N01.102	0.29	0.00	0.29	UAR	2	Add to road system.
15N01.102	0.19	0.29	0.48	UAR	2	Add to road system. ML 2. POC mitigation - Seasonal closure- gate at right spur (mp 0.09). Barricade last 50' of southern fork, located about 500' from 15N01
15N01A.1	0.10	0.00	0.10	UAR	Restore	Barricade.
15N01A.2	0.05	0.00	0.05	UAR	Restore	Barricade.
15N01A.4	3.84	0.00	3.84	UAR	1	Add to system as ML 1. Replace culverts and repair road surface. Barricade.
15N01P	0.09	0.79	0.88	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
15N01R	0.10	0.00	0.10	1	1	Waterbars as needed and barricade.
15N01S	0.10	0.00	0.10	1	1	Waterbars as needed and barricade.
15N01U	0.70	0.00	0.70	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
15N01U.1	0.58	0.00	0.58	UAR	Restore	Barricade.
15N01-x.101	0.13	0.00	0.13	UAR	Restore	Barricade.
15N02	11.10	0.00	11.10	2	1	Downgrade to ML 1, Remove culverts. Waterbars as needed and Barricade.
15N02.101	0.81	0.00	0.81	UAR	Restore	
15N02.103	0.58	0.00	0.58	UAR	Restore	
15N02.106	0.48	0.00	0.48	UAR	Restore	
15N02.107	0.42	0.00	0.42	UAR	Restore	POC Mitigation - Barricade. Already located behind barricade.
15N02.108	1.14	0.00	1.14	UAR	Restore	Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
15N02.108A	0.59	0.39	0.98	UAR	Restore	Barricade.
15N02.2	0.24	0.00	0.24	UAR	Restore	Barricade
15N02.4	0.49	0.00	0.49	UAR	Restore	
15N02.5	0.90	0.00	0.90	UAR	Restore	Waterbars or rolling dips as needed and barricade.
15N02.5A	0.05	0.00	0.05	UAR	Restore	
15N11.2	0.32	0.00	0.32	UAR	Restore	Barricade.
15N11A	1.70	0.00	1.70	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N11A.1	0.25	0.00	0.25	UAR	Restore	Remove all culverts and associated fill from stream channels. Waterbars as needed.
15N11B	1.39	0.00	1.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbars and barricade.
15N13	3.80	0.00	3.80	2	2	Improve maintenance or repair/replace all culverts and drainage structures as needed. Manage as ML 2.
15N13.100	0.49	0.62	1.11	UAR	Restore	Barricade
15N13.100	0.48	1.74	2.22	UAR	Restore	Barricade
15N33	0.90	0.00	0.90	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N35A	0.24	0.00	0.24	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N35B	0.57	0.00	0.57	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N35C	0.57	0.00	0.57	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N36.1	0.62	0.00	0.62	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Waterbars as needed and barricade.
15N36C	0.55	0.00	0.55	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N36N	1.30	0.00	1.30	1	2	Upgrade first 1.3 miles to ML 2; Maintain, repair, or replace each culvert. Improve surface drainage with waterbars and rolling dips as needed.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
15N36N	1.30	1.30	2.60	1	Deco	Decommission from 1.3 to 2.6. Barricade.
15N36N.1	0.90	0.00	0.90	UAR	2	Add to road system as ML 2. Access to Blackhawk Bar. Keep; Maintain, repair or replace each culvert. Improve surface draining with waterbars and rolling dips as needed. Rock/gravel as needed.
15N36N.1A	0.16	0.00	0.16	UAR	Restore	Barricade.
15N36N.1B	0.21	0.00	0.21	UAR	Restore	Barricade.
15N36N.1C	0.03	0.00	0.03	UAR	Restore	
15N38	1.50	0.00	1.50	2	2	Improve surface drainage and install culvert at stream ford on road near private land.
15N38	1.40	1.50	2.90	2	1	Downgrade to ML 1. Remove culvert, waterbar as needed. Barricade.
15N39A	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
15N39A.1	0.18	0.00	0.18	UAR	Restore	Barricade
15N39B	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N42	1.06	0.00	1.06	2	1	Remove all 3 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
15N42A	0.44	0.00	0.44	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
15N45	1.13	0.00	1.13	1	1	Excavate culverts and associated fill. Barricade.
15N45.100	0.22	0.00	0.22	UAR	Restore	Barricade.
15N45.101	0.12	0.00	0.12	UAR	Restore	Barricade.
15N63	0.30	0.00	0.30	2	2	Manage as ML 2.
16N02.1	0.10	0.00	0.10	UAR	2	Add to road system. ML 2; Bear Basin water source
16N02.2	0.87	0.00	0.87	UAR	Restore	Barricade.
16N02.5	0.21	0.00	0.21	UAR	Restore	Waterbar or rolling dips as needed and barricade.
16N02D	0.61	0.00	0.61	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
16N02G	0.70	0.00	0.70	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed and barricade.
16N02H	0.40	0.00	0.40	1	1	Waterbars or rolling dips as needed.
16N02L	1.70	0.00	1.70	2	1	Downgrade to ML 1. Remove culverts, install waterbars or rolling dips. Barricade.
16N02S	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
16N02S.1	0.21	0.00	0.21	UAR	Restore	Barricade.
16N02T	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
16N02T.1	0.12	0.00	0.12	UAR	Restore	Barricade.
16N03.100	0.10	0.00	0.10	UAR	Restore	Barricade.
16N03.2	0.87	0.00	0.87	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Waterbars as needed and barricade.
16N03D	1.48	0.00	1.48	1	1	Waterbars as needed and barricade.
16N03F	0.70	0.00	0.70	2	1	Remove all 4 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
16N03G	0.08	0.00	0.08	1	Deco	Remove from System; Waterbar landing as needed and barricade.
16N03H	0.30	0.00	0.30	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N03K	0.63	0.87	1.50	2	1	Downgrade to ML 1. Remove culvert and fill. Waterbar as needed and barricade.
16N03L	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill as needed. Waterbars as needed and barricade.
16N10.1	0.14	0.00	0.14	UAR	Restore	Barricade.
16N10.2	0.21	0.00	0.21	UAR	Restore	
16N15A	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N16	1.50	0.00	1.50	2	2	Repair or replace plugged culverts.
16N16	0.60	1.50	2.10	2	1	Downgrade to ML1. Remove all 4 culverts and associated fill. Waterbars and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
16N18.1	1.04	0.00	1.04	UAR	Restore	Barricade past point where two access point joint, approximately 200' up road.
16N18.3	0.49	0.00	0.49	UAR	Restore	Barricade.
16N18.4	0.67	0.00	0.67	UAR	Restore	Barricade.
16N18A	1.35	0.00	1.35	2	1	Downgrade to ML1. Remove culverts. Rolling dips as needed. Barricade.
16N18A	0.95	1.35	2.30	2	Deco	Remove 5 culverts and decommission.
16N18B.1	0.66	0.00	0.66	UAR	Restore	Barricade.
16N18C	0.39	0.00	0.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N18E	0.96	0.00	0.96	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N18K	1.10	0.00	1.10	1	1	Waterbar or rolling dips as needed.
16N19	8.28	0.00	8.28	2	1	Downgrade to ML1 and barricade. Repair, replace, or remove each of the 17 culverts.
16N19.1	0.05	0.00	0.05	UAR	Restore	Barricade.
16N19.2	0.08	0.00	0.08	UAR	Restore	Rolling dips as needed and barricade.
16N19.3	0.30	0.00	0.30	UAR	Restore	Barricade.
16N19.4	0.87	0.00	0.87	UAR	Restore	Barricade.
16N19.5	0.19	0.00	0.19	UAR	Restore	Remove fill from culvert. Barricade.
16N19A	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N19B	1.40	0.00	1.40	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
16N19E	0.95	0.00	0.95	2	1	Remove all 7 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
16N19E.1	0.41	0.00	0.41	UAR	Restore	Barricade.
16N19F	0.76	0.00	0.76	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N19G	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
16N21.1	0.15	0.00	0.15	UAR	Restore	Waterbars or rolling dips as needed and barricade.
16N21.2	0.10	0.00	0.10	UAR	Restore	Barricade.
16N21F.1	0.09	0.00	0.09	UAR	Restore	Barricade.
16N23	7.40	0.00	7.40	2	1	Downgrade to ML 1, remove culverts, waterbars or rolling dips as needed. Barricade.
16N23.100	0.64	0.00	0.64	UAR	Restore	
16N23.2	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized trail.
16N23.4	0.69	0.00	0.69	UAR	Restore	
16N23A.1	1.90	0.00	1.90	UAR	Restore	
16N24A	0.65	0.00	0.65	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N27	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N30	0.24	0.00	0.24	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
16N31A.1	0.22	0.00	0.22	UAR	Restore	Barricade.
16N31B.2	0.13	0.00	0.13	UAR	Restore	Barricade.
16N32	3.12	0.82	3.94	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed and barricade.
16N32	0.82	0.00	0.82	2	2	Improve maintenance, repair, or replace culverts.
16N32A	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N32C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channels.
16N33	0.70	0.00	0.70	2	1	Downgrade to ML 1. Barricade.
16N34	0.60	0.00	0.60	2	2	Add culvert at mp .34.
16N34	0.30	0.60	0.90	2	1	Downgrade to ML 1. Remove last culvert at mp .9 switchback. POC Mitigation - Barricade.
16N34A	0.50	0.00	0.50	2	1	Waterbars as needed and barricade. Downgrade to ML 1.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
16N35A	0.14	0.00	0.14	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N35C	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
16N36	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the culverts.
16N36.1	0.11	0.69	0.80	UAR	Restore	
16N36.1	0.69	0.00	0.69	UAR	Restore	Barricade.
16N36B	0.82	0.00	0.82	2	2	Clean blocked culverts and install 2 additional culverts.
16N37	1.20	0.00	1.20	2	1	Downgrade to ML 1, remove culverts, waterbars or rolling dips as needed. Barricade.
16N37B	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N38	1.32	0.28	1.60	2	1	Downgrade to ML 1. Remove culvert and associated fill. Waterbar as needed and barricade.
16N39A	0.22	0.00	0.22	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N41	0.06	0.53	0.59	2	2	Replace culvert at mp .56. Gravel areas with dead POC along road as needed.
16N41A	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N41B	0.09	0.00	0.09	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
16N55	0.50	0.00	0.50	1	2	Upgrade to ML 2
16N55.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N01	0.70	0.00	0.70	2	2	POC Mitigation - Rock/gravel road as needed.
17N01.1	0.21	0.00	0.21	UAR	Restore	Barricade.
17N01.100	2.49	0.00	2.49	UAR	Restore	Remove all culverts and associated fill from stream channels. Barricade.
17N01.1A	0.02	0.00	0.02	UAR	Restore	
17N01.1B	0.03	0.00	0.03	UAR	Restore	

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N01.1C	0.09	0.00	0.09	UAR	Restore	Waterbars as needed.
17N01.1D	0.13	0.00	0.13	UAR	Restore	Barricade.
17N01.2	0.30	0.00	0.30	UAR	Restore	Barricade.
17N01.2B	0.03	0.00	0.03	UAR	Restore	
17N01.3	0.13	0.00	0.13	UAR	Restore	Barricade. Waterbar as needed.
17N01.3A	0.07	0.00	0.07	UAR	Restore	
17N03	1.20	0.00	1.20	1	1	Waterbars as needed and barricade.
17N04.1	0.12	0.00	0.12	UAR	Restore	Barricade.
17N04.2	0.35	0.00	0.35	UAR	Restore	Barricade.
17N04.3	0.97	0.00	0.97	UAR	Restore	Remove culvert and associated fill. Rolling dips as needed and barricade.
17N04S	1.80	0.00	1.80	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N05.100	0.88	0.00	0.88	UAR	Restore	Barricade.
17N05.101	0.06	0.00	0.06	UAR	Restore	Barricade.
17N05.4	0.32	0.00	0.32	UAR	Restore	Barricade.
17N05.4A	1.36	0.00	1.36	UAR	Restore	Rolling dips as needed and barricade.
17N05.5	0.14	0.00	0.14	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N05C	0.97	0.00	0.97	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N05E	0.71	0.00	0.71	1	1	Barricade.
17N05G	0.67	0.00	0.67	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N05U	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N07.1	0.25	0.00	0.25	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N07.101	0.09	0.00	0.09	UAR	Restore	Barricade.
17N07.102	3.07	0.00	3.07	UAR	Restore	Road not stable; failing. Remove all culverts and associated fill from stream channels. Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N07.2	0.51	0.00	0.51	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N07.4	0.21	0.00	0.21	UAR	Restore	Waterbars/Rolling dips as needed. No treatment recommended for this segment, but larger segment should have road blocked at beginning of route.
17N07.5	0.32	0.00	0.32	UAR	Restore	Barricade.
17N07.5A	0.15	0.00	0.15	UAR	Restore	Barricade.
17N07.6	0.75	0.00	0.75	UAR	Restore	Barricade.
17N07.7	0.30	0.00	0.30	UAR	Restore	Barricade.
17N07G	1.67	0.00	1.67	2	1	Downgrade to ML 1. Barricade.
17N07J	1.64	0.00	1.64	2	2	Repair culvert at mp 1.25
17N07K	0.80	0.00	0.80	2	1	Remove all 3 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
17N07Q	0.22	0.00	0.22	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N07R	0.44	0.00	0.44	2	Deco	Remove from System; Remove culvert and associated fill. Barricade.
17N07R.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N07R.1A	0.25	0.00	0.25	UAR	Restore	Barricade.
17N08.3	0.30	0.00	0.30	UAR	Restore	Barricade.
17N08A	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
17N13	0.70	0.00	0.70	2	1	Downgrade to ML 1. Barricade Remove culvert and associated fill.
17N13A	0.38	0.00	0.38	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N14	0.39	0.00	0.39	2	1	Downgrade to ML 1. Barricade first 100' from west side access.
17N15	0.90	0.00	0.90	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N15A	0.13	0.00	0.13	1	Deco	Remove from System; Waterbar as needed and barricade.
17N16	0.65	0.00	0.65	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N16.1	0.17	0.00	0.17	UAR	Restore	Barricade.
17N16.100	0.07	0.00	0.07	UAR	Restore	Waterbar or rolling dips as needed and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N17	0.60	0.00	0.60	1	Deco	Remove from System; Remove culvert and associated fill from stream channel. Waterbars as needed and barricade.
17N17.1	1.98	0.00	1.98	UAR	Restore	
17N18.2	0.39	0.00	0.39	UAR	Restore	Remove 2 culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N18.3	0.74	0.00	0.74	UAR	Restore	Barricade.
17N18.4	0.15	0.00	0.15	UAR	Restore	Barricade.
17N18A	0.94	0.00	0.94	1	2	Upgrade to ML 2.
17N18C	0.67	0.00	0.67	2	1	Downgrade to ML1, remove culverts, waterbars and rolling dips as needed. Barricade.
17N18E	0.42	0.00	0.42	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N18F	0.07	0.00	0.07	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N20	0.19	0.00	0.19	2	2	Improve maintenance, repair, or replace each of the 3 culverts.
17N21.1	0.41	0.00	0.41	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N22A	0.79	0.00	0.79	2	2	Improve maintenance on, repair, or replace culvert at mp 0.7.
17N22A.1	0.21	0.00	0.21	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N22A.2	0.25	0.00	0.25	UAR	Restore	Barricade.
17N22D	0.08	0.00	0.08	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N22J	0.12	0.00	0.12	2	2	Waterbars or rolling dips as needed.
17N22W	0.15	0.00	0.15	0	Deco	Waterbars as needed. SUP Road, do not barricade.
17N22W.1	0.46	0.00	0.46	UAR	Restore	Waterbar as needed. SUP Road, do not barricade.
17N23	1.30	1.50	2.80	1	Deco	Remove from System; Waterbar as needed, remove culverts, barricade.
17N23	1.15	0.35	1.50	1	Deco	Remove from System.
17N23C.1	1.04	0.05	1.09	UAR	1	Add to road system. ML 1.
17N23C.1	0.05	0.00	0.05	UAR	1	Add to road system. ML 1.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N23C.1	1.15	1.09	2.24	UAR	1	Add to road system. ML 1.
17N26	0.25	0.00	0.25	2	1	Downgrade to ML 1. Barricade.
17N26A	0.37	0.00	0.37	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed and barricade.
17N27A.1	0.21	0.00	0.21	UAR	Restore	
17N27B	0.40	0.00	0.40	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N27C	0.40	0.00	0.40	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N27D.1	0.36	0.00	0.36	UAR	Restore	Waterbar or rolling dips as needed and barricade.
17N28	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N29	1.00	0.00	1.00	2	1	Downgrade to ML 1. Pull fill back from landing.
17N29.100	0.04	0.00	0.04	UAR	Restore	
17N29B	0.20	0.00	0.20	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N30	0.89	0.00	0.89	2	1	Remove all culverts and associated fill. Waterbars as needed. Downgrade to ML 1 and Barricade.
17N30	0.55	0.89	1.44	2	Deco	Remove from system.
17N30A	0.40	0.00	0.40	2	1	Downgrade to ML1
17N31	1.60	0.00	1.60	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N31.3	0.17	0.00	0.17	UAR	Restore	Barricade.
17N31A.1	0.36	0.00	0.36	UAR	Restore	Barricade.
17N32	2.22	0.00	2.22	2	1	Downgrade to ML 1. Remove Culvert and fill. Waterbar as needed and barricade.
17N32.1	0.31	0.00	0.31	UAR	Restore	Barricade.
17N32.2	0.17	0.00	0.17	UAR	Restore	
17N32B	0.80	0.00	0.80	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N32B.1	0.07	0.00	0.07	UAR	Restore	

