United States

Department of Agriculture

Forest Service

September, 2013

Rim Butte OHV Jeep Trails Environmental Assessment

Bend-Fort Rock Ranger District

Deschutes National Forest

Deschutes County, Oregon

Township 22 South, Range 12 East, Section 33 and Range 14 East, Section 24; Township 23 South, Range 12 East, Section 8 and Range 14 East, Section 17 Willamette Meridian

For More Information Contact:

Peter Sussmann

63095 Deschutes Market Road

Bend, OR 97701

Phone: 541-383-5594

prsussmann@fs.fed.us

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require Alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building,

14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and

TDD). USDA is an equal opportunity provider and employer.

Chapter 1: Purpose and Need for Action 7
1.1 Introduction 7
1.2 Background 7
1.3 Project Area Description 8
1.4 Existing Condition 10
1.5 Purpose and Need for Action 10
1.6 Management Direction 11
1.7 Other Law, Regulation, and Policy 17
1.8 Proposed Action 18
1.9 Public Involvement and Scoping 18
1.10 Issues 19
1.11 Travel Analysis 24
1.12 Decision to be Made 24
Chapter 2 Alternatives 25
2.1 Introduction 25
2.2 Alternatives Considered in Detail 27
2.3 Comparisons of Alternatives 31
2.4 Protection Measures and Monitoring 31
Chapter 3 – Environmental Consequences 34
3.1 Basis for Effects Analysis 34
3.2 Recreation 56
3.3 Wildlife 63
3.4 Botany 106
3.5 Botany Noxious Weeds 108
3.6 Transportation System 110
3.7 Fisheries 118
3.8 Scenic Resources 118
3.9 Soils 121
3.10 Inventoried Roadless Ares and Potential Wilderness Areas 128
3.11 Heritage Resources 130
3.12 Other Disclosures 131
Chapter 4 – Consultation and Coordination 135
4.1 Recipients of the EA 135
4.2 Interdisciplinary Team Members 135
Appendix A - References 137
Wildlife 137

Recreation 139
Scenic Resources 139
Noxious Weeds 139
Proposed, Threatened, Endangered or Sensitive Plant Species 139
Soils 140
Climate Change 140
Appendix B Travel Analysis 141
STEP 1: Setting up the Analysis 141
STEP 2: Describing the Situation 143
STEP 3: Identifying the Issues 151
STEP 4: Assessing Benefits, Problems, and Risks 152
STEP 5: Describing Opportunities and Setting Priorities 160
Travel Analysis References 162
Appendix C – Response to Comments 163

Figures

Figure 1 Vicinity Map 9
Figure 2 Deschutes Land Management Allocations 16
Figure 3 Trail locations for both Alternatives and nearby buttes 21
Figure 4 trail routes and buttes within ½ mile of the trail 22
Figure 5 Examples of technical trail sections from Cline Buttes OHV Area 23
Figure 6 Alternatives 2 and 3 along with proposed staging areas 26
Figure 7 (Left) Aerial photo of Alternative 2 eastern staging area between 2230 road and 2235700 road. 28
Figure 8 (Right) Aerial photo of Alternative 2 western staging area at junction of 2225730 road and 2225 road. 28
Figure 9 Alternative 3 Aerial photo of western most staging area near 2127-700 road 30
Figure 10 Alternative 3 Aerial photo of eastern most staging area near the 2127-400 road 30
Figure 11 Past Timber Harvest by Decade in the Project Area 41
Figure 12 Past and Ongoing Activities in the Project Area 42
Figure 13 Analysis Scales Used to determine Effects for Rim Butte Project 43
Figure 14 MVUM Map with Rim Butte Trail Alternatives 44
Figure 15 MVUM Map with Level 1 (Closed) Roads 45
Figure 16 East Fork Rock OHV Trails and Lava Rock Planning Area 62
Table 17 Definitions of plant vector risk 109
Figure 18 Inventoried Roadless Area and Potential Wilderness Area 129
Figure 19 Rim Butte Travel Analysis Boundary 142
Figure 20 Open road and travel routes within the Rim Butte Travel Analysis Area. 150

Tables

Table 1 Deschutes National Forest Summary of Existing OHV System 10
Table 2 LRMP Management Areas in Project Area 14
Table 3 Comparison of Alternatives 31
Table 4 Resource Protection Measures 32
Table 5 Past Actions and Events that Contribute to Current Conditions in the Project Area and Cumulative Effects Area (Figure 11) 37
Table 6 Ongoing or Reasonably Foreseeable Future Actions, in the Project Area and surrounding watersheds (Pine Lake-Devil's Garden Watershed, Long Prairie Watershed) that may contribute to Cumulative Effects (Figure 12) 38
Table 7 Summary Of Effects by Alternative 47
Table 8 Plant Association Groups within the Road Effect Area by Alternative 64
Table 9 Endangered, Threatened and Proposed Species on the Deschutes National Forest 65

Table 10 USDA Forest Service 2011 Pacific Northwest Region Regional Forester Sensitive Species List 68
Table 11 Lewis' Woodpecker Habitat by Subwatersheds in the Analysis Area 74
Table 12 Effects Determinations by Alternative 77
Table 13 Deschutes National Forest Management Indicator Species 77
Table 14 Miles of Road in the Analysis Area 89
Table 15 Road Densities in the Rim Butte Analysis Area 91
Table 16 USFWS Birds of Conservation Concern (USFWS 2008) 100
Table 17 Priority habitat features and associated focal species for the East-Slope Cascade Strategy. 102
Table 18 Arterial HSA and Collector Access to the Rim Butte Analysis Area 110
Table 19 HSA Arterial Roads Deferred Maintenance 111
Table 20 Forest Service Collector Roads within the Rim Butte Travel Analysis Area 112
Table 21 Road Densities for Portions of Subwatersheds in the Rim Butte Project Area (Miles/Square Mile) 113
Table 22 Motorized Trail Route Densities for 12th field subwatershed area within the Rim Butte Travel Analysis Area and for entire 12th field subwatershed (Mile/Square Mile) 113
Table 23 Comparison of Alternatives: Motorized Trail Density and Total Open Road and Motorized Trail Density by Subwatershed (Miles/Square Mile) 116
Table 24 Alternative 3 Level II Roads proposed for conversion to shared use (Class I, II, and III) 117
Table 25 Comparison of acreage committed to recreational facilities by Alternative 125
Table 26 Interdisciplinary Team Members 135
Table 27 LRMP Management Areas within the Rim Butte Travel Analysis Area 146
Table 28 Open Road Densities of 12th Field Subwatershed portions within the Rim Butte Analysis area 148
Table 29 Open Road Densities of entire 12th Field Subwatersheds 148

Chapter 1: Purpose and Need for Action

1.1 Introduction

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental effects that would result from the proposed action. This document is organized into five parts:

Purpose and Need for Action: This section includes information on the history of the project proposal, the purpose of and need for the project, the proposal for achieving that purpose and need, and key issues used to formulate Alternatives, develop mitigation, and track effects and other issues that did not drive Alternatives but were addressed in this analysis.

Alternatives: This section provides a more detailed description of the proposed action as well as Alternative methods for achieving the stated purpose. This discussion also includes possible mitigation measures and monitoring items.

Environmental Consequences: This section describes the environmental effects of implementing the proposed action and other Alternatives. This analysis is organized by resource areas (i.e. silviculture, wildlife, plants). Within each section, the effect of the No Action Alternative that provides a baseline for evaluation and comparison of the other Alternatives that follow are described in this section.

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

Appendices: The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project area resources, data specific to the project, public notifications and their responses, and miscellaneous documentation, may be found in the project record located at the Bend-Fort Rock Ranger District, Bend, Oregon.