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N32F	1.00	0.00	1.00	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N32G	1.20	0.00	1.20	2	1	Downgrade to ML 1. Repair, or replace culverts.
17N35	0.50	0.00	0.50	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N35.100	0.35	0.00	0.35	UAR	Restore	Barricade.
17N36	2.50	0.00	2.50	2	2	Improve maintenance, repair, or replace each of the 14 culverts.
17N36B.1	0.26	0.00	0.26	UAR	Restore	Barricade.
17N36C	0.43	0.00	0.43	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N36F	1.20	0.00	1.20	1	2	Upgrade to ML 2.
17N39	2.19	0.00	2.19	2	1	Downgrade to ML1, remove culverts. Waterbars and rolling dips as needed. Barricade.
17N39A	0.95	0.00	0.95	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N39B	0.51	0.00	0.51	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
17N39C	0.12	0.00	0.12	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N40	0.35	0.65	1.00	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N40	0.28	0.37	0.65	2	1	Downgrade to ML 1. Barricade.
17N40B	0.53	0.00	0.53	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N40B.1	0.19	0.00	0.19	UAR	Restore	Barricade.
17N40C.1	0.20	0.00	0.20	UAR	Restore	Barricade.
17N40D	0.18	0.00	0.18	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N41	1.60	0.00	1.60	2	1	Downgrade to ML1, remove culverts, waterbars and rolling dips as needed. Barricade.
17N41.1	0.74	0.00	0.74	UAR	Restore	Barricade.
17N41.2	0.02	0.00	0.02	UAR	Restore	Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N41A	0.30	0.00	0.30	1	1	Barricade.
17N41G.1	0.17	0.00	0.17	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N41H	0.90	0.00	0.90	2	1	Downgrade to ML 1. Remove culvert and associated fill. Waterbar as needed and barricade.
17N41H.100	0.06	0.00	0.06	UAR	Restore	
17N42A.100	0.48	0.00	0.48	UAR	Restore	Barricade.
17N43	1.00	0.00	1.00	2	1	Downgrade to ML 1. Barricade.
17N43.1	0.04	0.00	0.04	UAR	Restore	Barricade.
17N46	1.20	0.00	1.20	2	1	Downgrade as ML 1. Remove culvert and associated fill. Waterbar as needed.
17N46A	0.16	0.00	0.16	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
17N48	1.66	0.00	1.66	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed and barricade.
17N48.1	0.33	0.00	0.33	UAR	Restore	Barricade.
17N48.3	0.16	0.00	0.16	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N48.4	0.46	0.00	0.46	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N48C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Barricade.
17N49	1.75	2.96	4.71	3	3	Gravel short stretch as needed where road crosses draw just north of 17N49.101 junction.
17N49	1.34	4.71	6.05	3	3	
17N49.1	0.04	0.00	0.04	UAR	Restore	Barricade.
17N49.100	0.12	0.00	0.12	UAR	Restore	Barricade.
17N49.100	3.88	0.12	4.00	UAR	Restore	Barricade.
17N49.100A	0.21	0.00	0.21	UAR	Restore	Barricade.
17N49.101	1.17	0.00	1.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate near mp 0.88
17N49.102	0.87	0.00	0.87	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N49.102A	0.71	0.00	0.71	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102B	0.17	0.00	0.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102C	0.20	0.00	0.20	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.103	0.26	0.00	0.26	UAR	Restore	Waterbars or rolling dips as needed and barricade.
17N49.104	3.82	0.00	3.82	UAR	Restore	Barricade.
17N49.104	0.86	3.82	4.68	UAR	Restore	Barricade.
17N49.104A	0.05	0.00	0.05	UAR	Restore	Barricade.
17N49.104B	0.08	0.00	0.08	UAR	Restore	Barricade.
17N49.105	1.43	0.00	1.43	UAR	Restore	Barricade.
17N49.105A	0.12	0.00	0.12	UAR	Restore	Barricade.
17N49.106	0.32	0.00	0.32	UAR	Restore	Barricade.
17N49.107	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.108	0.31	0.00	0.31	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11	1.94	0.00	1.94	UAR	Restore	Barricade
17N49.11	2.55	1.94	4.49	UAR	Restore	
17N49.11M	0.17	0.00	0.17	UAR	Restore	
17N49.11N	0.23	0.00	0.23	UAR	Restore	
17N49.11P	0.21	0.00	0.21	UAR	Restore	Barricade.
17N49.12	2.10	0.00	2.10	UAR	Restore	Barricade.
17N49.13	0.30	0.00	0.30	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.14	0.54	0.00	0.54	UAR	Restore	Barricade.
17N49.15	0.62	0.00	0.62	UAR	Restore	Barricade.
17N49.15A	0.24	0.00	0.24	UAR	Restore	Barricade.
17N49.2	0.20	0.00	0.20	UAR	Restore	Barricade.
17N49.3	0.23	0.00	0.23	UAR	Restore	Barricade.
17N49.4	1.29	0.00	1.29	UAR	M. Trail	Add to trail system. Motorized Trail. Delineate route.
17N49.4	0.75	1.29	2.04	UAR	Restore	Barricade both ends.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
17N49.4A	1.06	0.00	1.06	UAR	Restore	Barricade.
17N49.7	3.06	0.00	3.06	UAR	Restore	Barricade.
17N49.7	0.29	3.06	3.35	UAR	Restore	Barricade.
17N49.7A	0.82	0.00	0.82	UAR	Restore	Barricade.
17N49.8	0.39	0.00	0.39	UAR	Restore	Barricade.
17N63	0.30	0.00	0.30	2	1	Downgrade to ML 1. Barricade.
17N85	1.20	0.00	1.20	UAR	Restore	Remove culverts and barricade.
18N01	0.10	0.00	0.10	2	2	Maintain as ML 2
18N01	0.06	0.10	0.16	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N02	1.75	0.00	1.75	3	3	Rock/gravel segment 100' either side of Sanger Lake Outlet
18N02	0.85	1.75	2.60	3	3	POC Mitigation - Install Seasonal Gate Closure
18N02.1	0.14	0.00	0.14	UAR	Restore	Barricade.
18N02.2	0.28	0.00	0.28	UAR	Restore	Barricade.
18N02.3	0.02	0.00	0.02	UAR	Restore	Barricade.
18N03	1.91	0.00	1.91	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N04.2	0.11	0.00	0.11	UAR	Restore	Barricade.
18N04E	0.21	0.65	0.86	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar or rolling dips as needed and barricade.
18N05.1	0.20	0.00	0.20	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N05.100	2.16	0.00	2.16	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed. POC Mitigation - Barricade.
18N05.2	0.53	0.00	0.53	UAR	Restore	Remove culverts and associated fill from stream channels.
18N06A	0.18	0.00	0.18	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N07.11	0.06	0.00	0.06	UAR	Restore	Barricade.
18N07.12	0.04	0.00	0.04	UAR	Restore	Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
18N07.14	0.05	0.00	0.05	UAR	Restore	Barricade.
18N07.2	0.13	0.00	0.13	UAR	2	Add to road system. Manage as ML 2
18N07.3	0.08	0.00	0.08	UAR	Restore	Barricade.
18N07.6	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N07.8	0.38	0.00	0.38	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed and Barricade.
18N08.2	0.03	0.00	0.03	UAR	2	Add to road system. ML 2
18N08F	0.90	0.90	1.80	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed and barricade.
18N08G	1.12	0.00	1.12	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N09	5.10	0.00	5.10	2	2	POC Mitigation - Seasonal Gate closure
18N09.100	0.27	0.00	0.27	UAR	Restore	Rolling dips as needed and barricade at 18N09.
18N09.100A	0.16	0.00	0.16	UAR	Restore	Rolling dips as needed and barricade.
18N09.102	1.84	0.00	1.84	UAR	Restore	Rolling dips as needed and barricade.
18N09.103	0.04	0.00	0.04	UAR	Restore	Waterbar or rolling dips as needed and barricade.
18N09.104	0.05	0.00	0.05	UAR	Restore	Rolling dips as needed and barricade.
18N09.105	0.12	0.00	0.12	UAR	Restore	Rolling dips as needed and barricade.
18N09.106	0.02	0.00	0.02	UAR	Restore	Barricade.
18N09.107	0.01	0.00	0.01	UAR	Restore	Barricade.
18N09.108	0.03	0.00	0.03	UAR	Restore	Barricade.
18N10.1	0.70	0.00	0.70	UAR	Restore	Barricade.
18N11	1.92	4.15	6.07	2	2	Replace culvert at mp 5.78.
18N11A	0.80	0.00	0.80	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N11B	0.19	0.00	0.19	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
18N11C	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N11D	0.46	0.00	0.46	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N11D.1	1.75	0.00	1.75	UAR	Restore	
18N11D.2	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed.
18N11D.3	0.29	0.00	0.29	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed.
18N11D.4A	0.73	0.00	0.73	UAR	Restore	Barricade.
18N11D.5	2.11	0.00	2.11	UAR	Restore	Remove culverts and fill from stream channels. Waterbars as needed and Barricade.
18N12A	0.43	0.00	0.43	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N13.100	0.21	0.00	0.21	UAR	Restore	Barricade.
18N13.101	0.08	0.00	0.08	UAR	Restore	
18N15	1.20	0.00	1.20	2	1	Downgrade to ML 1. Upsize culverts, install waterbars or rolling dips.
18N15D	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N16	5.33	0.00	5.33	2	2	Add rock/gravel as needed 0.28 miles within infected POC
18N16.100	2.60	0.00	2.60	UAR	Restore	Barricade.
18N16E	0.38	0.00	0.38	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N16F.1	0.16	0.00	0.16	UAR	Restore	Barricade.
18N16W	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N17	8.10	0.00	8.10	2	1	Downgrade to ML1. Remove culverts. Rolling dips and waterbars as needed. Barricade.
18N17.100	1.01	0.00	1.01	UAR	Restore	Barricade.
18N17.100A	0.08	0.00	0.08	UAR	Restore	Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
18N17.101	0.05	0.00	0.05	UAR	Restore	
18N17.102	0.06	0.00	0.06	UAR	Restore	
18N17.103	0.21	0.00	0.21	UAR	Restore	Barricade.
18N17.104	0.20	0.00	0.20	UAR	Restore	Barricade.
18N17.104A	0.02	0.00	0.02	UAR	Restore	
18N17A	0.21	0.00	0.21	2	1	Downgrade to ML 1. Remove culverts and associated fill. Waterbar as needed. Barricade 100' north from junction of 18N17H.
18N17B	0.87	0.00	0.87	2	1	Downgrade to ML 1. Install culvert at mp 0.5
18N17C	1.18	0.00	1.18	2	1	Downgrade to ML1. Remove culverts. Rolling dips and waterbars as needed. Barricade.
18N17C.1	0.05	0.00	0.05	UAR	Restore	
18N17D	0.25	0.00	0.25	2	1	Downgrade to ML 1. Barricade.
18N17E	0.90	0.00	0.90	2	1	Downgrade to ML 1. Remove culverts and fill. Waterbar as needed and barricade.
18N17F	0.54	0.00	0.54	2	1	Downgrade to ML 1.
18N17G	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N17H	0.15	0.00	0.15	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N18A	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N18B	0.15	0.00	0.15	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N18C	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N18D	0.13	0.00	0.13	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N19A	0.22	0.00	0.22	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N19B	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
18N19C	0.17	0.00	0.17	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N20	1.00	0.00	1.00	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N20.100	0.28	0.00	0.28	UAR	Restore	Barricade.
18N20.100A	0.08	0.00	0.08	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed.
18N20.101	0.12	0.00	0.12	UAR	Restore	Barricade.
18N20.102	0.47	0.00	0.47	UAR	Restore	Remove culverts and associated fill. Waterbar as needed.
18N20A	0.40	0.00	0.40	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N22	2.00	0.00	2.00	2	1	Remove all culverts. Waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
18N22D	0.62	0.00	0.62	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N22E	0.14	0.00	0.14	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N23	0.10	0.00	0.10	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N24	1.10	0.00	1.10	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N26	1.75	0.00	1.75	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N26A	0.15	0.00	0.15	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N26A.2	0.06	0.00	0.06	UAR	Restore	
18N26B	0.08	0.00	0.08	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N30.100	0.04	0.00	0.04	UAR	Restore	
18N30A	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
18N30B	0.46	0.00	0.46	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N31	0.60	0.00	0.60	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Barricade.
18N31.1	0.16	0.00	0.16	UAR	Restore	
18N31.2	0.23	0.00	0.23	UAR	Restore	Rolling dips as needed.
18N31.3C	0.18	0.00	0.18	UAR	Restore	Rolling dips as needed. Barricade.
18N31.4	1.25	0.00	1.25	UAR	Restore	Rolling dips as needed. Barricade.
18N46	0.39	0.00	0.39	2	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N47	0.44	0.00	0.44	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N48	0.31	0.00	0.31	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N51	0.27	0.00	0.27	1	2	Upgrade to ML 2.
18N51.100	1.45	0.00	1.45	UAR	Restore	Barricade.
18N51.100A	0.46	0.00	0.46	UAR	Restore	Barricade.
18N56	0.88	0.00	0.88	2	1	Downgrade to ML1. Remove culverts. Rolling dips and waterbars as needed. Barricade.
18N56.100	0.04	0.00	0.04	UAR	Restore	
18N57	0.56	0.00	0.56	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
18N58.1	0.13	0.00	0.13	UAR	Restore	Barricade.
18N58B	0.25	0.00	0.25	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
199.102	0.13	0.00	0.13	UAR	2	Add to road system. ML2. Administrative access only to water system for campground.
199.103	0.10	0.00	0.10	UAR	3	Add to road system. ML 3, Madrona Campground. Gravel areas near creek and river.
199.104	0.11	0.00	0.11	UAR	3	Add to road system. ML 3, Madrona Campground. Gravel Areas near creek and river

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
199.105	0.03	0.00	0.03	UAR	3	Add to road system. ML 3, Darlingtonia Trail head access
199.106	0.18	0.00	0.18	UAR	3	Add to road system. ML 3, Eighteen-mile river access site.
199.107	0.10	0.00	0.10	UAR	Restore	Barricade.
199.109	0.10	0.00	0.10	UAR	Restore	Barricade to allow parking at turnout and hiking access to river.
199.111	0.09	0.00	0.09	UAR	Restore	Barricade.
199.111A	0.07	0.00	0.07	UAR	Restore	
199.112	0.29	0.00	0.29	UAR	Restore	Barricade.
199.113	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail
19N01	1.60	0.00	1.60	2	1	Downgrade to ML 1; Waterbar as needed and barricade.
19N01E	0.47	0.00	0.47	2	1	Downgrade to ML 1; Waterbar as needed.
19N34	1.95	0.00	1.95	1	Deco	Remove from System; Remove culvert and associated fill as needed. Waterbars as needed and barricade.
19N34A	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
19N34B	0.29	0.00	0.29	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
19N34C	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
305.100	0.57	0.00	0.57	UAR	Restore	Barricade.
305.101	1.08	0.00	1.08	UAR	Restore	Barricade.
305.101A	0.04	0.00	0.04	UAR	Restore	Barricade.
305.101B	0.50	0.00	0.50	UAR	Restore	Barricade.
305.102	0.15	0.00	0.15	UAR	Restore	Barricade.
305.103	0.14	0.00	0.14	UAR	Restore	Barricade.
305.104	0.14	0.00	0.14	UAR	Restore	Barricade.
305.105	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
305.106	0.21	0.00	0.21	UAR	Restore	Barricade.
305.107	1.25	0.00	1.25	UAR	Restore	Barricade.
305.108	0.06	0.00	0.06	UAR	Restore	Barricade.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
305.109	2.43	0.00	2.43	UAR	Restore	Barricade.
305.109A	1.02	0.00	1.02	UAR	Restore	Barricade.
305.113	0.12	0.00	0.12	UAR	Restore	Barricade.
305.114	0.63	0.00	0.63	UAR	Restore	Waterbar or rolling dips as needed and barricade.
305.115	1.74	0.00	1.74	UAR	Restore	Waterbar or rolling dips as needed and barricade.
305.115A	0.18	0.00	0.18	UAR	Restore	Waterbar or rolling dips as needed and barricade.
305.118	0.80	0.00	0.80	UAR	Restore	POC Mitigation - Barricade. Waterbars/Rolling Dips as needed.
305.119	0.22	0.00	0.22	UAR	Restore	Barricade.
305.120	0.04	0.00	0.04	UAR	Restore	Barricade.
305.121	0.63	0.00	0.63	UAR	Restore	Barricade.
305.121A	0.28	0.00	0.28	UAR	Restore	Barricade.
305.121B	1.03	0.00	1.03	UAR	Restore	Barricade.
305.123	0.63	0.00	0.63	UAR	Restore	Barricade.
305.124	1.20	0.00	1.20	UAR	Restore	Waterbar or rolling dips as needed and barricade.
305.125	1.44	0.00	1.44	UAR	Restore	Barricade. place barricade 600' up road from NE junction with 305, before 1st POC storm xing, other barricade at mp 1.02 from west side of 305.
305.125A	0.21	0.00	0.21	UAR	Restore	Barricade.
305.126	1.56	0.00	1.56	UAR	Restore	Barricade.
305.128	0.70	0.00	0.70	UAR	Restore	Barricade.
305.129	0.40	0.00	0.40	UAR	Restore	Barricade.
305.130	1.72	0.00	1.72	UAR	Restore	Barricade.
305.131	0.09	0.00	0.09	UAR	Restore	Barricade.
305.133	0.01	0.00	0.01	UAR	Restore	Barricade.
305.134	0.14	0.00	0.14	UAR	Restore	Barricade.
314.1	1.21	0.00	1.21	UAR	Restore	Barricade.
314.102	0.80	0.00	0.80	UAR	Restore	Barricade.
314.107	0.26	0.00	0.26	UAR	Restore	Barricade; place large boulders at each entrance to pond areas

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
314.108	0.06	0.00	0.06	UAR	Restore	Barricade.
315.100	1.68	0.00	1.68	UAR	Restore	Barricade.
315.102	0.48	0.00	0.48	UAR	Restore	Barricade.
315.103	0.26	0.00	0.26	UAR	Restore	Barricade.
315.104	0.82	0.00	0.82	UAR	Restore	Barricade.
315.106	0.25	0.00	0.25	UAR	Restore	Barricade.
315.107	0.30	0.00	0.30	UAR	Restore	Barricade.
315.108	0.46	0.00	0.46	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
315.109	0.50	0.00	0.50	UAR	Restore	Barricade.
315.110	0.07	0.00	0.07	UAR	Restore	Barricade.
315.111	0.03	0.00	0.03	UAR	Restore	Barricade.
315.2	0.51	0.00	0.51	UAR	Restore	Rolling dips as needed. Remove culverts at mp 0.07 0.13 and 0.18 to improve drainage. Barricade.
315.3	0.98	0.00	0.98	UAR	Restore	Remove all culverts. Barricade.
315.3A	0.24	0.00	0.24	UAR	Restore	Remove all culverts. Waterbar as needed.
315.9A	1.22	0.00	1.22	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbar as needed and barricade.
316.10	0.03	0.00	0.03	UAR	Restore	Barricade.
316.11	0.04	0.00	0.04	UAR	Restore	Barricade.
316.12	0.03	0.00	0.03	UAR	Restore	Barricade.
316.2	0.20	0.00	0.20	UAR	Restore	Barricade.
316.3	0.08	0.00	0.08	UAR	Restore	Barricade.
316.4	0.07	0.00	0.07	UAR	Restore	Barricade.
316.5	0.03	0.00	0.03	UAR	Restore	Barricade.
316.6	0.03	0.00	0.03	UAR	Restore	Barricade.
316.7	0.02	0.00	0.02	UAR	Restore	Barricade.
316.7A	0.02	0.00	0.02	UAR	Restore	Barricade.
316.8	0.05	0.00	0.05	UAR	Restore	Barricade. Waterbars.

Table 167. Alternative 5

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 5 Proposed Actions
316.9	0.06	0.00	0.06	UAR	Restore	Barricade.
316.9A	0.05	0.00	0.05	UAR	Restore	Barricade.
324.100	0.13	0.00	0.13	UAR	Restore	Barricade.
405.10	0.74	0.00	0.74	UAR	M. Trail	Add driveable portion to trail system. Motorized trail. Delineate route. Route delineation at .36mp.
405.100	0.11	0.00	0.11	UAR	Restore	Barricade.
405.101	0.17	0.00	0.17	UAR	Restore	Barricade.
405.103	3.47	0.00	3.47	UAR	M. Trail	Add to trail system. Motorized trail. Improve surface drainage near creek; repair culvert.
405.9	0.05	0.00	0.05	UAR	Restore	Barricade.
411.101	0.30	0.00	0.30	UAR	Restore	Barricade.
411.102	0.17	0.00	0.17	UAR	Restore	Barricade.
427.101	0.15	0.00	0.15	UAR	1	Add to road system. ML 1.
427.103	0.32	0.00	0.32	UAR	2	Add to road system. ML 2. Delineate Route.
427.104	0.30	0.00	0.30	UAR	Restore	Barricade.
427.105	0.29	0.00	0.29	UAR	2	Add to road system. ML 2, County disposal site; may be gated periodically for administrative purposes.
427.106	0.13	0.00	0.13	UAR	M. Trail	Add to trail system. Motorized Trail; install rolling dips to improve drainage.
427.107	0.05	0.00	0.05	UAR	2	Add as ML 2
427.108	0.09	0.00	0.09	UAR	Restore	Barricade.
427.108A	0.04	0.00	0.04	UAR	Restore	

Alternative 6

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
13N35	0.10	0.18	0.28	2	Deco	Remove from System. Barricade.
13N35.5	0.14	0.00	0.14	UAR	Restore	Barricade.
13N37	2.00	0.00	2.00	2	1	Remove all culverts and associated fill. Waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
13N37.1	0.11	0.00	0.11	UAR	Restore	Barricade.
13N37A	0.77	0.00	0.77	2	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
13N37B	0.27	0.00	0.27	2	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N01D	1.80	0.00	1.80	2	2	Maintain, repair, or replace each culvert; improve surface drainage.
14N06A.1	0.18	0.00	0.18	UAR	Restore	Barricade.
14N08T	0.11	0.00	0.11	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N15	0.50	0.00	0.50	2	2	Maintain, repair, or replace each culvert; improve surface drainage.
14N15.1	3.80	0.00	3.80	UAR	Restore	Remove culverts and associated fill. Waterbar as needed and barricade.
14N29A	0.80	0.00	0.80	0	Deco	Remove all culverts and associated fill. Waterbars as needed and barricade.
14N32.1	0.26	0.00	0.26	UAR	Restore	Barricade.
14N33	1.60	0.18	1.78	2	Deco	Remove from system. Remove culverts and associated fill from stream channels. Waterbars as needed and barricade.
14N33.3	0.52	0.00	0.52	UAR	Restore	Remove culverts and associated fill from stream channels as on 14N33. Waterbars as needed.
14N33A	0.22	0.00	0.22	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
14N38	0.40	0.00	0.40	2	2	Improve surface drainage and maintain as ML 2.
14N38	0.20	0.40	0.60	2	1	POC Mitigation - Downgrade to ML 1. Remove culverts, Waterbar as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
14N46	2.70	0.00	2.70	2	1	Remove 2 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
14N46.2	0.13	0.00	0.13	UAR	Restore	Waterbars as needed and barricade.
14N46B	0.37	0.00	0.37	1	Deco	Remove from System; Waterbars as needed and Barricade.
15N01.102	0.29	0.00	0.29	UAR	2	Add to rd system. ML 2. POC Mitigation - Add gravel at terminus of rd where water accumulates.
15N01.102	0.19	0.29	0.48	UAR	Restore	Barricade.
15N01A.1	0.10	0.00	0.10	UAR	Restore	Barricade.
15N01A.2	0.05	0.00	0.05	UAR	Restore	Barricade.
15N01A.4	3.84	0.00	3.84	UAR	1	Replace culverts and repair road surface. Manage as ML1.
15N01P	0.09	0.79	0.88	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
15N01Q	0.29	0.00	0.29	1	M. Trail	Convert to Motorized Trail to Marlow Campsite
15N01R	0.10	0.00	0.10	1	1	Waterbars as needed and barricade.
15N01S	0.10	0.00	0.10	1	1	Waterbars as needed and barricade.
15N01U	0.70	0.00	0.70	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
15N01U.1	0.58	0.00	0.58	UAR	Restore	Barricade.
15N01-x.101	0.13	0.00	0.13	UAR	Restore	Barricade.
15N02	11.10	0.00	11.10	2	2	Replace 3 priority culverts. POC Mitigation - Seasonal gate near beginning of road.
15N02.101	0.81	0.00	0.81	UAR	M. Trail	Add to trail system. Motorized trail. Barricade at end.
15N02.103	0.58	0.00	0.58	UAR	M. Trail	Add to trail system. Motorized trail
15N02.106	0.48	0.00	0.48	UAR	M. Trail	Add to trail system. Motorized Trail.
15N02.107	0.42	0.00	0.42	UAR	M. Trail	Add to trail system. Motorized trail
15N02.108	1.14	0.00	1.14	UAR	Restore	Barricade.
15N02.108A	0.59	0.39	0.98	UAR	Restore	Barricade.
15N02.2	0.24	0.00	0.24	UAR	Restore	Barricade