1.2 Background

In 2005 the Forest Service codified a national regulation entitled the Travel Management Rule (referred to as the Rule), which directed the National Forests and Grasslands to designate travel routes (roads and trails) and areas open to motorized travel.[1] The Rule was codified in response to a national increase in overall Off Highway Vehicle (OHV) use and a resulting increase in the number of motor vehicles driving off road. This included OHVs of all classes, including Quad ATVs (Class I), 4-wheel drive vehicles such as Jeeps (Class II), and motorcycles (Class III). A new and growing class of OHVs are side-by-side or Utility Trail Vehicles (Class IV).The intent of Executive Orders 11644 and 11989 to ensure that the use of off road vehicles be controlled to protect resources, promote safety and minimize conflicts was not being met under relatively unrestricted motorized access across forest lands.

The Deschutes National Forest and Ochoco National Forests began a public involvement process to implement the Travel Management Rule in 2008. Part of the overall strategy identified by the Forest for implementing the Rule was to recognize those motorized recreation groups that would be most affected and convene a Travel Management Working Group to collaboratively explore and identify community

[1] Code of Federal Regulations (CFR) Chapter 36, sections 212, 251, 261, and 295.

support areas appropriate for the potential designation of additional OHV trail routes. During this process, the Forest first recognized the potential loss of existing off road experiences by OHV users if cross-country travel by motorized vehicles was eliminated under the Rule. Comments from the public indicated a need for additional designated motorized trail routes for Class II and Class III OHVs if the Rule were implemented.

In 2009, the Forest began planning site specific OHV projects within areas that had received some community support from a public Working Group during the Travel Management process in response to changes that implementing the Travel Management Rule would incur on motorized use and access. Site specific OHV projects begun during this time included the Three Trails project on the Crescent Ranger District, the Ochoco Summit project on the Ochoco National Forest and the Lava Rock OHV project on the Bend/Fort Rock District.

The Lava Rock project, which proposed multiple miles of Class I, II and III trail routes across a range of rated difficulties on the east and south side of the Newberry Crater complex, has been postponed. The 2011 Record of Decision for the Three Trails project implemented additional Class I, II and Class III trail routes to the Forest's motorized trail system, including 8 miles of Class II trails rated as easy and more-difficult. The 2013 Draft Environmental Impact Statement (DEIS) for the Ochoco Summit project proposes approximately 11 miles of new Class II trail rated as easy to moderately difficult. However, the rock types in these areas do not provide hard terrain features for technically difficult trails in the most-difficult or extremely difficult categories.

The Deschutes and Ochoco National Forests completed a Final Environmental Impact Statement (FEIS) and signed a Record of Decision (ROD) for the Travel Management Project to implement the Travel Management Rule in 2011. The impacts that would occur to the various motorized user groups as a result of implementing the Rule were identified in the FEIS and ROD for the Travel Management Project. This decision effectively eliminated cross-country travel by motorized vehicles, a change which most affected Class II OHV users on the Deschutes National Forest. Class II users identified a desire for technical trail routes during the initial Lava Rock OHV planning process and reiterated the desire for trail routes rated as extremely difficult following the implementation of the Rule. In an effort to respond to the lack of technical trail routes on the Forest and move forward with a key portion of Class II trails, the Deschutes National Forest has developed the Rim Butte project.

1.3 Project Area Description

The Rim Butte OHV project is located on the Bend/Fort Rock Ranger District east of US Highway 97 and south of the Newberry National Volcanic Monument. Proposed trails are located in portions of the Long Prairie and Pine Lake - Devils Garden 10th field watersheds.

The proposed Class II trails are shown in Figure 1 and are roughly bounded by Forest Road 2121 on the west; Forest Road 22 on the south; Forest Road 2230 on the east; and the Newberry National Volcanic Monument on the north.

Legal descriptions of the extent of proposed trails are as follows: Township 22 South, Range 12 East, Section 33 on the northwest corner; T23S, R12E, Section 8 on the southwest corner; T23S, R14E, Section 17 on the southeast corner; and T22S, R14E, Section 24 on the northeast corner.

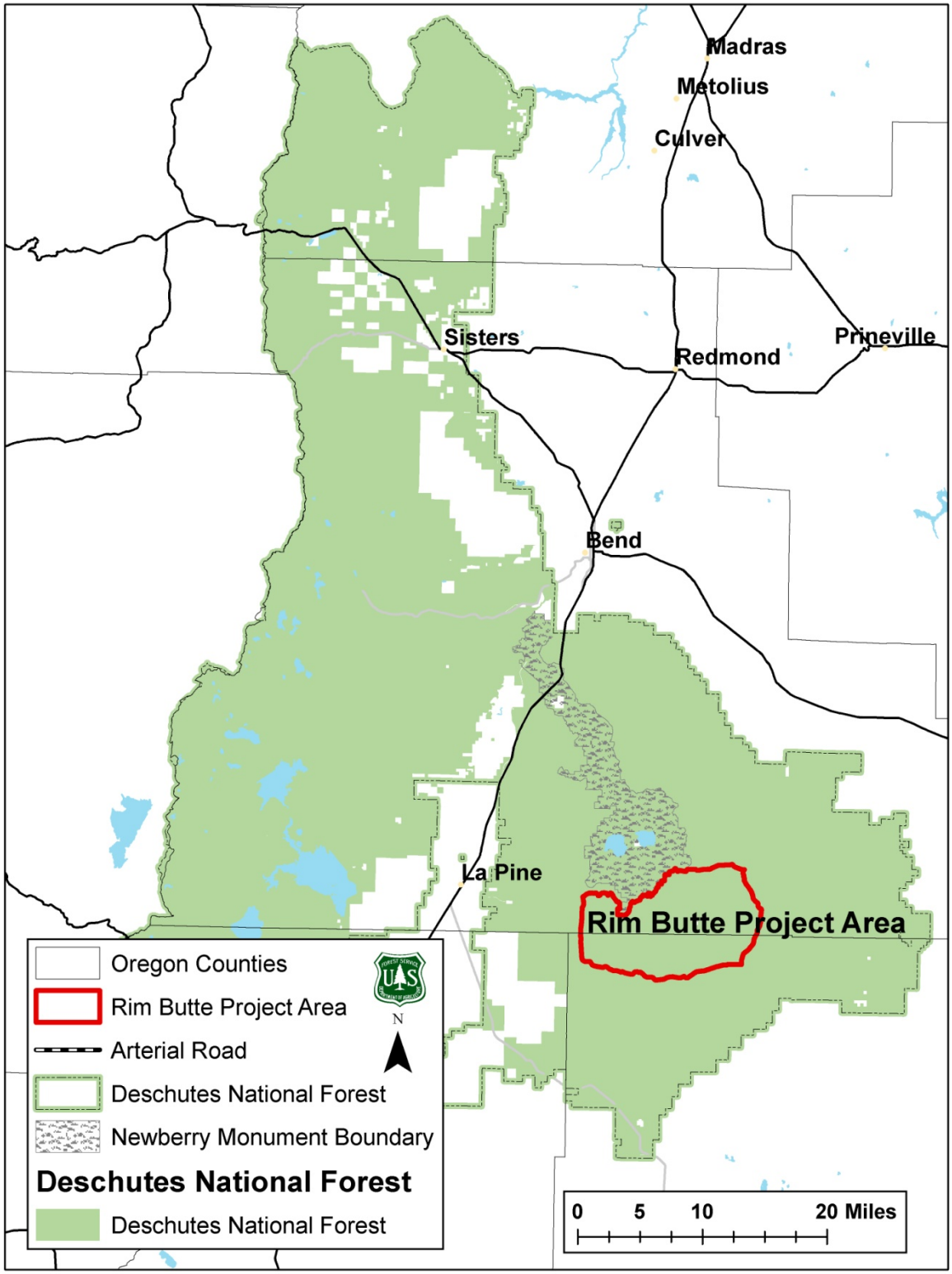


Figure 1 Vicinity Map

1.4 Existing Condition

The Deschutes National Forest has about 349 miles of designated OHV trails and areas open to a variety of highway and non-highway licensed vehicles. The designated trail miles are primarily 50 inch wide treads open to quad ATVs (Class I) and motorcycles (Class III) within the East Fort Rock OHV trail system. Trails designated for 4x4 vehicles (Class II) are currently limited to approximately 23 miles of trail in the Edison Butte area and 8 miles in the Three Trails OHV area. There is a designated rock crawling area within the Groundhog Butte pit. There are currently no designated motorized Class II trails within the proposed Rim Butte OHV area, although Maintenance Level II roads are open to all classes of motorized use.[2]

Table 1 Deschutes National Forest Summary of Existing OHV System

Trail Users Group	User Class	Miles	Location
Quad ATVs & Motorcycles	I, III	318	East Fort Rock OHV System, Bend-Fort Rock District
Quad ATVs & Motorcycles	1, III,	3	Groundhog Butte Pit
4x4 vehicles, Quad ATVs & Motorcycles	1, II, III	20	Edison Butte, Bend-Fort Rock District
4x4 vehicles	II	8	Three Trails Crescent District (approved, pending construction)
Total		349	

1.5 Purpose and Need for Action

The purpose of the Rim Butte project is to designate motorized Class II[3] OHV trails in order to provide a suitable experience for users while minimizing resource damage.

The Deschutes National Forest has developed the Rim Butte project as a result of a limited number of existing motorized trail routes for Class II OHVs and a demonstrated demand from the public for more technical trails. There is a need for additional Class II OHV trail routes, especially those with higher difficulty ratings[4], that was identified by the public during the planning, analysis and implementation of the Travel Management Rule. Additionally, comments received during scoping for the Rim Butte project re-emphasized a desire for technical trail routes on hard terrain features that would rate as most difficult and extremely difficult.

---

[2] A "Maintenance Level II road" is a road that is open for use by high-clearance vehicles. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses.

[3] Class II vehicles include 4-wheel drive jeeps and rock crawlers with high clearance capabilities and widths up to 84".

[4] Class II trail ratings include easy, more, most and extreme difficulties