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
15N02.4	0.49	0.00	0.49	UAR	M. Trail	Add to trail system. Motorized trail
15N02.5	0.71	0.19	0.90	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
15N02.5	0.19	0.00	0.19	UAR	M. Trail	Add as Motorized Trail.
15N02.5A	0.05	0.00	0.05	UAR	M. Trail	Add as Motorized Trail
15N11.2	0.32	0.00	0.32	UAR	Restore	Barricade.
15N11A	1.70	0.00	1.70	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N11A.1	0.25	0.00	0.25	UAR	Restore	Remove all culverts and associated fill from stream channels. Waterbar as needed.
15N11B	1.39	0.00	1.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N13	3.80	0.00	3.80	2	2	Improve maintenance or repair/replace all culverts and drainage structures as needed. Manage as ML 2.
15N13.100	0.49	0.62	1.11	UAR	Restore	Barricade
15N13.100	0.48	1.74	2.22	UAR	Restore	Barricade
15N33	0.90	0.00	0.90	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N35A	0.24	0.00	0.24	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N35B	0.57	0.00	0.57	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N35C	0.57	0.00	0.57	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N36.1	0.62	0.00	0.62	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Waterbars as needed and Barricade.
15N36C	0.55	0.00	0.55	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N36N	1.30	0.00	1.30	1	2	Upgrade first 1.3 miles to ML2; Maintain, repair, or replace each culvert. Improve surface drainage with waterbars/rolling dips as needed.
15N36N	1.30	1.30	2.60	1	Deco	Decommission from 1.3 to 2.6, Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
15N36N.1	0.90	0.00	0.90	UAR	2	Add to road system as ML 2. Access to Blackhawk Bar. Keep; Maintain, repair or replace each culvert. Improve surface draining with waterbars and rolling dips as needed. Rock/gravel as needed.
15N36N.1A	0.15	0.00	0.15	UAR	M. Trail	Add as Motorized Trail
15N36N.1B	0.21	0.00	0.21	UAR	2	Add as ML 2
15N36N.1C	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
15N38	1.50	0.00	1.50	2	2	Improve surface drainage and install culvert at stream ford on road near private land. POC Mitigation - Barricade last 300' of road, before bottom of POC stand.
15N39A	1.20	0.00	1.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N39A.1	0.18	0.00	0.18	UAR	Restore	Barricade.
15N39B	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N42	1.06	0.00	1.06	2	1	Remove all 3 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
15N42A	0.44	0.00	0.44	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
15N45	1.13	0.00	1.13	1	1	Excavate culverts and associated fill. Waterbars as needed and Barricade.
15N45.100	0.22	0.00	0.22	UAR	Restore	Barricade.
15N45.101	0.12	0.00	0.12	UAR	Restore	Barricade.
15N63	0.30	0.00	0.30	2	2	Manage as ML 2.
16N02.1	0.10	0.00	0.10	UAR	2	Add to road system. ML 2; Bear Basin water source
16N02.2	0.87	0.00	0.87	UAR	Restore	Barricade.
16N02.5	0.21	0.00	0.21	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
16N02D	0.61	0.00	0.61	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N02H	0.40	0.00	0.40	1	1	Waterbars/Rolling dips as needed.
16N02L	1.70	0.00	1.70	2	2	Upsize culverts, install waterbars or rolling dips.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
16N02S	1.20	0.00	1.20	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
16N02S.1	0.21	0.00	0.21	UAR	Restore	Barricade.
16N02T	0.50	0.00	0.50	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
16N02T.1	0.12	0.00	0.12	UAR	Restore	Barricade.
16N03.100	0.10	0.00	0.10	UAR	Restore	Barricade.
16N03.2	0.87	0.00	0.87	UAR	Restore	Remove 3 culverts and associated fill from stream channels. Waterbar as needed and Barricade.
16N03A	0.06	0.00	0.06	1	M. Trail	Convert to motorized trail for access to a small peak on Hurdygurdy Butte.
16N03D	1.40	0.00	1.40	1	1	Waterbars as needed and barricade.
16N03F	0.70	0.00	0.70	2	1	Remove all 4 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
16N03G	0.08	0.00	0.08	1	Deco	Remove from System; Waterbar landing as needed and barricade.
16N03H	0.30	0.00	0.30	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N03K	0.87	0.00	0.87	2	2	Repair culverts at mp 1.08 and 1.14. POC Mitigation - Seasonal gate at beginning.
16N03L	0.20	0.00	0.20	1	Deco	Remove from System; Remove all culverts and associated fill. Waterbars as needed and barricade.
16N10.1	0.14	0.00	0.14	UAR	Restore	Barricade.
16N10.2	0.21	0.00	0.21	UAR	Restore	
16N15A	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N16	1.50	0.00	1.50	2	2	Repair or replace plugged culverts.
16N16	0.60	1.50	2.10	2	1	Downgrade to ML1. Remove all 4 culverts and associated fill. Waterbars as needed and barricade.
16N18.1	1.04	0.00	1.04	UAR	Restore	Barricade.
16N18.3	0.49	0.00	0.49	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
16N18.4	0.67	0.00	0.67	UAR	Restore	Barricade.
16N18A	1.35	0.00	1.35	2	2	Repair or replace 8 culverts on section up to MP 1.35 at bridge. POC Mitigation - Seasonal gate at beginning.
16N18A	0.95	1.35	2.30	2	Deco	Remove 5 culverts and decommission. Waterbar as needed and barricade.
16N18B.1	0.66	0.00	0.66	UAR	Restore	Barricade.
16N18C	0.39	0.00	0.39	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N18E	0.96	0.00	0.96	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N18K	1.10	0.00	1.10	1	1	Waterbars/Rolling dips as needed.
16N19	8.28	0.00	8.28	2	2	Improve maintenance on, repair, or replace each of the 17 culverts. Reinforce creek x'ings and sections of road with POC 0.29 - 0.46 miles west of 16N19E intersection as needed.
16N19.1	0.05	0.00	0.05	UAR	2	Add to as ML 2; water source; POC mitigation - rock/gravel entire route as needed.
16N19.2	0.08	0.00	0.08	UAR	2	Add as ML 2 for access to Coon Creek. POC mitigation - rock/gravel entire route as needed.
16N19.3	0.30	0.00	0.30	UAR	Restore	Barricade.
16N19.4	0.87	0.00	0.87	UAR	Restore	Barricade.
16N19.5	0.19	0.00	0.19	UAR	Restore	Remove fill from culvert. Waterbars as needed and barricade.
16N19A	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N19B	1.40	0.00	1.40	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
16N19E	0.95	0.00	0.95	2	1	Remove all 7 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
16N19E.1	0.41	0.00	0.41	UAR	Restore	Barricade.
16N19F	0.76	0.00	0.76	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N19G	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
16N21.1	0.15	0.00	0.15	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
16N21.2	0.10	0.00	0.10	UAR	Restore	Barricade.
16N21F.1	0.09	0.00	0.09	UAR	Restore	Barricade.
16N23	7.40	0.00	7.40	2	2	Improve road drainage at all culverts. POC Mitigation - Seasonal gate at beginning.
16N23.100	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized trail
16N23.2	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized trail
16N23.4	0.69	0.00	0.69	UAR	M. Trail	Add to trail system. Motorized trail
16N23A.1	1.90	0.00	1.90	UAR	M. Trail	Add to trail system. Motorized trail
16N24A	0.65	0.00	0.65	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N27	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N30	0.24	0.00	0.24	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N31A.1	0.22	0.00	0.22	UAR	Restore	Barricade.
16N31B.2	0.13	0.00	0.13	UAR	Restore	Barricade.
16N32	3.12	0.82	3.94	2	2	Improve maintenance, repair, or replace each of the 16 culverts.
16N32A	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N32C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N33	0.70	0.00	0.70	2	2	POC Mitigation - Seasonal Gate Closure. Rock/gravel POC crossing as needed.
16N33	3.70	0.70	4.40	1	1	Barricade.
16N34	0.60	0.00	0.60	2	2	Add culvert at mp .34.
16N34	0.30	0.60	0.90	2	1	Downgrade to ML 1. Remove last culvert at mp .9 switchback. POC Mitigation - Barricade.
16N34A	0.50	0.00	0.50	2	1	Waterbars as needed and barricade. Downgrade to ML 1.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
16N35A	0.14	0.00	0.14	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N35C	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N36	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the culverts.
16N36.1	0.11	0.69	0.80	UAR	Restore	Barricade.
16N36.1	0.69	0.00	0.69	UAR	2	Add as ML 2. Repair or replace culverts.
16N36B	0.82	0.00	0.82	2	2	Clean blocked culverts and install 2 additional culverts.
16N37	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace each of the 6 culverts. POC Mitigation - Reinforce POC crossing with gravel and install culvert.
16N37B	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N38	1.32	0.28	1.60	2	2	POC Mitigation - Reinforce POC crossing with gravel, about 170' west of 16N21 junction.
16N39A	0.22	0.00	0.22	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N41	1.43	0.00	1.43	2	2	Replace culvert at mp 0.56. POC Mitigation - Reinforce POC crossing with gravel and install culvert, about 200' east of 16N37 junction.
16N41A	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N41B	0.09	0.00	0.09	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
16N55	0.50	0.00	0.50	1	2	Upgrade to ML 2
16N55.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N01	0.70	0.00	0.70	2	2	POC Mitigation - Rock/gravel road as needed.
17N01.1	0.21	0.00	0.21	UAR	2	Add to road system. ML 2. POC mitigation - rock/gravel length of road as needed.
17N01.100	2.49	0.00	2.49	UAR	Restore	Remove all culverts and associated fill from stream channels. Waterbar as needed and Barricade.
17N01.1A	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N01.1B	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
17N01.1C	0.09	0.00	0.09	UAR	Restore	Barricade. Waterbar as needed.
17N01.1D	0.13	0.00	0.13	UAR	Restore	Barricade.
17N01.2	0.30	0.00	0.30	UAR	2	Add as ML 2. POC Mitigation - Rock/gravel entire route as needed.
17N01.2B	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail. POC Mitigation - Rock/gravel entire route as needed.
17N01.3	0.13	0.00	0.13	UAR	M. Trail	Add as Motorized Trail. Rolling dips as needed
17N01.3A	0.07	0.00	0.07	UAR	Restore	Barricade
17N03	1.20	0.00	1.20	1	1	Waterbars as needed and barricade.
17N04.1	0.12	0.00	0.12	UAR	Restore	Barricade.
17N04.2	0.05	0.00	0.05	UAR	Restore	Barricade
17N04.3	0.97	0.00	0.97	UAR	Restore	Remove culvert and associated fill. Waterbars/Rolling dips as needed and barricade.
17N04S	1.80	0.00	1.80	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N05.100	0.88	0.00	0.88	UAR	Restore	Barricade.
17N05.101	0.06	0.00	0.06	UAR	Restore	Barricade.
17N05.4	0.32	0.00	0.32	UAR	Restore	Barricade.
17N05.4A	1.36	0.00	1.36	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N05.5	0.14	0.00	0.14	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N05C	0.97	0.00	0.97	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N05E	0.71	0.00	0.71	1	1	Barricade
17N05G	0.67	0.00	0.67	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N05U	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N07.1	0.25	0.00	0.25	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N07.101	0.09	0.00	0.09	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N07.102	3.07	0.00	3.07	UAR	Restore	Road not stable; failing. Remove all culverts and associated fill from stream channels. Waterbar as needed and Barricade.
17N07.2	0.51	0.00	0.51	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N07.4	0.21	0.00	0.21	UAR	Restore	Waterbars/Rolling dips as needed. Barricade.
17N07.5	0.32	0.00	0.32	UAR	Restore	Barricade.
17N07.5A	0.15	0.00	0.15	UAR	Restore	Barricade.
17N07.6	0.75	0.00	0.75	UAR	Restore	Barricade.
17N07.7	0.30	0.00	0.30	UAR	Restore	Barricade.
17N07G	1.62	0.00	1.62	2	2	POC Mitigation - Rock and gravel milepost 0.2 ~ 0.22 stretch as needed.
17N07J	1.64	0.00	1.64	2	2	Repair culvert at mp 1.25
17N07K	0.80	0.00	0.80	2	1	Remove all 3 culverts and associated fill. Waterbars as needed and barricade. Downgrade to ML 1.
17N07Q	0.22	0.00	0.22	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N07R	0.44	0.00	0.44	2	Deco	Remove from System; Remove culvert and associated fill. Barricade.
17N07R.1	0.16	0.00	0.16	UAR	Restore	Barricade.
17N07R.1A	0.25	0.00	0.25	UAR	Restore	Barricade.
17N08.3	0.30	0.00	0.30	UAR	Restore	Barricade.
17N08A	0.50	0.00	0.50	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N13	0.70	0.00	0.70	2	1	POC Mitigation - Downgrade to ML 1. Barricade. Remove culvert and associated fill.
17N13A	0.38	0.00	0.38	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N14	0.33	0.00	0.33	2	2	POC Mitigation - Rock and gravel approximately milepost 0.14-0.16.
17N15	0.90	0.00	0.90	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N15A	0.13	0.00	0.13	1	Deco	Remove from System; Waterbars as needed and Barricade.
17N16	0.65	0.00	0.65	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N16.1	0.17	0.00	0.17	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N16.100	0.07	0.00	0.07	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N17	0.60	0.00	0.60	1	Deco	Remove from System; Remove culvert and associated fill from stream channel. Waterbars as needed and Barricade.
17N17.1	1.98	0.00	1.98	UAR	Restore	
17N18.2	0.39	0.00	0.39	UAR	Restore	Remove 2 culverts and associated fill from stream channels. Waterbars as needed and Barricade.
17N18.3	0.74	0.00	0.74	UAR	Restore	Barricade.
17N18.4	0.15	0.00	0.15	UAR	Restore	Barricade.
17N18A	0.94	0.00	0.94	1	2	Upgrade to ML 2.
17N18C	0.67	0.00	0.67	2	2	Improve maintenance, repair, or replace each of the 3 culverts. POC Mitigation- Rock and gravel entire length of road as needed, infested POC.
17N18E	0.42	0.00	0.42	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N18F	0.07	0.00	0.07	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N20	0.19	0.00	0.19	2	2	Improve maintenance, repair, or replace each of the 3 culverts.
17N21.1	0.41	0.00	0.41	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N22A	0.79	0.00	0.79	2	2	Improve maintenance on, repair, or replace culvert at mp 0.7.
17N22A.1	0.21	0.00	0.21	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N22A.2	0.25	0.00	0.25	UAR	Restore	Barricade.
17N22D	0.08	0.00	0.08	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N22J	0.12	0.00	0.12	2	2	Waterbars/Rolling dips as needed.
17N22W	0.15	0.00	0.15	0	Deco	Waterbars as needed. SUP Road, do not barricade.
17N22W.1	0.46	0.00	0.46	UAR	Restore	Rolling dips as needed. SUP Road, do not barricade.
17N23	1.30	1.50	2.80	1	Deco	Remove from System; remove culverts, waterbars as needed and barricade.
17N23	1.15	0.35	1.50	1	Deco	Remove from System.
17N23C.1	1.04	0.05	1.09	UAR	1	Add to road system. ML 1.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N23C.1	1.15	1.09	2.24	UAR	1	Add to road system. ML 1.
17N23C.1	0.05	0.00	0.05	UAR	1	Add to road system. ML 1.
17N26	0.25	0.00	0.25	2	2	POC Mitigation - Rock and gravel entire length of road as needed, infested POC.
17N26A	0.37	0.00	0.37	2	2	POC Mitigation - Rock and gravel entire length of road as needed.
17N27A.1	0.21	0.00	0.21	UAR	Restore	
17N27B	0.40	0.00	0.40	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N27C	0.40	0.00	0.40	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N27D.1	0.36	0.00	0.36	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N28	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N29	1.00	0.00	1.00	2	2	Pull fill back from landing.
17N29.100	0.04	0.00	0.04	UAR	Restore	Barricade.
17N29B	0.20	0.00	0.20	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N30	0.89	0.00	0.89	2	1	Remove all culverts and associated fill. Waterbars as needed. Downgrade to ML 1. Barricade.
17N30	0.55	0.89	1.44	2	Deco	Remove from system. Waterbars as needed.
17N30A	0.40	0.00	0.40	2	1	Downgrade to ML1.
17N31	1.60	0.00	1.60	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N31.3	0.17	0.00	0.17	UAR	Restore	Barricade.
17N31A.1	0.36	0.00	0.36	UAR	Restore	Barricade.
17N32	3.40	0.00	3.40	2	2	POC Mitigation -Seasonal Gate Closure, Rock/gravel POC crossing as needed.
17N32.1	0.31	0.00	0.31	UAR	Restore	Barricade.
17N32.2	0.17	0.00	0.17	UAR	Restore	
17N32B	0.80	0.00	0.80	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N32B.1	0.07	0.00	0.07	UAR	Restore	
17N32F	1.00	0.00	1.00	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N32G	1.20	0.00	1.20	2	2	Improve maintenance, repair, or replace culverts.
17N35	0.50	0.00	0.50	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N35.100	0.35	0.00	0.35	UAR	Restore	Barricade.
17N36	2.50	0.00	2.50	2	2	Improve maintenance, repair, or replace each of the 14 culverts.
17N36B.1	0.26	0.00	0.26	UAR	Restore	Barricade.
17N36C	0.43	0.00	0.43	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N36F	1.20	0.00	1.20	1	2	Upgrade to ML 2.
17N39	2.19	0.00	2.19	2	2	Improve maintenance, repair, or replace each of the 25 culverts. POC Mitigation - Rock and gravel stretch with infected POC as needed, from junction with 411 to ~ milepost 0.65.
17N39A	0.95	0.00	0.95	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N39B	0.51	0.00	0.51	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N39C	0.12	0.00	0.12	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N40	0.35	0.65	1.00	2	1	Waterbars as needed, barricade, and downgrade to ML 1.
17N40	0.65	0.00	0.65	2	2	POC Mitigation - Seasonal Gate Closure
17N40B	0.53	0.00	0.53	2	1	Waterbars as needed and barricade. Downgrade to ML 1.
17N40B.1	0.19	0.00	0.19	UAR	Restore	Barricade.
17N40C.1	0.20	0.00	0.20	UAR	Restore	Barricade.
17N40D	0.18	0.00	0.18	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N41	1.60	0.00	1.60	2	2	Improve maintenance on, repair, or replace/upgrade each of the 13 culverts and waterbars as needed. POC Mitigation - Rock and gravel stretch with infected POC, from junction with 411 to ~ milepost 1.05.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N41.1	0.74	0.00	0.74	UAR	Restore	Barricade.
17N41.2	0.02	0.00	0.02	UAR	Restore	Barricade.
17N41A	0.35	0.00	0.35	1	1	Barricade.
17N41G.1	0.17	0.00	0.17	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N41H	0.90	0.00	0.90	2	2	POC Mitigation - Rock and gravel stretch approximately first 0.25 mile as needed.
17N41H.100	0.06	0.00	0.06	UAR	Restore	Barricade.
17N42A.100	0.48	0.00	0.48	UAR	Restore	Barricade.
17N43	1.00	0.00	1.00	2	2	POC Mitigation - Rock and gravel stretch approximately 0.47-0.68 mileposts as needed.
17N43.1	0.04	0.00	0.04	UAR	Restore	Barricade.
17N46	1.22	0.00	1.22	2	2	POC Mitigation - Seasonal Gate on 17N40 closes access to this route.
17N46A	0.16	0.00	0.16	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N48	1.66	0.00	1.66	2	2	POC Mitigation - Rock and gravel entire length of road as needed.
17N48.1	0.33	0.00	0.33	UAR	Restore	Barricade.
17N48.3	0.16	0.00	0.16	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N48.4	0.46	0.00	0.46	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N48C	0.47	0.00	0.47	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
17N49	1.75	2.96	4.71	3	3	POC Mitigation - Rock and gravel as needed stretch with infected POC, ~ milepost 3.8, just north of 17N49.101 junction, for 100'.
17N49	0.90	5.15	6.05	3	3	
17N49	0.44	4.71	5.15	3	Mixed-use	Designate as mixed use.
17N49.1	0.04	0.00	0.04	UAR	Restore	Barricade
17N49.100	0.12	0.00	0.12	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.100	3.88	0.12	4.00	UAR	Restore	Barricade.
17N49.100A	0.21	0.00	0.21	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N49.101	1.17	0.00	1.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate near mp 0.88
17N49.102	0.87	0.00	0.87	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102A	0.71	0.00	0.71	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102B	0.17	0.00	0.17	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.102C	0.20	0.00	0.20	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.103	0.26	0.00	0.26	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
17N49.104	3.82	0.00	3.82	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.104	0.86	3.82	4.68	UAR	Restore	Barricade.
17N49.104A	0.05	0.00	0.05	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.104B	0.08	0.00	0.08	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.105	1.43	0.00	1.43	UAR	Restore	Barricade.
17N49.105A	0.12	0.00	0.12	UAR	Restore	Barricade.
17N49.106	0.32	0.00	0.32	UAR	Restore	Barricade.
17N49.107	0.64	0.00	0.64	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.108	0.31	0.00	0.31	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11	1.94	0.00	1.94	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11	2.55	1.94	4.49	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - Seasonal Closure - Gate mid-slope of 17N49.11, near long 124.0119W and lat 41.88593.
17N49.11M	0.17	0.00	0.17	UAR	Restore	Barricade
17N49.11N	0.23	0.00	0.23	UAR	Restore	Barricade
17N49.11P	0.18	0.00	0.18	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.11P	0.03	0.18	0.21	UAR	Restore	Barricade.
17N49.12	2.10	0.00	2.10	UAR	Restore	Barricade.
17N49.13	0.30	0.00	0.30	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.14	0.54	0.00	0.54	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.15	0.62	0.00	0.62	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
17N49.15A	0.24	0.00	0.24	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.2	0.20	0.00	0.20	UAR	Restore	Barricade.
17N49.3	0.23	0.00	0.23	UAR	Restore	Barricade.
17N49.4	1.29	0.00	1.29	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.4	0.75	1.29	2.04	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC mitigation - seasonal closure - just to east of 17N49.102
17N49.4A	1.06	0.00	1.06	UAR	Restore	Barricade.
17N49.7	2.15	0.91	3.06	UAR	M. Trail	Add to trail system. Motorized Trail; repair road drainage at spring area and two culverts; Delineate Route. POC Mitigation - Install seasonal gate north of junction with 17N49.15.
17N49.7	0.29	3.06	3.35	UAR	Restore	Barricade.
17N49.7	0.91	0.00	0.91	UAR	M. Trail	Add to trail system. Motorized Trail; repair road drainage at spring area and two culverts; Delineate Route.
17N49.7A	0.82	0.00	0.82	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N49.8	0.39	0.00	0.39	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
17N63	0.30	0.00	0.30	2	2	POC Mitigation - Rock and gravel entire length of road as needed.
17N85	1.20	0.00	1.20	UAR	1	Add as ML 1. Remove or replace failing culverts. POC Mitigation - Barricade.
18N01	0.10	0.00	0.10	2	2	Maintain as ML 2
18N01	0.06	0.10	0.16	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N02	1.75	0.00	1.75	3	3	POC Mitigation - Rock/gravel segment 100' either side of Sanger Lake outlet as needed.
18N02	0.85	1.75	2.60	3	3	POC Mitigation - Install Seasonal Gate Closure
18N02.1	0.14	0.00	0.14	UAR	Restore	Barricade.
18N02.2	0.08	0.00	0.08	UAR	M. Trail	Add as Motorized Trail
18N02.3	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail
18N03	1.91	0.00	1.91	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N04.2	0.11	0.00	0.11	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
18N04E	0.21	0.65	0.86	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar or rolling dips as needed and barricade.
18N05.1	0.20	0.00	0.20	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed
18N05.100	2.16	0.00	2.16	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
18N05.2	0.53	0.00	0.53	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars and barricade as needed.
18N06A	0.18	0.00	0.18	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N07.11	0.06	0.00	0.06	UAR	Restore	Barricade.
18N07.12	0.04	0.00	0.04	UAR	M. Trail	Add as Motorized Trail
18N07.14	0.05	0.00	0.05	UAR	M. Trail	Add as Motorized Trail
18N07.2	0.13	0.00	0.13	UAR	2	Add as ML 2
18N07.3	0.08	0.00	0.08	UAR	Restore	POC Mitigation - Barricade.
18N07.6	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed. Barricade.
18N07.8	0.38	0.00	0.38	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
18N08.2	0.03	0.00	0.03	UAR	2	Add to road system. ML 2
18N08F	0.90	0.90	1.80	2	1	POC Mitigation - Downgrade to ML 1. Remove culverts and associated fill. Waterbars as needed and barricade.
18N08G	1.12	0.00	1.12	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N09	5.10	0.00	5.10	2	2	POC Mitigation - Seasonal Gate at beginning of road.
18N09.100	0.21	0.00	0.21	UAR	M. Trail	Add as Motorized Trail, Route Delineation at site, POC Mitigation - Seasonal Gate on 18N09 closes access to this route.
18N09.100	0.06	0.21	0.27	UAR	Restore	Waterbars/Rolling dips as needed and barricade at 18N09.
18N09.100A	0.16	0.00	0.16	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N09.102	1.84	0.00	1.84	UAR	Restore	Waterbars/Rolling dips as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
18N09.103	0.04	0.00	0.04	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N09.104	0.05	0.00	0.05	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N09.105	0.12	0.00	0.12	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N09.106	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail
18N09.107	0.01	0.00	0.01	UAR	M. Trail	Add as Motorized Trail
18N09.108	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
18N10.1	0.70	0.00	0.70	UAR	Restore	Barricade.
18N11	1.92	4.15	6.07	2	2	Replace culvert at mp 5.78.
18N11A	0.80	0.00	0.80	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N11B	0.19	0.00	0.19	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N11C	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N11D	0.46	0.00	0.46	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N11D.1	1.75	0.00	1.75	UAR	Restore	
18N11D.2	0.25	0.00	0.25	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N11D.3	0.29	0.00	0.29	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N11D.4A	0.73	0.00	0.73	UAR	Restore	Barricade.
18N11D.5	2.11	0.00	2.11	UAR	Restore	Remove culverts and fill from stream channels. Waterbars as needed. POC Mitigation - Barricade.
18N12A	0.43	0.00	0.43	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N13.100	0.21	0.00	0.21	UAR	Restore	Barricade.
18N13.101	0.08	0.00	0.08	UAR	Restore	
18N15	1.20	0.00	1.20	2	2	Upsize culverts, install waterbars or rolling dips.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
18N15D	0.23	0.00	0.23	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N16	5.33	0.00	5.33	2	2	POC Mitigation - Rock/gravel first 0.28 miles as needed.
18N16.100	2.60	0.00	2.60	UAR	Restore	Barricade.
18N16E	0.38	0.00	0.38	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N16F.1	0.16	0.00	0.16	UAR	Restore	Barricade.
18N16W	0.17	0.00	0.17	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N17	8.10	0.00	8.10	2	2	Improve maintenance on, repair, or replace/upgrade each of the 19 culverts and waterbars as needed. POC Mitigation - Seasonal gate closure.
18N17.100	1.01	0.00	1.01	UAR	Restore	Barricade.
18N17.100A	0.08	0.00	0.08	UAR	Restore	Barricade.
18N17.101	0.05	0.00	0.05	UAR	Restore	
18N17.102	0.06	0.00	0.06	UAR	Restore	
18N17.103	0.21	0.00	0.21	UAR	Restore	Barricade.
18N17.104	0.20	0.00	0.20	UAR	Restore	Barricade.
18N17.104A	0.20	0.00	0.20	UAR	Restore	
18N17B	0.87	0.00	0.87	2	2	Install culvert at mp 0.5
18N17C	1.18	0.00	1.18	2	2	Replace culverts at mp 0.35 and 0.77; and maintain, repair or upgrade remaining 4 culverts and improve surface drainage.
18N17C.1	0.05	0.00	0.05	UAR	Restore	Barricade.
18N17G	0.12	0.00	0.12	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N17H	0.15	0.00	0.15	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N18A	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
18N18B	0.15	0.00	0.15	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N18C	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N18D	0.13	0.00	0.13	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N19A	0.22	0.00	0.22	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N19B	0.20	0.00	0.20	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N19C	0.17	0.00	0.17	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N20	1.00	0.00	1.00	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N20.100	0.28	0.00	0.28	UAR	Restore	Barricade.
18N20.100A	0.08	0.00	0.08	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed.
18N20.101	0.12	0.00	0.12	UAR	Restore	Barricade.
18N20.102	0.47	0.00	0.47	UAR	Restore	Remove culverts and associated fill. Waterbars as needed.
18N20A	0.40	0.00	0.40	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N22	2.00	0.00	2.00	2	1	Remove all culverts. Waterbars/rolling dips as needed and barricade. Downgrade to ML 1.
18N22D	0.62	0.00	0.62	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N22E	0.14	0.00	0.14	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N23	0.10	0.00	0.10	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N24	1.10	0.00	1.10	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
18N26	1.75	0.00	1.75	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N26A	0.15	0.00	0.15	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N26A.2	0.06	0.00	0.06	UAR	Restore	
18N26B	0.08	0.00	0.08	1	1	Remove all culverts. Waterbars/rolling dips as needed and barricade.
18N30.100	0.04	0.00	0.04	UAR	Restore	Barricade.
18N30A	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N30B	0.46	0.00	0.46	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N31	0.60	0.00	0.60	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N31.1	0.16	0.00	0.16	UAR	Restore	
18N31.2	0.23	0.00	0.23	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N31.3C	0.18	0.00	0.18	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N31.4	1.25	0.00	1.25	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
18N46	0.39	0.00	0.39	2	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N47	0.44	0.00	0.44	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N48	0.31	0.00	0.31	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N51	0.27	0.00	0.27	1	2	Upgrade to ML 2.
18N51.100	1.45	0.00	1.45	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
18N51.100A	0.46	0.00	0.46	UAR	Restore	Barricade.
18N56	0.88	0.00	0.88	2	2	Replace culverts; install rolling dips as needed. POC Mitigation - Rock/gravel 100' either side of infected creek crossing near mile post 0.15 as needed.
18N56.100	0.04	0.00	0.04	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
18N57	0.56	0.00	0.56	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
18N58.1	0.13	0.00	0.13	UAR	Restore	Barricade.
18N58B	0.25	0.00	0.25	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
199.102	0.13	0.00	0.13	UAR	2	Add to road system. ML2. Administrative access only to water system for campground.
199.103	0.10	0.00	0.10	UAR	3	Add to road system. ML 3, Madrona Campground. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.104	0.11	0.00	0.11	UAR	3	Add to road system. ML 3, Madrona Campground. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.105	0.03	0.00	0.03	UAR	3	Add to road system. ML 3, Darlingtonia Trail head access
199.106	0.18	0.00	0.18	UAR	3	Add to road system. ML 3, Eighteen-mile river access site. POC Mitigation - Rock/gravel entire route of infected POC as needed.
199.107	0.10	0.00	0.10	UAR	Restore	Barricade.
199.109	0.10	0.00	0.10	UAR	Restore	Barricade to allow parking at turnout and hiking access to river.
199.111	0.09	0.00	0.09	UAR	2	Add to road system. Add road to creek as ML 2. POC Mitigation- Rock/gravel entire route of infected POC as needed.
199.111A	0.07	0.00	0.07	UAR	Restore	Barricade.
199.112	0.29	0.00	0.29	UAR	Restore	Barricade.
199.113	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail
19N34	1.95	0.00	1.95	1	Deco	Remove from System; Remove culvert and associated fill as needed. Waterbars as needed and barricade.
19N34A	0.28	0.00	0.28	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
19N34B	0.29	0.00	0.29	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
19N34C	0.08	0.00	0.08	1	Deco	Remove from System; Remove culverts and associated fill from stream channel. Waterbar as needed and barricade.
305.100	0.57	0.00	0.57	UAR	Restore	Barricade.
305.101	1.08	0.00	1.08	UAR	Restore	Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
305.101A	0.04	0.00	0.04	UAR	Restore	Barricade.
305.101B	0.50	0.00	0.50	UAR	Restore	Barricade.
305.102	0.15	0.00	0.15	UAR	Restore	Barricade.
305.103	0.14	0.00	0.14	UAR	Restore	Barricade.
305.104	0.14	0.00	0.14	UAR	Restore	Barricade.
305.105	0.22	0.00	0.22	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
305.106	0.21	0.00	0.21	UAR	Restore	Barricade.
305.107	1.25	0.00	1.25	UAR	Restore	Barricade.
305.108	0.06	0.00	0.06	UAR	Restore	Barricade.
305.109	2.43	0.00	2.43	UAR	M. Trail	Add to trail system. Motorized Trail; POC Mitigation - At seepy crossing with POC, install culvert and add gravel.
305.109A	1.02	0.00	1.02	UAR	Restore	Barricade.
305.113	0.12	0.00	0.12	UAR	Restore	Barricade.
305.114	0.63	0.00	0.63	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
305.115	1.74	0.00	1.74	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
305.115A	0.18	0.00	0.18	UAR	Restore	Waterbars/Rolling dips as needed and barricade.
305.118	0.80	0.00	0.80	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - seasonal closure required at beginning of route. Gate mid-Oct - early June; need culvert in at POC site. Barricade end of route.
305.118	0.76	0.80	1.56	UAR	Restore	Waterbars/Rolling dips as needed. POC Mitigation - Barricade.
305.119	0.22	0.00	0.22	UAR	Restore	Barricade.
305.120	0.04	0.00	0.04	UAR	Restore	Barricade.
305.121	0.63	0.00	0.63	UAR	Restore	Barricade.
305.121A	0.28	0.00	0.28	UAR	Restore	Barricade.
305.121B	1.03	0.00	1.03	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC Mitigation - Barricade just before creek, near mile post 1.02.
305.123	0.63	0.00	0.63	UAR	Restore	Barricade.
305.124	1.20	0.00	1.20	UAR	Restore	Waterbars/Rolling dips as needed and barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
305.125	1.44	0.00	1.44	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route. POC Mitigation - Seasonal closure - gate at both ends.
305.125A	0.21	0.00	0.21	UAR	Restore	Barricade.
305.126	1.56	0.00	1.56	UAR	Restore	Barricade.
305.128	0.70	0.00	0.70	UAR	Restore	Barricade.
305.129	0.40	0.00	0.40	UAR	Restore	Barricade.
305.130	1.72	0.00	1.72	UAR	Restore	Barricade.
305.131	0.09	0.00	0.09	UAR	Restore	Barricade.
305.133	0.01	0.00	0.01	UAR	M. Trail	Add as Motorized Trail
305.134	0.13	0.00	0.13	UAR	Restore	Barricade
314.1	1.21	0.00	1.21	UAR	M. Trail	Add to trail system. Motorized trail. POC mitigation - Barricade at mp 1.21.
314.102	0.80	0.00	0.80	UAR	Restore	Barricade.
314.107	0.26	0.00	0.26	UAR	2	Add to road system. ML 2; Delineate route. Three Ponds camping area. POC mitigation - Rock/gravel length of motorized trail as needed.
314.108	0.06	0.00	0.06	UAR	Restore	Barricade.
315.100	1.68	0.00	1.68	UAR	Restore	Barricade.
315.102	0.48	0.00	0.48	UAR	Restore	Barricade.
315.103	0.26	0.00	0.26	UAR	Restore	Barricade.
315.104	0.82	0.00	0.82	UAR	Restore	Barricade.
315.106	0.25	0.00	0.25	UAR	Restore	Barricade.
315.107	0.30	0.00	0.30	UAR	Restore	Barricade.
315.108	0.46	0.00	0.46	UAR	M. Trail	Add to trail system. Motorized Trail; Delineate route.
315.109	0.49	0.00	0.49	UAR	Restore	Barricade.
315.110	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail
315.111	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
315.2	0.51	0.00	0.51	UAR	Restore	Waterbars/Rolling dips as needed. Remove culverts at mp 0.07 0.13 and 0.18 to improve drainage. POC Mitigation - Barricade.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
315.3	0.98	0.00	0.98	UAR	Restore	Remove all culverts. Waterbars as needed. POC Mitigation-barricade.
315.3A	0.24	0.00	0.24	UAR	Restore	Remove all culverts. Waterbars as needed and barricade.
315.9A	1.22	0.00	1.22	UAR	Restore	Remove culverts and associated fill from stream channels. Waterbars as needed and Barricade.
316.10	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.11	0.04	0.00	0.04	UAR	M. Trail	Add as Motorized Trail
316.12	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.2	0.20	0.00	0.20	UAR	M. Trail	Add as Motorized Trail
316.3	0.08	0.00	0.08	UAR	M. Trail	Add as Motorized Trail
316.4	0.07	0.00	0.07	UAR	M. Trail	Add as Motorized Trail; route delineation
316.5	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.6	0.03	0.00	0.03	UAR	M. Trail	Add as Motorized Trail
316.7	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail
316.7A	0.02	0.00	0.02	UAR	M. Trail	Add as Motorized Trail; route delineation
316.8	0.05	0.00	0.05	UAR	M. Trail	Add as Motorized Trail; route delineation; waterbars
316.9	0.06	0.00	0.06	UAR	M. Trail	Add as Motorized Trail
316.9A	0.05	0.00	0.05	UAR	Restore	Barricade
324.100	0.13	0.00	0.13	UAR	Restore	Barricade.
405.10	0.74	0.00	0.74	UAR	M. Trail	Add to trail system. Motorized trail. Delineate route. Route delineation at .36mp.
405.100	0.11	0.00	0.11	UAR	Restore	Barricade.
405.101	0.17	0.00	0.17	UAR	Restore	Barricade.
405.103	3.47	0.00	3.47	UAR	M. Trail	Add to trail system. Motorized trail. Improve surface drainage near creek; repair culvert.
405.9	0.05	0.00	0.05	UAR	Restore	Barricade.
411.101	0.30	0.00	0.30	UAR	Restore	Barricade.
411.102	0.17	0.00	0.17	UAR	Restore	Barricade.
427.101	0.15	0.00	0.15	UAR	1	Add to road system. ML 1.

Table 168. Alternative 6

Road or Route	Miles	Beginning Mile Point	End Mile Point	Existing Status or Maintenance Level	Final Status or Maintenance Level	Alternative 6 Proposed Actions
427.103	0.32	0.00	0.32	UAR	2	Add to road system. ML 2. Delineate Route.
427.104	0.30	0.00	0.30	UAR	Restore	Barricade.
427.105	0.29	0.00	0.29	UAR	2	Add to road system. ML 2, County disposal site; may be gated periodically for administrative purposes.
427.106	0.13	0.00	0.13	UAR	M. Trail	Add to trail system. Motorized Trail; install rolling dips to improve drainage.
427.107	0.05	0.00	0.05	UAR	2	Add as ML 2
427.108	0.09	0.00	0.09	UAR	M. Trail	Add as Motorized Trail
427.108A	0.04	0.00	0.04	UAR	Restore	Barricade

Appendix B. Monitoring Plan

Water Quality Monitoring Plan

The Water Resources Monitoring Plan presented here was developed to meet state water quality objectives as identified by the State of California Regional Water Quality Management Plan, which is intended to protect and maintain the identified beneficial uses of water flowing from NFS land. Best Management Practices (BMPs) were developed specifically for the purpose of meeting all state water quality objectives. The BMP (Practice: 4-7) for Off-Highway Vehicle (OHV) use is described below.

Water Quality Monitoring of Off-Highway Vehicle (OHV) Use According To a Developed Plan

Objective: To provide a systematic process to determine when and to what extent OHV use will cause, or is causing adverse effects on water quality.

Explanation: Each Forest's OHV plan will:

Identify areas or routes where OHV use could cause degradation of water quality.

- Establish baseline water quality data for normal conditions as a basis from which to measure change.
- Identify water quality standards and the amount of change acceptable.
- Establish monitoring methods and frequency.
- Identify controls and mitigation appropriate in management of OHV's.
- Restrict OHV use to designated routes.

Implementation: Monitoring results are evaluated against the OHV plan objectives for water quality and the Forest Plan objectives for the area. These results are documented, along with the actions necessary to correct identified problems.

If considerable adverse effects are occurring, or are likely to occur, immediate corrective action will be taken. Corrective actions may include, but are not limited to, reduction in the amount of OHV use, signing, or barriers to redistribute use, partial closure of areas, rotation of use on areas, closure to causative vehicle type(s), or total closure, and structural solutions, such as culverts and bridges. Closure is accomplished through authority of the Forest supervisor.

Water Resources Monitoring Plan

- Over the next 10 year period, monitor and evaluate at least 20% of routes added to the NFTS annually which were identified as high risk. Monitoring is predicated on available funding.
- The recommended protocol for monitoring of newly added routes is the Region 5 OHV Trail-Monitoring Protocol, commonly referred to as "Green-Yellow-Red". This protocol was developed in Region 5 specifically to evaluate OHV route impacts to soil and water resources (See Table 169).

Table 169. Green-yellow-red water quality monitoring indicators

	Green Condition		Yellow Condition		Red Condition
G1	Water control is provided by enough functional waterbreaks to divert runoff from the trail before it has the volume and velocity to cause erosion. Where present, rills occur on less than 1/3 of the distance between waterbreaks.	Y1	Waterbreaks do not divert all runoff from the trail because they are nearly filled to capacity and/or are partially breached, or spaced too widely. Where present, rills occur on more than 1/3 of the distance between waterbreaks	R1	Waterbreaks no longer divert runoff from the trail because they are full and/or have been breached, or are absent or spaced too widely. Gully or rill erosion may be present.
G2	No accelerated erosion off-trail. Runoff at waterbreak outlets and on slopes adjacent to the trail is dispersed effectively. All sediment is filtered by vegetation or litter.	Y2	Rill erosion and/or sediment deposition occurs at waterbreak outlets and/or on slopes adjacent to the trail. All sediment is filtered or deposited before it reaches a watercourse with a scoured channel.	R2	Gully erosion occurs at waterbreak outlets or on slopes adjacent to the trail and/or sediment is transported to an intermittent or perennial watercourse.
G3	Sediment traps, where present, are all functional and have adequate capacity for at least one season of use. Trapped sediment can be retrieved during normal maintenance.	Y3	Where present, most sediment traps are full or nearly full, but still functional. Most trapped sediment can be retrieved during normal maintenance.	R3	Where present, sediment traps have been breached and have a plume of sediment and/or a gully below the breach. Most sediment cannot be retrieved.
G4	Tread wear is minimal. Tread is generally incised less than 6 inches. Tread wear is generally evident on less than 1/3 of the distance between waterbreaks or on less than 1/3 of the tread width.	Y4	Tread wear is evident. Tread is generally incised 6 to 12 inches and tread wear is generally evident on more than 1/3 the distance between waterbreaks and on more than 1/3 of the tread width. If present, “whoops” or “stutterbumps” and high berms are well-developed.	R4	Tread wear is severe. Tread incision is generally greater than 12 inches deep and tread wear is generally evident on the entire distance between waterbreaks. If present, deep “whoops” and “stutterbumps” force traffic off the trail.
G5	Tread width is generally no greater than 1.5 times the design width for the designated use.	Y5	Tread width is generally greater than 2 times the design width for the designated use and appears to be increasing.	R5	Tread width is generally greater than 3 times the design width for the designated use and has caused or is causing severe resource damage.
G6	Unauthorized user-created trails are limited to single tracks or single passes generally less than 300 feet long. Tracks are not eroded and have little effect on water control.	Y6	Unauthorized user-created trails are common, well-defined, and generally greater than 300 feet long. Water control is inadequate. Areas with resource damage can be revegetated/restored with ordinary effort.	R6	Unauthorized user-created trails have caused severe resource damage such as gully erosion, eroded hillclimbs, or extensive damage to vegetation and/or sensitive habitat. Restoration will usually require a major effort (e.g., large equipment, topsoil replacement, etc.)
G7	Approach to watercourse crossing is short and has a gentle gradient. Tread is stable, shows little evidence of erosion, and is at design width. No damage to riparian vegetation outside the tread.	Y7	Approach to watercourse crossing is short and steep or long and gentle. Tread may show some evidence of erosion and may show evidence of widening. Minimal damage to riparian vegetation.	R7	Approach to watercourse crossing is both steep and long and/or tread is unstable and shows evidence of accelerated erosion. Approach may be widening and damaging riparian vegetation.

Recreation Monitoring Plan

Objective: Monitoring of motorized trail use is conducted by the Forest to meet standards and guidelines set by the LRMP. Note that the Forest Plan references "OHV routes." These routes are analogous to NFTS motorized trails as referenced in this document.

Timing: Monitoring of road and trail conditions is required annually.

Implementation: If monitoring, or road and trail condition surveys, lead the Responsible Official to determine motor vehicle use is directly causing or will directly cause considerable adverse effects on public safety or soil, vegetation, wildlife, wildlife habitat, or cultural resources, corrective actions will be taken immediately. Corrective actions may include, but are not limited to, signing, barriers, closure to causative vehicle type(s), partial closure, or total closure.

Protocol: The annual monitoring of NFTS motorized trails (20 percent of routes) is focused on routes with specific resource concerns. Road and trail condition surveys are conducted using a random sample and must meet national standards. The dispersed recreation monitoring element as provided in the Forest Plan includes annual assessment of project effects on:

1) Recreation setting and recreation opportunity spectrum (ROS) categories in primitive and semiprimitive areas;

2) OHV routes - A sampling of 20 percent of routes when the threshold of concern is triggered where there is:

    a. More than 10% variance from planned use levels; and

    b. Visible damage of Forest resources along or adjacent to NFTS motorized trails.

Port-Orford-Cedar Monitoring Plan

Objectives:

1) Annual monitoring for the illegal use (i.e. use outside allowed season of use) of roads and motorized trails on the NFTS rated as high risk of introducing *Phytophthera lateralis* into POC stands.

2) Monitoring POC stands within 300 feet of routes for signs of *Phytophthera lateralis* if illegal use is identified.

3) Yearly monitoring of seasonal closure gates to determine efficacy in stopping illegal use.

Timing: Monitoring will occur at least once a year and more often if possible.

Methodology: Forest Service personnel will inspect seasonal gates to look for signs of illegal use beyond the gate and to ensure gate integrity is sound.

Implementation: If adverse effects are noted, corrective action will be taken. Corrective actions may include, but are not limited to, reinforcing areas around gates to restrict access beyond areas of illegal use, such as boulder placement or moving gates to different location that may be more effective at preventing trespass.

Botanical Resources Monitoring Plan

Introduction: It is forest service policy to analyze impacts to sensitive species to ensure management activities do not create a significant trend toward federal listing or loss of viability. The Botanical Resources Monitoring Plan was developed to assess impacts to Sensitive plants growing on unauthorized routes designated for addition to the National Forest Transportation System to determine if a downward trend develops from use overtime.

Objective: To provide a systematic process to evaluate if motorized recreation within 100 of unauthorized routes proposed for addition to the National Forest Transportation System (NFTS) is impacting Sensitive plant species growing there.

Location: The following routes will be monitored:

Table 170. Routes to be monitored - botany

Road_Route	Miles	OCC_ID	LEOP	SISE10	STHO
17N49.101	1.17	SISE10_007		300	
17N49.101	1.17	SISE10_009		300	
17N49.102	0.87	SISE10_008		1000	
17N49.104	3.82	SISE10_012		200	
17N49.104	3.82	SISE10_016		650	
17N49.104	3.82	SISE10_018		616	
17N49.104	3.82	STHO_017			120
17N49.11	2.55	SISE10_014		517	
17N49.11	1.94	SISE10_014		147	
17N49.11	2.55	STHO_017			16
17N49.11	1.94	STHO_017			19
17N49.13	0.3	SISE10_019		45	
17N49.4	0.75	SISE10_006		750	
17N49.7	3.06	SISE10_013		400	
17N49.7	0.29	SISE10_015		800	
17N49.7A	0.82	SISE10_017		600	
17N49.8	0.39	SISE10_016		58	
17N49.8	0.39	STHO_017			13
18N51.100	1.45	LEOP_014	27		
305.109	2.43	LEOP_011	29		
305.109	2.43	LEOP_012	42		
305.109	2.43	LEOP_013	162		
305.109	2.43	SISE10_027		295	
		Totals	**260**	**6383**	**168**

Timing: Monitoring will commence within one year of the addition of motorized trails to the NFTS or change in maintenance level of NFTS roads in order to obtain baseline information on current conditions adjacent to trails and roads. Monitoring shall occur in late Fall, following hunting season. Monitoring shall occur every other year thereafter until analysis shows that occurrences are stable.

Methodology: If loss of plants is noted it will be quantified as to severity and extent. Severity will be described in terms of percent of occurrence lost. If the reason for the decline is apparent (e.g. wheel ruts in moist substrate) it will be recorded and photo documented.

Implementation: If significant downward trends are noted, or are likely to occur, corrective action will be taken. Corrective actions may include, but are not limited to, signing, barriers, closure to causative vehicle type(s), or removal of the route from the Motor Vehicle Use Map (MVUM).

Protocol: The recommended protocol for monitoring affects to Sensitive plants is the Region 5 OHV Trail-Monitoring Protocol, using the "Green-Yellow-Red indicators.

Table 171. Green - yellow - red botany monitoring indicators

Green Condition	Yellow Condition	Red Condition
There is no downward trend in numbers of individuals per occurrence.	There is evidence of downward trend in numbers of individuals.	There is a loss of 25% or more individuals in an occurrence.

Table 172. Cost

Personnel	No. of Days	Cost Per Day	Total Cost
2 GS 430-09	10	$600	$6000
Travel	10	$70	$700
		Total Cost Per Year =	**$6700**

Noxious Weed Monitoring Plan

The Noxious Weed Monitoring Plan was developed to meet the objective of preventing the introduction and spread of priority noxious weeds from existing weed infestations located on the following routes and roads affected by the proposed action. The intent is to achieve a condition where vehicular travel ways are free of priority weeds. Priority weeds are listed in the table below.

Location: The following noxious weed sites, showing past treatment data, will be monitored:

Table 173. Noxious weed sites to be monitored

Route	Miles	Species	Date Last Treated	Plants Treated	Exist	Alt6
13N37	2.00	Scotch broom	7/10/2012	1	2	1
15N38	2.90	Scotch broom	1/27/2012	69	2	2
15N63	0.30	Scotch broom	9/15/2010	20	2	2
16N03K	1.50	Scotch broom	8/23/2011	67	2	2
16N19	8.28	Scotch broom	7/24/2013	63	2	2
16N38	2.90	Scotch broom	5/23/2010	327	2	2
16N41	1.43	Scotch broom	5/27/2010	10	2	2
17N04S	1.80	Scotch broom	6/5/2006	50	1	DECO
17N05C	0.97	Scotch broom	6/15/2012	986	1	DECO
17N13A	0.38	Scotch broom	9/19/2012	280	2	1

Route	Miles	Species	Date Last Treated	Plants Treated	Exist	Alt6
17N15A	0.13	Scotch broom	7/27/2012	282	2	DECO
17N16	0.65	meadow knapweed	7/19/2012	6	2	1
17N22J	0.12	Scotch broom	4/21/2011	5	2	2
17N26	0.25	tansy ragwort	7/24/2013	13	2	2
17N31	1.60	Scotch broom	1/4/2012	82	2	1
17N36	2.50	Scotch broom	9/11/2012	1	2	2
17N41H	0.90	Scotch broom	11/19/2008	463	2	2
17N48	1.66	Scotch broom	4/25/2012	85	2	2
17N49	3.52	French broom	8/23/2011	1	3	3
17N49	0.44	Scotch broom	6/10/2010	1	3	3
18N07.2	0.13	Scotch broom	4/8/2013	5745	UAR	2
18N08.2	0.03	Scotch broom	12/7/2011	14	UAR	2
18N16E	0.38	Scotch broom	3/8/2013	671	1	DECO
18N17	8.10	Scotch broom	8/8/2012	10	2	2
18N19C	0.17	Scotch broom	11/17/2011	30	1	DECO
18N20	1.00	Scotch broom	8/7/2012	10	2	DECO
18N20		Scotch broom	8/7/2012	1	2	DECO
18N20		tansy ragwort	8/7/2012	160	2	DECO
18N56	0.88	Scotch broom	8/8/2012	7	2	2
199.104	0.11	Scotch broom	3/17/2013	132	UAR	3
427.103	0.32	Scotch broom	12/16/2011	71	UAR	2
427.106	0.13	Scotch broom	4/28/2011	476	UAR	TRAIL

Timing: Monitoring will commence at the end on one full growing season following the addition of the routes to the NFTS. Monitoring shall occur in late Fall, following the first rains. Monitoring shall occur every year thereafter.

Methodology: Priority will be given to sites treated. Rangeland General Forms (weed inventory forms) shall be completed for each site visited to quantify weed species present.

Protocol: Motorized trails and NFTS roads shall be maintained in a weed free state. If weed sites are found on motorized trails or NFTS roads they will be treated to removal all weeds. If yellow star-thistle, diffuse or spotted knapweed infestations are found on motorized trails, these trails should be removed from the Motor Vehicle Use Map until such time as the infestations are eradicated.

Table 174. Green - yellow - red - weed monitoring indicators

Green Condition	Yellow Condition	Red Condition
There is no evidence priority noxious weeds on designated routes.	Due to proximity there is potential for priority noxious weeds to spread from existing system roads to newly designated motorized trails or newly designated NFTS roads.	Priority noxious weeds have spread to newly designated motorized trails or newly designated NFTS roads.

Table 175. Cost

Personnel	No. of Days	Cost Per Day	Total Cost
2 GS 430-09	10	$600	$6000
Travel	10	$70	$700
		Total Cost Per Year =	**$6700**

Appendix C. Past, Present and Reasonably Foreseeable Activities

A detailed description of these activities is located in the project record.

Implementation Complete

Forest Service

Coast to Crest Trail, signed 9/2007.

Altaville Mining District Site: Union-Zaar Mine Rehabilitation, signed 2008.

Goose Creek Land Acquisition

Hurdygurdy Land Acquisition

Gasquet Motor Vehicle Use Map, issued 2009.

Roadside Sanitation of 15N39, signed 8/2000.

Doe Flat Trail and Trailhead Relocation Project, signed 11/2000.

Non-Forest Service

Hardscrabble Bridge Replacement Project (US 199, PM 10.9–PM 11.2), completed in 2009;

Del Norte 199 Cable Mesh Drape Project (US 199, PM 18.3–PM 18.6), completed in 2011;

In Implementation

Forest Service

Hurdygurdy Recreation Improvement Project, Signed 2/2005.

Big Flat Vegetation and Fuels Management Project, signed 9/2008.

Station 3 Fuel Break, signed 1/2013

Coon Mountain Meadow Restoration, signed 11/2007, rescoped and signed on 3/2009.

Gasquet Community Wildfire Protection, signed 6/2003, Supplemental Information Report signed 2/2009.

Hiouchi Community Protection Fuelbreak Project, signed 4/2006, Rescoped and signed 5/2009.

Gasquet Shaded Fuel Break, signed 11/1992; Rescoped as Elk Camp Fuel Break Project, signed 4/2009.

Mus-Yeh-Sait-Neh Understory Burn, Signed 8/1995, Supplemental Information Report signed 6/2011.

North Fork Smith Special Interest Area Road Access, signed 5/2001, Supplemental Information Report signed June 7, 2013.

Forest-wide Integrated Management of Invasive Non-native Plant Species, signed 5/2011.

Lower Trinity and Mad River Motorized Travel Management

Young's Valley Trailhead Relocation and Road Improvement

Non-Forest Service

Hurdygurdy Bridge Replacement

Steven Memorial Bridge Replacement

Culvert replacement on Griffin Creek

Planned Activities

Forest Service

Aquatic Riparian Restoration EA

Gordon Hill Project

Hurdygurdy Land Acquisition

Non-Forest Service

Private Timber Harvests

Hiouchi Community Improvements Project (US 199, PM 5.4–6.2);

Major Bridge Seismic Retrofit Project at five bridges (US 101 and US 199, various locations);

Maintenance project for a thin blanket overlay (US 199, PM 0.7–4.2), planned for 2014;

Three storm damage repair projects on US 199 (PMs 8.6–8.8, 21.7, 24.67, and 26.31, these being called "Patrick Creek Slipout," "Dollar Bend Soldier Pile Wall," and "Siskiyou Forks Slipout");

Hamilton Road High Friction Surface Treatment (US 101, PM 22.5–23.0); and

Smith River Canyon Safety Project (US 199, PM 8.1–8.4).

Dr. Fine Bridge Project

CalTrans STAA Hwy 199:

- Patrick Creek Narrows Location 1 (US 199: PM 20.5 to 20.7)
- Patrick Creek Narrows Location 2 (US 199: PM 23.9 to 24.3)
- Patrick Creek Narrows Location 3 (US 199: PM 25.55 to 25.65)
- The Narrows (US 199: PM 22.7 to 23.0)
- Washington Curve (US 199: PM 26.3 to 26.5)

Appendix D. Cumulative Watershed Effects

Assumptions and Equivalent Roaded Acres Coefficients used for Travel Management Assessment

The Forest Service in Region 5 has adopted the equivalent roaded acres (ERA) model as a method of addressing cumulative watershed effects. This model is designed as a preliminary indicator for managers to determine whether or not past and present land management disturbances in a given watershed approach or exceed a threshold of concern. Where equivalent roaded acres approach or exceed a given watershed's threshold of concern, further field work would be necessary to ascertain whether cumulative watershed effects are present and if land management activities would adversely add to those effects and result in detrimental impacts to beneficial uses.

The equivalent roaded acre methodology has both strengths and weaknesses. The analysis is readily duplicated and easily understood. It also incorporates rates of management disturbance and recovery times associated with those disturbances, an attribute which is missing in many other cumulative watershed effect models. On the other hand, it is only an office exercise based on management-related hill slope disturbance. It also does not address physical or biological processes in stream channels, nor does it account for the time lag associated with routing sediment delivered from a given activity. Recovery times in the equivalent roaded acre model apply only to onsite treatments, not to recovery of downstream impacts.

Equivalent Roaded Acres Calculations

The cumulative watershed effects equivalent roaded acre analysis for the Smith River NRA project was conducted on all lands within the affected watersheds (Public and Private). The methods used to calculate percent equivalent roaded acres for past and present land management activities are described below. The coefficients used in the equivalent roaded acre calculations are listed in Table 176 through Table 181, which include the rational for assigning of coefficients.

Equivalent Roaded Acres Equations and Coefficients for Existing and Current Land Management Activities

Timber Harvest

The timber harvest equivalent roaded acres is calculated using the following formula:

ERA = [Acres Harvested] x [Logging System Coefficient]

Table 176 lists the coefficients assigned to various logging systems. In addition, the recovery times anticipated for each activity is included as well as the type of recovery curves. Some activities recover gradually and mimic a linear recovery while other activities recover rapidly initially and then gradually taper off. Those activities are better represented by a concave recovery curve.

Table 176. Logging system equivalent roaded acres (ERA) coefficient and recovery time

Logging Activity	Logging System	ERAs per Acre Coefficient	Recovery Time	Recovery Curve
Changes	Fire	0.15	15	Linear
Fuel-Treatment	Broadcast Burn	0.04	4	Concave
Fuel-Treatment	Burn Piles	0.02	2	Concave
Fuel-Treatment	Mechanical	0.15	15	Concave
Fuel-Treatment	Piling - hand	0.02	2	Concave
Fuel-Treatment	Piling - tractor	0.15	15	Concave
Fuel-Treatment	Under burning	0.1	10	Concave
Harvest	Change Detection, NFS	0.2	20	Concave
Harvest	Change Detection, Other	0.25	25	Concave
Harvest	Clear-cut	0.25	25	Concave
Harvest	Clear-cut, Skyline	0.2	20	Concave
Harvest	Clear-cut, Tractor/Mechanical	0.3	30	Concave
Harvest	Group Select	0.2	20	Concave
Harvest	Group Select, Helicopter	0.1	10	Concave
Harvest	Group Select, Skyline	0.15	15	Concave
Harvest	Group Select, Tractor/Mechanical	0.2	20	Concave
Harvest	Overstory Removal	0.25	25	Concave
Harvest	Overstory Removal, Helicopter	0.1	10	Concave
Harvest	Overstory Removal, Skyline	0.2	20	Concave
Harvest	Overstory Removal, Tractor/Mechanical	0.3	30	Concave
Harvest	Shelter wood	0.25	25	Concave
Harvest	Shelter wood, Skyline	0.2	20	Concave
Harvest	Shelter wood, Tractor/Mechanical	0.25	25	Concave
Harvest	Thin	0.2	20	Concave
Harvest	Thin, Skyline	0.15	15	Concave
Harvest	Thin, Tractor/Mechanical	0.2	20	Concave
TSI	Pre-commercial Thin	0.05	5	Concave
TSI	Pre-commercial Thin, Biomass	0.15	15	Concave
TSI	Pre-commercial Thin, Manual	0.02	2	Concave
TSI	Pre-commercial Thin, Tractor	0.15	15	Concave

Roads

The road equivalent roaded acres is calculated using the following formula:

ERA = [Road Miles] x [Average width of Road Prism]

Road miles (all public, state, county and privately owned) were converted to equivalent roaded acres based on an average road prism width of 35 feet. Roads are a permanent feature on the landscape and unless they are decommissioned or restored they do not recover over time. As such, their recovery curve is shown in Table 177 as a flat curve. The recovery rate for a decommissioned or restored road, based on professional judgment and experience, is estimated to be 10 years. The equivalent roaded acres associated with open roads will stay constant over time and not reduce as in the case of timber sale acres that recover over time. Table 177 lists the coefficients used to develop equivalent roaded acres per road mile.

Table 177. Road equivalent roaded acres (ERAs) coefficient and recovery times

Roads and Motorized Trails	ERAs per Mile	Recovery Time	Recovery Curve
Existing/In Use	4.2	0	Flat
Decommissioned or Restored.	4.2	10	Linear

Wildfire

Table 178 shows the equivalent roaded acres assigned to burned areas (within the past 15 years) in the analysis watersheds. It was assumed that light to moderate burn intensities had no negative watershed impacts. Moderate intensity burns were assumed to have a light impact on a watershed similar to that of an extremely light land management ground disturbing activity (for example, timber stand improvement activities. Higher burn intensities were given equivalent roaded acres/Acre similar to more ground disturbing activities such as skyline or cable suspension systems and in the case of the most intense burned areas, equivalent roaded acres/Acre values were assigned similar to disturbances associated with tractor yarding systems.

Wildfire burn severity equivalent roaded acres were calculated using the following formula:

ERA = Wildfire Acres x Burn Severity (ERAs/Ac) x Burn Recovery Coefficient[8]

Table 178. Wildfire equivalent roaded acres

Wildfire Burn Severity Description	ERAs
0 – no burn	0.00
1 – low burn intensity	0.00
2 – low to moderate burn intensity	0.00
2a - moderate burn intensity	0.05
3 – moderate to high burn intensity	0.10
4a – high burn intensity	0.15
4b – extreme burn intensity	0.20

[8] Burn recovery coefficient = 1 – (current year– year burned)/years to recover after burn

Table 179 illustrates the estimates made as to how long it would take a burned area to recover relative to the burn severity. Estimates on recovery times were extremely conservative, especially since evidence exists that surface erosion is essentially negligible after the first 1-5 years after a fire. However, due to the decay of roots associated with dead trees, steep hillslopes may reach maximum instability 10 –15 years after the fire and become more susceptible to mass wasting processes.

Table 179. Years to recover post wildfire

Burn Severity Descriptions	Years To Recovery
0 – No burn	0
1 – Low burn severity	0
2 – Low to moderate burn severity	0
2a - Moderate burn severity	5
3 – Moderate to high burn severity	10
4a – High burn severity	15
4b – Extreme burn severity	15

Percent Equivalent Roaded Acres for all Past Actions (existing condition):

The cumulative watershed effects equivalent roaded acres analysis for the Travel Management project was conducted on twenty 6th field watersheds (including all Federal, State and privately owned lands). The methods used to calculate percent equivalent roaded acres for past and present land management activities are described in the above sections. The coefficients used in the equivalent roaded acre calculations are listed above in Table 176 through Table 179.

The following equation is used to calculate total percent equivalent roaded acres for all past actions and represents the current condition: **%ERA = (([Timber Harvest ERA] + [Roads ERA] + [Wildfire ERA]) / [watershed acres]) x 100**. The total percent equivalent roaded acre results are shown in the table below.

Table 180. Total percent equivalent roaded acres by watershed

6th Field Watershed Name	Watershed Acres	Existing National Forest Roads and Motorized Trails	Past National Forest Mgmt Projects	Private Land Timber Harvest	Wildfire	ERA Total	ERA%	Threshold of Concern
Craigs Creek	11,533	224	12	188	0	424	3.7%	10.0%
Diamond Creek	21,307	312	0	0	1051	1,363	6%	12.9%
Eightmile Creek	15,243	20	1	0	30	51	0.3%	13.1%
Goose Creek	26,022	577	57	70	0	703	3%	11.7%
Hardscrabble Creek – Smith River	17,788	338	7	15	265	624	4%	10.0%
Hurdygurdy Creek	19,149	303	52	0	0	355	2%	11.9%
Jones Creek	15,714	157	41	0	0	197	1%	12.1%
Lower Middle Fork Smith River	27,251	347	31	0	310	687	3%	10.0%
Lower North Fork Smith River	35,484	354	7	0	769	1,130	3%	10.0%
Lower South Fork Smith River	27,359	433	27	0	0	460	2%	11.6%
Smith River-Frontal Pacific Ocean	25,513	35	0	341	0	376	1%	12.7%
Middle South Fork Smith River	33,111	505	65	4	405	981	3%	10.7%
Hunter Creek	19,103	72	0	284	0	355	2%	13.1%
Patrick Creek	14,789	369	2	0	37	407	3%	12.9%
Rock Creek	10,288	65	0	95	0	160	2%	11.7%
Rowdy Creek	21,864	198	2	850	25	1,075	5%	10.5%
Siskiyou Fork Smith River	17,504	202	31	0	5	237	1%	11.4%
Turwar Creek	20,380	0	1	77	0	77	0.4%	11.7%
Upper Middle Fork Smith River	24,177	461	46	3	5	515	2%	11.8%
Upper South Fork Smith River	28,514	116	8	0	13	137	0.5%	12.7%

Equivalent Roaded Acres Calculations for Reasonably Foreseeable Future Land Management Activities

The same equations as the ones used calculate existing and project related equivalent roaded acres were used to estimate near future timber and fuel treatment projects. The Gordon Hill Vegetation and Fuel Management Project was added to the total percent equivalent roaded acres in the Hardscrabble Creek-Smith River, Lower Middle Fork Smith River, Craigs Creek, Hurdygurdy Creek and Lower South Fork Smith River watersheds.

Development of Threshold of Concern

Thresholds of concern by watershed were developed in 1995 Six Rivers National Forest Land and Resource Management Plan revision. The threshold of concern is an estimated upper limit of total disturbance that a watershed can tolerate without adverse impacts to beneficial uses. In the event that the percent equivalent roaded acres beginning to approach a threshold of concern, management actions should be evaluated to insure that detrimental cumulative watershed effects don't occur. In developing thresholds of concern, several physical and biological parameters were evaluated, including inherent geologic stability, extent of inner gorges plus active and inactive landslides, erodibility of soils, slope steepness, status of anadromous fish, condition of riparian areas and others. Assigning a threshold of concern to a given watershed is an interdisciplinary professional judgment that weighs the various environmental indicators described above. The thresholds of concern for this project range between 9.0 percent equivalent roaded acres in all affected watersheds (see Table 181).

Table 181. Existing percent equivalent roaded acres compared to threshold of concern

6th Field Watershed Name	Existing % ERA	% Threshold of Concern
Craigs Creek	3.69	10.0
Diamond Creek	6.41	12.9
Eightmile Creek	0.33	13.1
Goose Creek	2.72	11.7
Hardscrabble Creek-Smith River	3.51	10.0
Hunter Creek	1.86	13.1
Hurdygurdy Creek	1.86	11.9
Jones Creek	1.25	12.1
Lower Middle Fork Smith River	2.52	10.0
Lower North Fork Smith River	3.18	10.0
Lower South Fork Smith River	1.67	11.6
Middle South Fork Smith River	2.96	10.7
Patrick Creek	2.76	12.9
Rock Creek	1.56	11.7
Rowdy Creek	4.93	10.5
Siskiyou Fork Smith River	1.36	11.4
Smith River-Frontal Pacific Ocean	1.47	12.7
Turwar Creek	0.38	11.7
Upper Middle Fork Smith River	2.14	11.8
Upper South Fork Smith River	0.48	12.7

Appendix E. Best Management Practices

USFS Region 5 Best Management Practices for OHV use and road construction and maintenance (from Regional Water Quality Management Plan, 2000)

The following are the BMPs for the control of non-point source pollution associated with OHV use and road maintenance activities. These BMPs were formulated based on the administrative directives that guide and direct the Forest Services' construction and maintenance of roads, buildings, and administrative facilities on NFS land. The line officer on each administrative subunit is responsible for fully implementing the directives that require water quality protection and improvement for maintenance of motorized trails and NFTS roads. The BMPs synthesize the direction into a "process" to be followed.

Trained and qualified earth scientists, and other professional employees, are available to provide the engineering work force with technical assistance to identify beneficial uses and the most recent state-of-the-art water quality control methods and techniques; and to evaluate results. Publications and training sessions provide road and motorized trail maintenance engineers with knowledge of the latest proven water quality protection methods.

Water Quality Monitoring of Off-Highway Vehicle (OHV) Use According To a Developed Plan (Practice: 4-7 pg. 101).

Objective: To provide a systematic process to determine when and to what extent OHV use will cause, or is causing adverse effects on water quality.

Explanation: Each Forest’s OHV plan will:

1) Identify areas or routes where OHV use could cause degradation of water quality.
2) Establish baseline water quality data for normal conditions as a basis from which to measure change.
3) Identify water quality standards and the amount of change acceptable.
4) Establish monitoring methods and frequency.
5) Identify controls and mitigation appropriate in management of OHVs.
6) Restrict OHV use to designated routes.

Implementation: Monitoring results are evaluated against the OHV plan objectives for water quality and the Forest Plan objectives for the area. These results are documented, along with the actions necessary to correct identified problems. If considerable adverse effects are occurring, or are likely to occur, immediate corrective action will be taken. Corrective actions may include, but are not limited to, reduction in the amount of ORV use, signing, or barriers to redistribute use, partial closure of areas, rotation of use on areas, closure to causative vehicle type(s), or total closure, and structural solutions, such as culverts and bridges. Closure is accomplished through authority of the Forest supervisor.

Erosion Control Plan (Practice: 2-2)

Objective: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of construction and maintenance activities and through effective contract administration during implementation.

Explanation: Land disturbing activities can result in short term erosion. By effectively planning for erosion control, sedimentation can be controlled or prevented. Within a specified period after award of a contract (presently 60 days prior to the first operating season in Timber Sale Contracts, per C6.3) the purchaser or contractor will submit a general plan which, among other things, sets forth erosion control measures. Operations cannot begin until the Forest Service has given written approval of the plan. The plan recognizes the mitigation required in the contract. A similar plan is required of miners and special use permittees.

Implementation: Design engineers develop detailed mitigation using an IDT. The detailed mitigations are reflected in the contract specifications and provisions. The intent of mitigation is to prevent construction and maintenance-generated erosion, as well as that generated from the completed road, from entering watercourses. Contracted projects are implemented by the contractor or operator. Compliance with contract specifications and operating plans is ensured by the Contracting Officer Representative, Engineering Representative, or Forest Service Representative through inspection.

This practice is commonly applied to all road construction through contract clauses and specifications and will apply to road construction and maintenance for timber sales, mining, recreation, special uses and other roadwork on NFS lands.

Timing of Construction Activities (Practice: 2-3)

Objective: To minimize erosion by conducting operations during minimal runoff periods.

Explanation: The amount of erosion and sedimentation from road construction are affected by the magnitude of water runoff. An essential element of effective erosion control is to schedule operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations to minimize erosion and sedimentation. Equipment will not be allowed to operate when ground conditions are such that excessive rutting and soil compaction could result. Such conditions will be identified by the COR or ER with the assistance of an earth scientist or other specialists as needed.

Erosion control work will be kept as current as practicable on active road construction projects. Construction of drainage facilities and performance of other contract work to control erosion and sedimentation will be required in conjunction with earthwork projects. The operator should limit the amount of area being graded at a site at any one time, and should minimize the time that an area is laid bare. Erosion control work must be kept current when road construction occurs outside of the normal operating season.

Implementation: Detailed mitigations developed by design engineers and an IDT will be included in the environmental analysis and in subsequent project plans and contracts.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and as specified in the project plan. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and the operating plan will be achieved by the COR or ER through inspection.

Control of Road Drainage (Practice: 2-7)

Objective: Is to minimize the erosive effects of water concentrated by road drainage features; to disperse runoff from disturbances within the road clearing limits; to lessen the sediment yield from roaded areas; to minimize erosion of the road prism by runoff from road surfaces and from uphill areas.

Explanation: This is a preventive practice. A number of treatments can be used, alone, or in combination, to control unacceptable effects of road drainage. Methods used to reduce erosion include but are not limited to such controls as construction of properly spaced cross drains, water bars or rolling dips; installing energy dissipaters, apron, downspouts, gabions, flumes, overside drains and debris racks; armoring of ditches, drain inlets and outlets and removing or adding berms to control runoff. Accomplish dispersal of runoff on the road surface by such means as rolling the grade, outsloping or crowning. Installing water spreading ditches or contour trenching can disperse road water after the water leaves the road surface.

Dispersal of runoff reduces downstream peak flows and associated scouring of the channels and sediment transport. Reduce sediment loads from road surfaces by adding aggregate or paving surfaces or by installing such controls as: sediment filters, settling ponds, and contour trenches. Soil stabilization can reduce sedimentation by lessening erosion on borrow and waste areas, on cut and fill slopes, and on road shoulders.

Implementation: Project location, design criteria and detailed mitigation are determined and documented during the environmental analysis process. These are then incorporated into the project plan.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications, and project criteria. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, ER, or FSR.

This practice is required in contracts when the need is identified in the project planning process.

Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects (Practice: 2-9)

Objective: To minimize erosion and sedimentation from disturbed ground on incomplete projects.

Explanation: The best drainage design can be ineffective if erosion control has not been completed by the end of the normal operating season. Affected areas can include roads, road fills, tractor trails, skid trails, landings, stream crossings, bridge excavations, and firelines.

Preventive measures include:

1) Removal of temporary culverts, culvert plugs, diversion dams, or elevated stream crossings.

2) Installation of temporary culverts, side drains, flumes, cross drains, diversion ditches, energy dissipaters, drainage or diversion dips, sediment basins, berms, debris racks, or other facilities needed to control erosion.

3) Removal of debris, obstructions and spoil material from channels and floodplains.

4) Planting vegetation, mulching, and/or covering exposed surfaces with jute mats or other protective material.

Implementation: Apply protective measures to all areas of disturbed, erosion-prone, unprotected ground that is not to be further disturbed in the present year. When conditions permit operations outside of the

normal operating season, update the operating plan as necessary and keep erosion control measures sufficiently current with ground disturbance to allow rapid closure when weather conditions deteriorate. Do not leave project areas for the winter with remedial measures incomplete.

Develop project mitigation measures and layout requirements during the environmental analysis process. Incorporate them into subsequent project plans and/or contracts.

Project crew leaders and supervisors are responsible for ensuring that force account projects meet construction specifications and project criteria. Contracted projects are implemented by the contractor or operator. Compliance with project plan criteria, contract specifications and operating plans is ensured by the COR, ER, or FSR.

Control of Sidecast Material During Construction and Maintenance (Practice: 2-11)

Objective: To minimize sediment production originating from sidecast material during road construction or maintenance.

Explanation: Unconsolidated materials including rocks and boulders that are cast over the side of the road shoulder can roll directly into streams, damage downslope vegetation and create bare areas that are difficult to stabilize with vegetation. Where spoil does not directly reach a stream, it is still highly susceptible to erosion, dry ravel and mass instability, and subsequently can directly deliver sediment to a nearby stream. Site-specific limits and controls for side casting or end hauling are developed and documented during environmental analysis. Loose, unconsolidated sidecast material must not be permitted to enter stream management zones, (see Practice 2-17).

Sidecasting is an unacceptable construction and maintenance alternative in areas where it can adversely impact water quality. Prior to the start of construction, or maintenance activities, waste areas must be located where excess material can be deposited and stabilized. During road maintenance operations, potential sidecast and other waste material will be utilized on the road surface or removed to designated disposal sites.

The roadway will be constructed within reasonable limits of the lines, grades, and dimensions given in the engineering drawings and designated on the ground. Provisions for waste material disposal are included in every road construction and maintenance contract.

Implementation: Project location, selected disposal areas, and mitigation will be developed and documented during the environmental analysis.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria. Road maintenance plans are developed for each forest and include slide and slump repairs and disposal site locations for excess material.

Contracted projects are implemented by the contractor or timber sale operator. Compliance with project criteria, contract specifications, and operating plans will be enforced by the COR, ER, or FSR. Standard maintenance specifications have been prepared which include disposal area operation, disposal methods, and surface treatment. Timber sale contracts include clause C5.4 to address temporary road maintenance specifications, which includes slide and slump repair, surface blading, and side casting during road maintenance.

Control of Construction and Maintenance Activities Adjacent to Stream Management Zones (Practice: 2-13)

Objective: To protect water quality by controlling construction and maintenance actions within and adjacent to any streamside management zone so that the following stream management zone functions are not impaired:

1) Acting as an effective filter for sediment generated by erosion from bare surfaces, road fills, dust drift, and oil traces;

2) Maintaining shade, riparian habitat (aquatic and terrestrial), and channel stabilizing effects;

3) Keeping the floodplain surface in a resistant, undisturbed condition to slow water velocities and limit erosion by flood flows.

Explanation: Construction and maintenance fills, sidecast, and end-hauled materials are kept out of stream management zones except at designated sites to minimize effects on the aquatic environment. Factors such as stream class, channel stability, sideslope steepness, ground cover, and sideslope stability are taken into account in developing zone widths. In some situations, stream management zone widths are established by records of decision and by EIS standards and guidelines (e.g. PACFISH EA, Northwest Forest Plan ROD). It is also necessary to stabilize fill slopes to prevent sediment accumulations in the streamside zone.

Stream management zones are determined and documented during the environmental analysis process by the IDT, which includes hydrologists, fishery biologists, and other specialists as required.

Implementation: Project location alternatives are formulated, and mitigation measures developed by the IDT are included into the contract by design engineers. Project crew leaders and supervisors are responsible for ensuring that force account projects meet maintenance and construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with mitigation measures, contract specifications, and operating plans is ensured by the COR, FSR, or ER.

Controlling In-Channel Excavation (Practice: 2-14)

Objective: To minimize stream channel disturbances and related sediment production.

Explanation: During construction, heavy equipment may need to cross, or work in and near streams or lakes. This is permitted only as necessary in the construction, or removal of culverts and bridges and other facilities (e.g. water sources, boat ramp/launching sites, etc.) and only under specific protection requirements. The Engineering Representative (ER) is authorized to designate the location of crossings or work sites and coordinate with the contractor to manage heavy equipment. Excavation during the installation of instream structures must follow all of the following minimum water quality protection requirements.

1) Unless otherwise approved, no excavation will be made outside of caissons, cribs, cofferdams, or sheet piling.

2) The natural streambed or lake bottom adjacent to the structure will not be disturbed without prior approval of the ER or COR.

3) If any excavation, or dredging is made at the site of the structure before caissons, cribs, or cofferdams are sunk in place, all such excavations will be restored to the original surface and the streambed or lake bottom must be protected with suitable stable material.

4) Material deposited within the stream or lake area from foundation, or other excavation will not be discharged directly into live streams or lakes, but will be put into settling areas as shown on the engineering drawings or as approved by the ER, or COR. (See Practice 2-15)

5) If the channel or lake bottom is disturbed during construction, it must be restored to its original configuration while minimizing any additional disturbance.

6) Disturbances of stream or lake banks are kept to a minimum. Disturbed banks are stabilized.

Implementation. Mitigation measures developed by the IDT are set forth in the environmental documentation and incorporated into the contract by design engineers. Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria. Contracted projects are implemented by the contractor or operator. Compliance with mitigation measures, contract specifications, and operating plans is enforced by the CI, COR, FSR or ER.

USDA Forest Service National Best Management Practices for Water Quality Management on National Forest System Lands (April 2012).

Rec-4. Motorized and Nonmotorized Trails

Reference: FSM 2353, FSH 2309.18, FSM 7715.5, FSM 7723 and EM 7720-104

Objective: Avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources by controlling soil erosion, erosion of trail surface materials and water quality problems originating from construction, maintenance and use of motorized and nonmotorized trails.

Explanation: The Forest Service manages about 133,000 miles of trails that are part of the designated transportation system. Only portions of these trails are open to motorized vehicle use. Almost all NFS trails serve nonmotorized users, including hikers, bicyclists and equestrians, alone or in some combination with motorized uses.

Trail construction, maintenance and use by motorized vehicles, human or stock traffic can adversely affect water quality by increased sediment delivery and contamination from vehicle fluids, human and animal wastes to nearby waterbodies. Compaction of the trail surface limits water infiltration, which can lead to concentrated runoff on the trail surface. Concentrated runoff on trails lacking adequate drainage causes erosion of the trail surface and can transport sediment and other pollutants directly into waterbodies if not filtered. Heavy tread, foot or hoof traffic can loosen some trail surface materials, making them more susceptible to erosion.

Trails open to motorized use are designated during the Travel Management process and depicted on the Motor Vehicle Use Map. Motorized use is designated by allowed vehicle class and, if appropriate, time of year, with the objective of minimizing damage to soil and water resources.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

- Use applicable Road Management Activities BMPs for construction, operation and maintenance of motorized trails.
- Locate or relocate trails to conform to the terrain, provide suitable drainage, provide adequate pollutant filtering between the trail and nearby waterbodies, and reduce potential adverse effects to soil, water quality or riparian resources.
    - Avoid sensitive areas, such as riparian areas, wetlands, stream crossings, inner gorges and unstable areas to the extent practicable.
    - Use suitable measures to mitigate trail impacts to the extent practicable where sensitive areas are unavoidable.
    - Use suitable measures to hydrologically disconnect trails from waterbodies to the extent practicable.
- Design, construct and maintain trail width, grades, curves and switchbacks suitable to the terrain and designated use.
- Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) for control of erosion and stormwater when constructing trails.
- Install and maintain suitable drainage measures to collect and disperse runoff and avoid or minimize erosion of trail surface and adjacent areas.
- Use and maintain surfacing materials suitable to the trail site and use to withstand traffic and minimize runoff and erosion.
    - Pay particular attention to areas where high wheel slip (curves, acceleration and/or braking) during motorized use generates loose soil material.
- Design stream crossings to use the most cost efficient structure consistent with resource protection, facility needs and types of use, and safety obligations (see BMP Road-2 (Road Location and Design) and BMP Road-7 (Stream Crossings)).
- Designate season-of-use to avoid periods when trail surfaces are particularly prone to unacceptable erosion, rutting or compaction.
- Designate class of vehicle and type of nonmotorized uses (e.g. hiking, bicycling, equestrian,) suitable for the trail width, location, waterbody crossings and trail surfaces to avoid or minimize adverse effects to soil, water quality or riparian resources.
- Monitor trail condition at regular intervals to identify drainage and trail surface maintenance needs to avoid, minimize or mitigate adverse effects to soil, water quality and/or riparian resources.
- Manage designated trails to mitigate adverse effects to soil, water quality and/or riparian resources from over-use when closure and rehabilitation is not practicable or desired.
    - Change designated vehicle class and/or season-of-use period as necessary.
- Close and rehabilitate unauthorized trails that are causing adverse effects on soil, water quality and/or riparian resources (see BMP Fac-10 (Facility Site Reclamation)).

Road-1. Travel Management Planning and Analysis

Reference: FSM 7710, FSH 7709.55 and FSH 7709.59 Chapter 10

Objective: Use the travel management planning and analysis processes to develop measures to avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources during road management activities.

Explanation: Road management related planning includes travel analyses as well as consideration of road management objectives and maintenance levels to address access needs and adjustments for projects. Planning occurs at scales that range from forest-wide assessments and plans, to watershed scale or project level analyses, to individual road activities. Effects to soil, water quality and riparian resources are evaluated during planning and balanced with the social, economic, and land management needs of the area. Appropriate protection and mitigation measures are considered when soil, water quality and riparian resources may be adversely impacted.

Travel analysis is conducted at a scope and scale determined by the line officer, and used to inform future project decisions on the benefits and risks, and the ongoing need for, the transportation system. Project level travel analyses are conducted to inform decisions and facilitate vegetation, fire and fuels, rangeland, recreation, minerals or other management actions. Such analyses contain detail on the condition of individual roads. Options for road management are shown in Figure 3.

Road Management Objectives are developed and documented for each system road and include the intent and purpose in providing access to implement the Forest or Grassland Plan. In addition to considering route needs at the site scale, road management objectives also document the purpose of the road (access needs) along with maintenance levels and objectives.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

- Use applicable practices of BMP Plan-2 (Project Planning and Analysis) and BMP Plan-3 (AMZ Planning) when conducting travel management planning and analysis.
- Use interdisciplinary coordination for travel planning and project level transportation analysis, including engineers, hydrologists, soil scientists and other resource specialists as needed, to balance protection of soil, water quality and riparian resources with transportation and access needs.
- Design the transportation system to meet long-term Forest or Grassland Plan desired conditions, goals and objectives for access rather than to access individual sites.
- Limit roads to the minimum practicable number, width and total length consistent with the purpose of specific operations, local topography, geology, and climate to achieve Forest or Grassland Plan desired conditions, goals and objectives for access and water quality management.
    - Use existing roads when practicable.
    - Use system roads where access is needed for long-term management of an area or where control is needed in the location, design or construction of the road to avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources.
    - Use temporary roads for short-term access needs if the road can be constructed, operated and obliterated without specific control of techniques to avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources (See BMP Road-5 (Temporary Roads)).
    - Decommission temporary roads and return to resource production when the access is no longer needed (See BMP Road-6 (Road Storage and Decommissioning)).

  - Consider placing roads in storage (Maintenance Level 1) when the time between intermittent uses exceeds one year and the costs of annual maintenance (both economic and potential disturbance) or potential failures due to lack of maintenance, exceed the benefits of keeping the road open in the interim (See BMP Road-6 (Road Storage and Decommissioning)).
  - Consider decommissioning unneeded existing roads within a planning area when planning new system roads to reduce cumulative impacts to soil, water quality and riparian resources (See BMP Road-6 (Road Storage and Decommissioning)).
- Plan road networks to have the minimum number of waterbody crossings as is practicable and necessary to achieve transportation system desired conditions, goals and objectives.
- Develop or update road management objectives for each system road to include design criteria, operation criteria and maintenance criteria to avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources.
  - Use applicable practices of BMP Road-2 (Road Location and Design) to establish design elements and standards.
  - Use applicable practices of BMP Road-4 (Road Operations and Maintenance) to establish criteria on how the road is to be operated and maintained.
  - Revise road management objectives as needed to meet changing conditions.
- Identify and evaluate road segments causing, or with the potential to cause, adverse effects to soil, water quality and/or riparian resources.
  - Identify and prioritize suitable mitigation measures to avoid, minimize or mitigate adverse effects (see BMPs Road-2 (Road Location and Design), Road-3 (Road Construction and Reconstruction), Road-4 (Road Operations and Maintenance), Road-6 (Road Storage and Decommissioning), and Road-7 (Stream Crossings) for potential mitigation measures).

Road-4. Road Operations and Maintenance

Reference: FSM 7732 and FSH 7709.59 Chapter 60

Objective: Avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources by controlling road use and operations and providing adequate and appropriate maintenance to minimize sediment production and other pollutants during the useful life of the road.

Explanation: Control of road use and operations, and appropriate maintenance can protect road investment and soil, water quality and riparian resources. Periodic inventory and assessment that determine road condition are used to determine operational controls and maintenance needs.

Operational objectives and activities are documented in the road management objective. In Travel Management decisions, roads open to motorized vehicle use are designated by allowed vehicle class and, if appropriate, by time of year. Road operations include permit, contract, and agreement administration, control of allowed use, maintaining roads in closed status and revising maintenance levels and seasonal closures as needed. Road closures and restrictions are necessary because many forest roads are designed for dry season use. Many local roads are not surfaced; while others have some surfacing but little to no base. Such roads can be damaged by use during wet periods or by loads heavier than the road was designed to convey.

Properly maintained road surfaces and drainage systems can reduce adverse effects to water resources by encouraging natural hydrologic function. Roads and drainage systems normally deteriorate because of

traffic, weather, and age. In addition, roads occasionally become saturated by groundwater springs and seeps after a wildfire or unusually wet periods. Many such conditions can be corrected by timely maintenance. However, while routine maintenance is needed to ensure the road performs as designed, it can also be a source of soil disturbance, concentrated flow, sediment production and slope instability if done improperly. Lower impact maintenance techniques may be desired to minimize disturbance of stable sites.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

Operations

- Designate season-of-use to avoid or restrict road use during periods when use would likely damage the roadway surface or road drainage features.
- Designate class of vehicle and type of uses suitable for the road width, location, waterbody crossings and road surfaces to avoid or minimize adverse effects to soil, water quality or riparian resources to the extent practicable.
- Use suitable measures to communicate and enforce road use restrictions.
- Use suitable measures to avoid or minimize adverse effects to soil, water quality or riparian resources when proposed operations involve use of roads by traffic and/or during periods for which the road was not designed.
    - Strengthen the road surface in areas where surfaces are vulnerable to movement such as corners and steep sections.
    - Upgrade drainage structures to avoid, to the extent practicable, or minimize direct discharges into nearby waterbodies.
    - Restrict use to low-ground-pressure vehicles or frozen ground conditions.
    - Strengthen the road base if roads are tending to rut.
    - Adjust maintenance to handle the traffic while minimizing excessive erosion and damage to the road surface.
- Ensure that drainage features are fully functional upon completion of seasonal operations.
    - Shape road surfaces to drain as designed.
    - Construct or reconstruct drainage control structures as needed.
    - Ensure that ditches and culverts are clean and functioning.
    - Remove berms unless specifically designed for erosion control purposes.
- Consider potential for water quality effects from road damage when granting permits for oversize/overweight loads.
- Use suitable road surface stabilization practices and dust abatement supplements on roads with high/heavy traffic use (See FSH 7709.56 and FSH 7709.59).
- Use applicable practices of Chemical Use Management Activities BMPs when chemicals are used in road operations.

Inspection

- Periodically inspect system travel routes to evaluate condition and assist in setting maintenance and improvement priorities.
  - Give inspection priority to roads at high risk of failure to reduce risk of diversions and cascading failures.
- Inspect drainage structures and road surfaces after major storm events and perform any necessary maintenance (see BMP Road-11 (Road Storm-Damage Surveys)).
  - Repair and/or temporarily stabilize road failures actively producing and/or transporting sediment as soon as practicable and safe to do so.
- Inspect roads frequently during all operations.
  - Restrict use if road damage such as unacceptable surface displacement or rutting is occurring.

Maintenance Planning

- Develop and implement annual maintenance plans that prioritize road maintenance work for the forest or district.
  - Increase priority for road maintenance work on road sections where road damage is causing, or potentially would cause, adverse effects to soil, water quality and riparian resources.
  - Consider the risk and consequence of future failure at the site when prioritizing repair of road failures.
- Develop and implement annual road maintenance plans for projects where contractors or permittees are responsible for maintenance activities.
  - Define responsibilities and maintenance timing in the plan.

Maintenance Activities

- Maintain the road surface drainage system to intercept, collect and remove water from the road surface and surrounding slopes in a manner that reduces concentrated flow in ditches, culverts and over fill slopes and road surfaces.
  - Clean ditches and catch basins only as needed to keep them functioning.
  - Do not undercut the toe of the cut slope when cleaning ditches or catch basins.
  - Use suitable measures to avoid, to the extent practicable, or minimize direct discharges from road drainage structures to nearby waterbodies.
- Identify diversion potential on roads and prioritize for treatment.
  - Minimize diversion potential through installation and maintenance of dips, drains or other suitable measures.
- Maintain road surface treatments to stabilize the roadbed, reduce dust and control erosion consistent with anticipated traffic and use.
- Grade road surfaces only as necessary to meet the smoothness requirements of the assigned maintenance level and to provide adequate surface drainage.
  - Do not undercut the toe of the cut slope when grading roads.
  - Do not permit sidecasting of maintenance-generated debris within the AMZ to avoid or minimize excavated materials entering waterbodies or riparian areas.

  - Avoid over-widening of roads due to repeated grading over time especially where sidecast material would encroach upon waterbodies.
  - Utilize potential sidecast or other waste materials on the road surface where practicable.
  - Dispose of unusable waste materials in designated disposal sites.
- Remove vegetation from swales, ditches, shoulders, and cut and fill slopes only when it impedes adequate drainage, vehicle passage or obstructs necessary sight distance to avoid or minimize unnecessary or excessive vegetation disturbance.
- Maintain permanent stream crossings and associated fills and approaches to reduce the likelihood that water would be diverted onto the road or erode the fill if the structure becomes obstructed.
- Identify waterbody-crossing structures that lack sufficient capacity to pass expected flows, bedload or debris, or that do not allow for desired aquatic organism passage, and prioritize for treatment.
  - Use applicable practices of BMP Road-7 (Stream Crossings) to improve crossings.
- Use applicable practices of BMP Road-6 (Road Storage and Decommissioning) for maintenance and management of Maintenance Level 1 roads.
- Assure the necessary specifications concerning prehaul maintenance, maintenance during haul, and post haul maintenance (putting the road back in storage) are in place when maintenance level 1 roads are opened for use on commercial resource management projects or other permitted activities.
  - Require the commercial operator or responsible party to leave roads in a satisfactory condition when project is completed.

Road-6. Road Storage and Decommissioning

Reference: FSH 7709.59 Chapter 60 and FSM 7734

Objective: Avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources by storing closed roads not needed for at least one year (Intermittent Stored Service) and decommissioning unneeded roads in a hydrologically stable manner to eliminate hydrologic connectivity, restore natural flow patterns and minimize soil erosion.

Explanation: Roads not needed for access for long periods (greater than one year) may be put into storage (Intermittent Stored Service – Maintenance Level 1) to reduce maintenance costs. Level 1 roads receive basic custodial maintenance focusing on maintaining drainage facilities and runoff patterns to avoid or minimize damage to adjacent resources and to perpetuate the road for future use. The integrity of the roadway is retained to the extent practicable and measures are implemented reduce sediment delivery from the road surface and fills and reduce the risk of crossing failure and stream diversion.

Roads no longer needed are identified during transportation planning activities at the forest, watershed or project level. The former road may be decommissioned or converted to a trail as appropriate. Decommissioned roads are stabilized and restored to a more natural state to protect and enhance NFS lands. Temporary roads constructed for a specific short-term purpose (e.g. ski area development, minerals exploration or timber harvesting) are decommissioned at the completion of their intended use.

Road decommissioning includes a variety of treatments to block the road, revegetate the road surface, restore surface drainage, remove crossing structures and fills, mitigate road surface compaction, reestablish drainageways, remove unstable road embankments and/or recontour to restore natural slopes. One or more treatments are applied to decommission the road depending upon resource objectives and cost.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

All Activities

- Implement suitable measures to close and/or physically block the road entrance so that unauthorized motorized vehicles cannot access the road.
    - Remove the road from the MVUM to include the change in the annual forest-wide order associated with the MVUM.
- Establish effective ground cover on disturbed sites to avoid or minimize accelerated erosion and soil loss.
    - Use suitable species and establishment techniques to stabilize and revegetate the site in compliance with local direction and requirements per FSM 2070 and FSM 2080 for vegetation ecology and prevention and control of invasive species.

Road Storage

- Evaluate all stream and waterbody crossings for potential for failure or diversion of flow if left without treatment.
    - Use suitable measures to reduce the risk of flow diversion onto the road surface.
    - Consider leaving existing crossings in low risk situations where the culvert is not undersized, does not present an undesired passage barrier to aquatic organisms and is relatively stable.
    - Remove culverts; fill material and other structures that present an unacceptable risk of failure or diversion.
    - Reshape the channel and streambanks at the crossing-site to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site.
    - Use suitable measures to avoid or minimize scour and downcutting.
- Use suitable measures to ensure that the road surface drainage system will intercept, collect and remove water from the road surface and surrounding slopes in a manner that reduces concentrated flow in ditches, culverts and over fill slopes and road surfaces without frequent maintenance.
- Use suitable measures to stabilize unstable road segments, seeps, slumps, or cut or fill slopes where there is evidence of potential failure.

Road Conversion to Trail

- Reclaim unneeded road width, cut and fill slopes when converting a road for future use as a trail.
- Use suitable measures to stabilize reclaimed sections to avoid or minimize undesired access and to restore a desired ecologic structures or functions.
- Use suitable measures to ensure that surface drainage will intercept, collect and remove water from the trail surface and surrounding slopes in a manner that minimizes concentrated flow and erosion on the trail surfaces without frequent maintenance.
- Use applicable practices of BMP Road-7 (Stream Crossings) to provide waterbody crossings suitable to the expected trail uses.

Road Decommissioning

- Use existing roads identified for decommissioning as skid roads in timber sales or land stewardship projects prior to closing the road where practicable as the opportunity arises.
- Evaluate risks to soil, water quality and riparian resources and use the most practicable, cost-effective treatments to achieve long-term desired conditions and water quality management goals and objectives.
- Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) for stormwater management and erosion control when obliterating system roads.
- Implement suitable measures to re-establish stable slope contours, and surface and subsurface hydrologic pathways where necessary to the extent practicable to avoid or minimize adverse effects to soil, water quality and riparian resources.
    - Remove drainage structures.
    - Recontour and stabilize cut slopes and fill material.
    - Reshape the channel and streambanks at crossing-sites to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site.
    - Restore or replace stream bed materials to a particle size distribution suitable for the site.
    - Restore floodplain function.
- Implement suitable measures to promote infiltration of runoff and intercepted flow and/or desired vegetation growth on the road prism and other compacted areas.
- Use suitable measures in compliance with local direction to prevent and control invasive species.

Road-7. Stream Crossings

Reference: FSM 7722 and FSH 7709.56b

Objective: Avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources when constructing, reconstructing or maintaining temporary and permanent waterbody crossings.

Explanation: Forest and grassland management activities often occur in areas that require surface waters to be crossed. Depending on the activity type and duration, crossings may be needed permanently or temporarily. Permanent crossings are generally more durable and are designed by an engineer to meet applicable standards while also protecting water quality and riparian resources.

Examples of crossings include culverts, bridges, arched pipes, low water crossings, vented fords and permeable fills. Crossings materials and construction will vary based on the type of access required, duration of need and volume of use expected. Crossings should be designed and installed to provide for flow of water, bedload and large woody debris, desired aquatic organism passage, and minimize disturbance to the surface and shallow groundwater resources.

Construction, reconstruction and maintenance of a crossing usually requires heavy equipment to be in and near streams, lakes and other aquatic habitats to install or remove culverts, fords and bridges and their associated fills, abutments, piles, and cribbing. Such disturbance near the waterbody can increase the potential for accelerated erosion and sedimentation by altering flow paths and destabilizing streambanks or shorelines, removing vegetation and ground cover, and exposing or compacting the soil. Use of heavy

equipment has a potential for contamination of the surface water from vehicle fluids or introduction of aquatic nuisance species.

Some crossings may require adherence to special conditions associated with CWA 401 Certification or CWA 404 permits. State and local entities may also provide guidance and regulations such as a Forest Practices Act or a Stream Alteration Act.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

All Crossings

- Plan and locate surface water crossings to limit the number and extent to that which is necessary to provide the level of access needed to meet resource management objectives as described in the road management objective.
- Use applicable practices of BMP AqEco-2 (Operations in Aquatic Ecosystems) when working in or near waterbodies.
- Use crossing structures suitable for the site conditions and the road management objective.
- Design and locate crossings to minimize disturbance to the waterbody.
- Use suitable measures to locate, construct and decommission or stabilize bypass roads to avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources.
- Use suitable surface drainage and roadway stabilization measures to disconnect the road from the waterbody to avoid or minimize water and sediment from being channeled into surface waters and to dissipate concentrated flows.
- Use suitable measures to avoid, minimize or mitigate damage to the waterbody and banks when transporting materials across the waterbody or AMZ during construction activities.

Stream Crossings

- Locate stream crossings where the channel is narrow, straight and uniform, has stable soils and relatively flat terrain to the extent practicable.
    - Select a site where erosion potential is low.
    - Orient the stream crossing perpendicular to the channel to the extent practicable.
    - Keep approaches to stream crossings to as gentle a slope as practicable.
    - Consider natural channel adjustments and possible channel location changes over the design life of the structure.
- Design the crossing to pass a normal range of flows for the site.
    - Design the crossing structure to have sufficient capacity to convey the design flow without appreciably altering stream flow characteristics.
    - Install stream crossings to sustain bankfull dimensions of width, depth and slope, and maintain streambed and bank resiliency and continuity through the structure.
- Bridge, culvert or otherwise design road fill to prevent restriction of flood flows.

  - Use site conditions and local requirements to determine design flood flows.
  - Use suitable measures to protect fill from erosion and to avoid or minimize failure of the crossing at flood flows.
  - Use suitable measures to provide floodplain connectivity to the extent practicable.
- Use suitable measures to avoid or minimize scour and erosion of the channel, crossing structure and foundation to maintain the stability of the channel and banks.
- Design and construct the stream crossing to maintain the desired migration or other movement of fish and other aquatic life inhabiting the waterbody.
  - Consider use of bottomless arch culverts where appropriate to allow for natural channel migration and desired aquatic organism passage.
  - Install or maintain fish migration barriers only where needed to protect endangered, threatened, sensitive or unique native aquatic populations, and only where natural barriers do not exist.
  - Use stream simulation techniques where practicable to aid in crossing design.
- Bridges
  - Use an adequately long bridge span to avoid constricting the natural active flow channel and minimize constriction of any overflow channel.
  - Place foundations onto non-scour susceptible material (e.g. bedrock or coarse rock material) or below the expected maximum depth of scour.
  - Set bridge abutments or footings into firm natural ground (e.g. not fill material or loose soil) when placed on natural slopes.
  - Use suitable measures as needed in steep, deep drainages to retain approach fills or use a relatively long bridge span.
  - Avoid placing abutments in the active stream channel to the extent practicable.
  - Place in-channel abutments in a direction parallel to the stream flow where necessary.
  - Use suitable measures to avoid or minimize, to the extent practicable, damage to the bridge and associated road from expected flood flows and floating debris and bedload.
  - Inspect the bridge at regular intervals and perform maintenance as needed to maintain the function of the structure.
- Culverts
  - Align the culvert with the natural stream channel.
  - Cover culvert with sufficient fill to avoid or minimize damage by traffic.
  - Construct at or near natural elevation of the streambed to avoid or minimize potential flooding upstream of the crossing and erosion below the outlet.
  - Install culverts long enough to extend beyond the toe of the fill slopes to minimize erosion.
  - Use suitable measures to avoid or minimize water from seeping around the culvert.
  - Use suitable measures to avoid or minimize culvert plugging from transported bedload and/or debris.
  - Regularly inspect culverts and clean as necessary.

- Low Water Crossings
  - Consider low water crossings on roads with low traffic volume and slow speeds, and where water depth is safe for vehicle travel.
  - Consider low water crossings to cross ephemeral streams, streams with relatively low baseflow and shallow water depth or streams with highly variable flows or in areas prone to landslides or debris flows.
  - Locate low water crossings where streambanks are low with gentle slopes and channels are not deeply incised.
  - Select and design low water crossing structures to maintain the function and bedload movement of the natural stream channel.
  - Locate unimproved fords in stable reaches with a firm rock or gravel base that has sufficient load bearing strength for the expected vehicle traffic.
  - Construct the low water crossing to conform to the site, channel shape and original streambed elevation, and to minimize flow restriction, site disturbance and channel blockage to the extent practicable.
  - Use suitable measures to stabilize/harden the streambed and approaches, including the entire bankfull width and sufficient freeboard, where necessary to support the design vehicle traffic.
  - Use vented fords with high vent area ratio (VAR) to maintain stream function and aquatic organism passage.
  - Construct the roadway-driving surface with material suitable to resist expected shear stress or lateral forces of water flow at the site.
- Consider using temporary crossings on roads that provide short-term or intermittent access to avoid, minimize or mitigate erosion, damage to streambed or channel and flooding.
  - Design and install temporary crossings suitable for the expected users, loads and timing of use.
  - Design and install temporary crossing structures to pass a design storm determined based on local site conditions and requirements.
  - Install and remove temporary crossing structures in a timely manner as needed to provide access during use periods and minimize risk of washout.
  - Use suitable measures to stabilize temporary crossings that must remain in place during high runoff seasons.
  - Monitor temporary crossings regularly while installed to evaluate condition.
  - Remove temporary crossings and restore the waterbody profile and substrate when the need for the crossing no longer exists.

Standing Water and Wetland Crossings

- Disturb the least amount of area as practicable when crossing a standing waterbody.
- Provide for sufficient cross drainage to minimize changes to, and avoid restricting, natural surface and subsurface water flow of the wetland under the road to the extent practicable.
  - Locate and design roads or road drainage to avoid dewatering or polluting wetlands.

  - Avoid or minimize actions that would significantly alter the natural drainage for flow patterns on forestlands immediately adjacent to wetlands.
- Use suitable measures to increase soil-bearing capacity and reduce rutting from expected vehicle traffic.
- Construct fill roads only when necessary.
  - Construct fill roads parallel to water flow and to be as low to natural ground level as practicable.
  - Construct roads with sufficient surface drainage for surface water flows.

Road-9. Parking and Staging Areas

Reference: FSM 7710, FSM 7720 and FSM 7730

Objective: Avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources when constructing and maintaining parking and staging areas.

Explanation: Parking and staging areas on NFS lands may be permanent or temporary and are associated with a variety of uses including administrative buildings, developed recreation sites, trailheads, and forest management projects. These parking facilities sometimes constitute large areas with little or no infiltration capacity. Runoff from these areas can create rills or gullies and carry sediment, nutrients and other pollutants to nearby surface waters.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

- Design and locate parking and staging areas of appropriate size and configuration to accommodate expected vehicles and avoid or minimize adverse effects to adjacent soil, water quality and riparian resources.
  - Consider the number and type of vehicles to determine parking or staging area size.
- Use applicable practices of BMP Fac-2 (Facility Construction and Stormwater Control) for stormwater management and erosion control when designing, constructing, reconstructing or maintaining parking or staging areas.
- Use suitable measures to harden and avoid or minimize damage to parking area surfaces that experience heavy use or are used during wet periods.
- Use and maintain suitable measures to collect and contain oil and grease in larger parking lots with high use and where drainage discharges directly to streams.
- Connect drainage system to existing stormwater conveyance systems where available and practicable.
- Conduct maintenance activities commensurate with parking or staging area surfacing and drainage requirements as well as precipitation timing, intensity and duration.
- Limit the size and extent of temporary parking or staging areas.
  - Take advantage of existing openings, sites away from waterbodies and areas that are apt to be more easily restored to the extent practicable.
  - Use temporary stormwater and erosion control measures as needed.

- Use applicable practices of BMP Fac-10 (Facility Site Reclamation) to rehabilitate temporary parking or staging areas as soon as practicable following use.

Road-10. Equipment Refueling and Servicing

Reference: FSM 2160 and FSH 7109.19 Chapter 40

Objective: Avoid or minimize adverse effects to soil, water quality and riparian resources from fuels, lubricants, cleaners and other harmful materials discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources during equipment refueling and servicing activities.

Explanation: Many activities require the use and maintenance of petroleum-powered equipment in the field. For example, mechanical vegetation management activities may employ equipment that uses or contains gasoline, diesel, oil, grease, hydraulic fluids, antifreeze, coolants, cleaning agents, and/or pesticides. These petroleum and chemical products may pose a risk to contaminating soils, surface water and groundwaters during refueling and servicing the equipment. BMP Fac-6 (Hazardous Materials) provides additional guidance for handling hazardous materials.

Practices:

Develop site-specific BMP prescriptions for the following practices, as appropriate or when required, using state BMPs, Forest Service regional guidance, Forest or Grassland Plan direction, BMP monitoring information and professional judgment:

- Plan for suitable equipment refueling and servicing sites during project design.
  - Allow temporary refueling and servicing only at approved locations, located well away from the AMZ, groundwater recharge areas and waterbodies.
- Develop or use existing fuel and chemical management plans (e.g. SPCC, spill response plan, emergency response plan) when developing the management prescription for refueling and servicing sites.
- Locate, design, construct and maintain petroleum and chemical delivery and storage facilities consistent with applicable local, state and federal regulations.
- Use suitable measures around vehicle service, storage and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills and avoid or minimize soil contamination and seepage to groundwater.
- Provide training for all agency personnel handling fuels and chemicals in their proper use, handling, storage and disposal.
  - Ensure that contractors and permit holders provide documentation of proper training in handling hazardous materials.
- Use suitable measures to avoid spilling fuels, lubricants, cleaners and other chemicals during handling and transporting.
- Prohibit excess chemicals or wastes from being stored or accumulated in the project area.
- Remove service residues, used oil and other hazardous or undesirable materials from NFS land and properly dispose them as needed during and following completion of the project.
- Clean up and dispose of spilled materials according to specified requirements in the appropriate guiding document.

- Report spills and initiate suitable clean-up action in accordance with applicable state and federal laws, rules and regulations.
    - Remove contaminated soil and other material from NFS lands and dispose of this material in a manner consistent with controlling regulations.
- Prepare and implement a certified SPCC Plan for each facility, including mobile and portable facilities, as required by federal regulations.
- Use applicable practices of BMP Fac-10 (Facility Site Reclamation) to reclaim equipment refueling and services site when the need for them ends.

Appendix F. Survey and Manage Species Lists

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
FUNGI		
Acanthophysium farlowii (Aleurodiscus farlowii)	B	B
Albatrellus avellaneus	B	B
Albatrellus caeruleoporus	B	B
Albatrellus ellisii	B	B
Albatrellus flettii,	B	B
Alpova alexsmithii	B	B
Alpova olivaceotinctus	B	B
Arcangeliella camphorata	B	B
Arcangeliella crassa	B	B
Arcangeliella lactarioides	B	B
Asterophora lycoperdoides	B	B
Asterophora parasitica	B	B
Baeospora myriadophylla	B	B
Balsamia nigrens	B	B
Boletus haematinus	B	B
Boletus pulcherrimus	B	B
Bondarzewia mesenterica	B	B
Bridgeoporus nobilissimus	A	A
Cantharellus subalbidus,	D	D
Catathelasma ventricosa	B	B
Chalciporus piperatus	D	D
Chamonixia caespitosa	B	B
Choiromyces alveolatus	B	B
Choiromyces venosus	B	B
Chromosera cyanophyyla	B	OFF
Chroogomphus loculatus	B	B
Chrysomphalina grossula	B	B
Clavariadelphus ligula	B	B
Clavariadelphus occidentalis	B	B
Clavariadelphus sachalinensis	B	B
Clavariadelphus subfastigiatus	B	B
Clavariadelphus truncatus	B	D
Clavulina castanopes var. lignicola	B	B
Clitocybe senilis	B	B
Clitocybe subditopoda	B	B
Collybia bakerensis	B	F

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Collybia racemosa	B	B
Cordyceps capitata	B	OFF
Cordyceps ophioglossoides	B	B
Cortinarius barlowensis	B	B
Cortinarius boulderensis	B	B
Cortinarius cyanites	B	B
Cortinarius depauperatus	B	B
Cortinarius magnivelatus	B	B
Cortinarius olympianus	B	B
Cortinarius speciosissimus	B	B
Cortinarius tabularis	B	B
Cortinarius umidicola	B	B
Cortinarius valgus	B	B
Cortinarius variipes	B	B
Cortinarius verrucisporus	B	B
Cortinarius wiebeae	B	B
Craterellus tubaeformis	D	OFF
Cudonia monticola	B	B
Cyphellostereum laeve	B	B
Dermocybe humboldtensis	B	B
Destuntzia fusca	B	B
Destuntzia rubra	B	B
Dichostereum boreale	B	B
Elaphomyces anthracinus	B	B
Elaphomyces subviscidus	B	B
Endogone acrogena	B	B
Endogone oregonensis	B	B
Entoloma nitidum	B	B
Fayodia bisphaerigera	B	B
Fevansia aurantiaca	B	B
Galerina atkinsonia	B	OFF
Galerina cerina	B	B
Galerina heterocystis	E	B
Galerina vittaeformis	B	OFF
Galerina sphagnicola	E	B
Gastroboletus imbellus	B	B
Gastroboletus ruber	B	B
Gastroboletus subalpinus	B	B
Gastroboletus turbinatus	B	B

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Gastroboletus vividus	B	B
Gastrosuillus amaranthii	E	E
Gastrosuillus umbrinus	B	B
Gautieria magnicellaris	B	B
Gautieria otthii	B	B
Gelatinodiscus flavidus	B	B
Glomus radiatum	B	B
Gomphus bonarii	B	B
Gomphus clavatus	B	F
Gomphus floccosus	F	OFF
Gomphus kauffmanii	B	E
Gymnomyces abietis	B	B
Gymnomyces nondistincta	B	B
Gymnopilus punctifolius	B	B
Gyromitra californica	B	B
Gyromitra esculenta	F	OFF
Gyromitra infula	B	OFF
Gyromitra melaleucoides	B	OFF
Gyromitra montana	F	OFF
Hebeloma olympianum	B	B
Helvella crassitunicata	B	B
Helvella elastica	B	B
Helvella maculata	B	OFF
Hydnotrya inordinata	B	B
Hydnotrya subnix	B	B
Hydnum umbilicatum	B	OFF
Hydropus marginellus	B	B
Hygrophorus caeruleus	B	B
Hygrophorus karstenii	B	B
Hygrophorus vernalis	B	B
Hypomyces luteovirens	B	B
Leucogaster citrinus	B	B
Leucogaster microsporus	B	B
Macowanites chlorinosmus	B	B
Macowanites lymanensis	B	B
Macowanites mollis	B	B
Marasmius applanatipes	B	B
Martellia fragrans	B	B
Martellia idahoensis	B	B

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Mycena hudsoniana	B	B
Mycena monticola	B	OFF
Mycena overholtsii	B	D
Mycena quinaultensis	B	B
Mycena tenax	B	B
Mythicomyces corneipes	B	B
Neolentinus adhaerens	B	B
Neolentinus kauffmanii	B	B
Neournula pouchetii	B	OFF
Nivatogastrium nubigenum, In entire range except OR Eastern Cascades and CA Cascades Physiographic Provinces	B	B
Octavianina cyanescens	B	B
Octavianina macrospora	B	B
Octavianina papyracea	B	B
Otidea leporina	B	D
Otidea onotica	F	OFF
Otidea smithii	B	B
Phaeocollybia attenuata	D	D
Phaeocollybia californica	B	B
Phaeocollybia dissiliens	B	B
Phaeocollybia fallax	D	D
Phaeocollybia gregaria	B	B
Phaeocollybia kauffmanii	D	D
Phaeocollybia olivacea	B	E
Phaeocollybia oregonensis	B	B
Phaeocollybia piceae	B	B
Phaeocollybia pseudofestiva	B	B
Phaeocollybia scatesiae	B	B
Phaeocollybia sipei	B	B
Phaeocollybia spadicea	B	B
Phellodon atratus	B	B
Pholiota albivelata	B	B
Pithya vulgaris	D	OFF
Plectania melastoma	F	OFF
Plectania milleri	B	OFF
Podostroma alutaceum	B	B
Polyozellus multiplex	B	B
Pseudaleuria quinaultiana	B	B
Ramaria abietina	B	B
Ramaria amyloidea	B	B

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Ramaria araiospora	B	B
Ramaria aurantiisiccescens	B	B
Ramaria botryis var. aurantiiramosa	B	B
Ramaria celerivirescens	B	B
Ramaria claviramulata	B	B
Ramaria concolor f. marrii	B	B
Ramaria concolor f. tsugina	B	B
Ramaria conjunctipes var. sparsiramosa	B	B
Ramaria coulterae	B	B
Ramaria cyaneigranosa	B	B
Ramaria gelatiniaurantia	B	B
Ramaria gracilis	B	B
Ramaria hilaris var. olympiana	B	B
Ramaria largentii	B	B
Ramaria lorithamnus	B	B
Ramaria maculatipes	B	B
Ramaria rainierensis	B	B
Ramaria rubella var. blanda	B	B
Ramaria rubribrunnescens	B	B
Ramaria rubrievanescens	B	B
Ramaria rubripermanens	B	B
Ramaria spinulosa var. diminutiva	B	B
Ramaria stuntzii	B	B
Ramaria suecica	B	B
Ramaria thiersii	B	B
Ramaria verlotensis	B	B
Rhizopogon abietis	B	B
Rhizopogon atroviolaceus	B	B
Rhizopogon brunneiniger	B	B
Rhizopogon chamaleontinus	B	B
Rhizopogon ellipsosporus	B	B
Rhizopogon evadens var. subalpinus	B	B
Rhizopogon exiguus	B	B
Rhizopogon flavofibrillosus	B	B
Rhizopogon inquinatus	B	B
Rhizopogon truncatus	D	D
Rhodocybe speciosa	B	B
Rickenella swartzii	B	B
Russula mustelina	B	B

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Sarcodon fuscoindicus	B	B
Sarcadon imbricatus	B	OFF
Sarcasoma latahense	B	OFF
Sarcosoma mexicanum	F	OFF
Sarcosphaera coronaria	B	OFF
Sedecula pulvinata	B	B
Sowerbyella rhenana	B	B
Sparassis crispa	D	D
Spathularia flavida	B	B
Stagnicola perplexa	B	B
Thaxterogaster pavelekii	B	B
Tremiscus helvelloides	B	D
Tricholoma venenatum	B	B
Tricholomopsis fulvescens	B	B
Tuber asa	B	B
Tuber pacificum	B	B
Turbinellis floccosus In California	N/A	F
Tylopilus porphyrosporus	D	D
LICHENS		
Bryoria pseudocapillaris	B	A
Bryoria spiralifera	B	A
Bryoria subcana	B	B
Bryoria tortuosa In California	A	OFF
Buellia oidalea	E	E
Calicium abietinum	B	B
Calicium adspersum	E	E
Calicium glaucellum	F	OFF
Calicium viride	F	OFF
Cetrelia cetrarioides	E	E
Chaenotheca chrysocephala	B	B
Chaenotheca ferruginea	B	B
Chaenotheca furfuracea	F	OFF
Chaenotheca subroscida	E	E
Chaenothecopsis pusilla	E	E
Cladonia norvegica	B	OFF
Dendriscocaulon intricatulum, In California	B	E
Dermatocarpon luridum	B	E
Fuscopannaria saubinetii	F	E
Heterodermia sitchensis	E	E

Table 182. Survey and Manage botanical species and category assignments 2001and 2003

Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Hypogymnia duplicata	A	C
Hypogymnia oceanica	F	OFF
Hypogymnia vittata	E	E
Hypotrachyna revoluta	E	E
Leptogium burnetiae var. hirsutum	A	E
Leptogium cyanescens	A	A
Leptogium rivale	B	E
Leptogium teretiusculum	E	E
Lobaria oregana, In California	A	A
Microcalicium arenarium	B	B
Nephroma isidiosum	E	E
Nephroma occultum	B	C
Niebla cephalota	A	A
Pannaria rubiginosa	E	E
Peltigera pacifica	E	E
Platismatia lacunosa,	C	E
Pseudocyphellaria perpetua	B	A
Pseudocyphellaria rainierensis	A	A
Pyrrhospora quernea	E	OFF
Ramalina pollinaria,	E	OFF
Ramalina thrausta	A	OFF
Stenocybe clavata	E	E
Teloschistes flavicans	A	A
Tholurna dissimilis, south of Columbia River	B	B
Usnea hesperina	B	E
Usnea longissima, In California and in Curry, Josephine, and Jackson Counties, Oregon	A	A
BRYOPHYTES		
Brotherella roellii	E	E
Buxbaumia viridis, In California	D	E
Diplophyllum albicans	D	OFF
Diplophyllum plicatum	B	B
Encalypta brevicolla var crumiana	B	OFF
Herbertus aduncus	B	E
Iwatsukiella leucotricha	B	B
Kurzia makinoana	B	B
Marsupella emarginata v. aquatica	B	B
Orthodontium gracile	B	B
Ptilidium californicum, In California	A	A
Racomitrium aquaticum	B	E

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Survey and Manage Species and Category Assignment TAXA GROUP / Species current accepted name	2001 Category	2003 Category
Schistostega pennata	A	A
Tetraphis geniculata	A	A
Tritomaria exsectiformis	B	B
Tritomaria quinquedentata	B	B
VASCULAR PLANTS		
Bensoniella oregana, In California	A	A
Botrychium minganense	A	A
Botrychium montanum	A	A
Coptis asplenifolia	A	A
Coptis trifolia	A	A
Corydalis aquae-gelidae	C	A
Cypripedium fasciculatum,	C	C
Cypripedium montanum	C	C
Eucephalus vialis	A	A
Platanthera orbiculata var. orbiculata	C	C

Appendix G. Law Enforcement

Forest Service Law Enforcement and Investigations (LEI) personnel are responsible for protecting the public, employees, natural resources, and other property under the Agency's jurisdiction. Additionally, LEI investigates and enforces applicable laws and regulations that affect the National Forest System (NFS) lands and prevents criminal violations. The Travel Management Rule (TMR) is one such regulation.

The Travel Management Rule requires designation of roads, trails, and areas open to motor vehicle use, and the prohibition of cross-country wheeled motor vehicle travel by the public. The implementation of designated routes and areas for motor vehicles will be the responsibility of all agency employees, especially in the area of education and enforcement. The law enforcement program is primarily responsible for issuing violations to enforce the Travel Management Rule.

The national LEI budget is funded by appropriated dollars from Congress to provide law enforcement services on the NFS lands. The Travel Management program is one of many Forest programs to benefit from federal law enforcement funding. LEI staff work in cooperation with Forest Service line officers to accomplish forest resource management objectives, yet LEI is administratively separated to maintain legal and investigatory independence.

To enhance enforcement of Travel Management Rule, Region 5 Forest Recreation Programs applied for and received grant dollars (green sticker funding) from the State of California Off-Highway Motor Vehicle Recreation Division Grants Program. These State funds are earmarked specifically for enforcement of off-highway vehicle laws and regulations on the various Forests, and are performed primarily by Forest Protection Officers (FPOs). In addition, Law Enforcement Officers (LEOs) support the FPOs as needed, especially if serious violations occurred. In recent years, State law enforcement grants ranged from 1.26 to 1.67 million dollars annually with similar funding anticipated for the 2014-2015 grant cycle.

Authority and Jurisdiction

The Forest Service exercises its law enforcement authority when violation of laws or regulations occurs on NFS lands or when incidents affect the NFS. The existing authorities for enforcement are completely adequate and no new laws will be needed to enforce the Travel Management Rule.

Every National Forest annually updates a law enforcement plan. All Forest Service employees have a duty to know and understand their authorities and responsibilities, and to properly enforce laws and regulations relating to the Forest within their authority and capability. LEI and agency personnel provide a regular and recurring presence on vast amounts of public land, roads, trails, and areas taking appropriate action if illegal activity is discovered. Violations are primarily enforced by LEOs and FPOs who patrol off-highway use roads, trails, and areas. LEOs use discretion when deciding what type of action to initiate when handling violations to the following federal laws that pertain specifically to motor vehicle use.

- The Act of June 4, 1897 (Title 16 United States Code 551) is the authority for issuing regulations at Title 36 Code of Federal Regulations, Part 261 (36 CFR 261). Specific OHV travel management regulations are in sections 261.9 – Property, 261.13 –Motor Vehicle Use, and 261.15 Use of Vehicles Off-Road. These CFRs cover a wide array of misdemeanor infractions.
- The Act of March 3, 1905 (Title 16 United States Code 559) authorizes all employees of the Forest Service to make arrests for violation of the laws and regulations pertaining to National Forests.

Normally, arrest authority is limited to trained law enforcement personnel. (Any employee may take immediate action when necessary to protect life and prevent serious damage to or destruction of property, escape of a suspect, or loss of material evidence when such action can be done with reasonable safety.)

The legal foundation for enforcement on the Six Rivers National Forest was established by Congress as "proprietary jurisdiction." This term means that the federal government has acquired some degree of right or title to an area in a state, but has not obtained any measure of the State's authority over the area. The legal scope of the Forest Service is limited to laws established for that property, or national forest. However, enforcement agencies with State authority in California retain their full legal authority on the Six Rivers National Forest. Notably, for enforcement of violations committed by motor vehicle operators, the California Highway Patrol and the four county Sheriffs have separate authority and jurisdiction to enforce OHV laws under the California Vehicle Code.

In November 2008, the Regional Forester signed a new regional order that allows Forest Service officers to enforce the OHV section (CVC 38000) of the California Vehicle Code on National Forest System roads.

Cooperation

The Forest Service shares responsibility and cooperates with local, state, and other federal agencies in the execution of its law enforcement program. The authority for cooperation among agencies, especially as it pertains to Travel Management Rule is within the following laws:

- The Act of August 10, 1971 (Title 16 United States Code 551a) authorizes the Secretary of Agriculture to cooperate with, and provide reimbursement to, any State or political subdivision thereof, for the enforcement of their laws within NFS. This law does not deprive any State or local law enforcement agency from exercising its criminal and civil jurisdiction on lands that are part of the NFS.
- The California Penal Code, Section 830.8 provides that Forest Service law enforcement personnel may exercise State Peace Officer authority where the sheriff of the county wherein the officer works provided specific written permission for the officer.
- CVC, Section 38301 allows State law enforcement officers to support enforcement of any of the Federal CFRs related to motor vehicles on NFS lands. (CVC penalties would apply.)

Each Forest maintains close working relationships with many State and local law enforcement agencies with law enforcement responsibilities in or adjacent to the Forest boundary. Significant cooperating agencies relative to enforcing Travel Management Rule include the local county sheriff departments, the California Department of Fish and Game, California Highway Patrol, California Department of Forestry and Fire Protection, and occasionally one or more Federal agencies depending on the violation. Forest Service law enforcement personnel cooperate fully with these agencies in carrying out their law enforcement responsibilities by providing assistance; liaison, advice, and information.

Forests maintain Cooperative Law Enforcement Agreements with their respective county sheriff's office. These funds are for performance of duties in addition to the normal activities in which the sheriff's deputies handle crimes against persons and their property that may occur within the NFS boundary. In these agreements, both parties recognize that public use of NFS lands is usually located in areas that are remote or sparsely populated and the enforcement of State and local law is related to the administration and regulation of NFS lands. Within the Cooperative Law Enforcement Agreements, an operating plan is developed outlining the supplemental work to be performed by the cooperating agency. Operating plans may provide:

- Supplemental patrols in areas of high use.
- Supplemental patrols on weekends or during particular months of high use.
- Additional officers for large group gatherings or events (enduros)
- Vehicle checkpoints for vehicle registration spark arrestors, and other miscellaneous items.

Implementation and Tracking

Implementation of the Forest Service law enforcement program is continually adapting as law enforcement personnel assess the changing patterns of visitor use and attitudes, and the trends in violations, especially for property and resource damage. One method of assessment is the analysis of Law Enforcement and Investigations Management Attainment Reporting System (LEIMARS) data. LEIMARS tracks all known violations of criminal law or regulation on NFS lands (FSH 5309.11, chapter 40 and FSM 5340). Additionally, imbedded in LEIMARS is the Case Tracking System, which tracks all felony and serious misdemeanor cases. These tracking systems:

- Capture and record information on location, volume, damages, and type of violations occurring on NFS lands.
- Provide a retrieval system of data on incidents and violations that is responsive to the needs of all organizational levels.
- Provide agency managers with a means to identify and monitor law enforcement activities.
- Specifically identify problem areas and periods of activity.
- Provide a method to record and analyze incidents involving violations or suspected violations on NFS lands.

Trends in violations can be analyzed and appropriate action(s) taken, if needed. Appropriate action(s) may involve one or more techniques or adaptive strategies. In the law enforcement community, this is often referred to as the “three E strategy” of engineering, education, and enforcement. With the changes to how the public accesses and travels on NFS lands, it is anticipated that the law enforcement program will use a combination of strategies, especially during the first five years of implementation of the MVUM.

Assumptions

Based on many years of enforcing off-highway vehicles, implementing change in access and enforcement of Travel Management Rule, from a law enforcement perspective, assumes the following to be true. These assumptions may change in time with analysis of the LEIMARS database.

Enforcement Assumptions

- Enforcement of the laws and regulations related to Travel Management Rule are enforced equally in authority and weight as with all other Federal laws and regulations.
- As with any change in a regulation on NFS lands, there is usually a transitional period for the public to understand the changes. It is anticipated there will be a higher number of violations to Travel Management Rule in the first couple of years and the number of violations will decline as the users understand and comply with the rules.
    - Users in communities adjacent to the Forest will comply within 1-2 years.
    - Frequent users, but further in distance from the Forest, will comply within 2-3 years.
    - Infrequent users regardless of distance may take up to 5 years to comply.

- Law enforcement officer and agency personnel's presence and enforcement actions will positively affect OHV users' behaviors and attitudes.
- The MVUM defines the designated routes, season of use, and type of use, therefore, making violations unequivocal.
- Once the MVUM is published, the designated network of roads and trails with signs, and user education programs, will reduce the number of violations.
- Depending on location of the Forest, FPOs may spend a large percentage of their time on Travel Management issues.

Agency Funding Assumptions

- Appropriated program funding levels and number of law enforcement personnel does not affect enforcement of Travel Management Rule. All laws and regulations are enforced equally.
- The State of California Off-Highway Motor Vehicle Recreation Division Grants Program (green sticker funding) enhances and provides additional law enforcement presence in the field at the Forest level.

Public Attitude and Compliance Assumptions

- Forest users want to do the right thing and will obey the rule (Tyler 2006), once they understand the rule and motor vehicle use map.

Measure of Success

Measuring the success of the compliance with Travel Management Rule will be done using the LEIMARS database. An analysis of the data may alert a Forest to a particular problem area for violations such as a dispersed group campsite area that may be surrounded by flat meadow areas inviting riders to potentially violate the regulation. A successful program will see a positive change in the following measures:

Measure 1: A reduction in the number of off-route travel violations.

Measure 2: A reduction in the number of resource damage violation

Appendix H. Fire and Fuels Evaluation Criteria

- Determine the primary purpose of the road
  - Is the road a primary access point for suppression efforts?
  - Is there more than one road that leads to this area?
  - Is this road important for suppression capabilities (i.e. numerous historical lightning starts, access to areas with critical fire control problems, etc.)?

  Rating system:

    - High: only 1 access or fastest response time to a certain area
    - Moderate: 2-3 roads access an area
    - Low: 4 + roads access an area
- Does the road access existing or proposed developments for suppression efforts?
  - Is there more than one development that the road leads to?
  - Are any developments planned along this road in the short-term (0-5 years)?
  - Are there any developments that have not been used or the access roads are overgrown?

  Rating system:

    - High: primary developments are located or planned to be located along this road. No other developments are available along this road.
    - Moderate: several developments located at various intervals along the road. Not all developments are needed.
    - Low: developments located along the road but are rarely used or the roads to them are becoming overgrown or impassable.
- Does the road provide access to or serve as a control line for residential areas?
  - Is the road the primary ingress/egress for these residential areas?
  - Does the road serve as a control line in protecting these residential areas?

  Rating system:

    - High: primary ingress/egress and/or road serves as control line.
    - Moderate: one of several roads which leads to a residential area or can potentially be used as a control line.
    - Low: does not provide access or could not be used as a control line for a residential area.
- Does the road provide access to areas requiring fuel treatments?
  - Is the road the primary access for areas requiring treatments for which BD/KV collections were made?
  - Is the road the primary access for areas where natural fuels treatments are planned or proposed?
  - Are there additional opportunities in the long-term (5 + years)?

Rating system:

- High: primary access to fuel treatment areas within the short-term (0-5 years).
- Moderate: one of several roads which provides access to fuel treatment area.
- Low: road does not provide access to fuel treatment areas in the short-term. Road may be needed for access in the long-term (5+ years).

- Does the road serve or will it serve as an established fuelbreak?
  - Does the road serve as an established fuelbreak where fuel treatments have been completed within the past 5 years?
  - Are fuel treatments proposed along this road within the short-term (0-5 years) which will act as fuelbreaks?

Rating system:

- High: fuel treatments have been accomplished or are planned along either side of the road in the short-term (0-5 years).
- Moderate: one of several roads within the area with established or planned fuelbreaks however additional fuels work is needed to maintain the effectiveness of the fuel break.
- Low: road is not used as a fuelbreak. A fuelbreak may be planned in the long-term (5+ years).

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