There is currently a lack of designated technical motorized trail routes for Class II vehicles on the Forest and there are currently no trails rated as extremely difficult in the system of Class II trails. Trail options for Class II jeeps on the Forest are limited to 25 miles of trail in the Edison system rated as more and most difficult and 8 miles within the Three Trails OV system rated as easy and more-difficult. Although the Edison system includes trails with ratings of more and most difficult, a seasonal closure between December 1st and March 31st prevents trail use when snow would present more challenging conditions. In addition, cross-country travel on rocky terrain features was eliminated when the Rule was implemented. Although Class II vehicles are allowed on all motorized mixed-use roads identified as open on the Motor Vehicle Use Maps (MVUMs) under the Rule, however, driving on roads does not offer a desirable recreational trail experience for many of these motorized users.

The Rim Butte project proposes to provide a range of off road trail opportunities for Class II motorized travel, including sections with extremely difficult ratings. The project responds to a demonstrated demand for technical Class II trails and includes design criteria to minimize impacts to soils, vegetation, heritage resources and recreation experiences in the area. The Rim Butte proposal also responds to the Deschutes National Forest Land and Resource Management Plan (Forest Plan) and other Forest Service policy recreation objectives. The Forest Plan directs land managers to provide a full range of recreation opportunities, maintain existing trail systems, provide additions or modifications to meet increasing and changing demands and, to the extent possible, provide trails of all difficulty levels. Forest Service Manual (FSM) 2355 provides additional direction to provide a diversity of off-road recreational opportunities when use is compatible with established land and resource objectives, when off-road opportunity is an appropriate activity, and when there is demonstrated demand for these opportunities.

1.6 Management Direction

1.6.1 Travel Management Rule & Forest Service Manual Direction

The Travel Management Rule provides policy for managing the Forest transportation system in a sustainable manner through the designation of motorized National Forest System (NFS) roads, trails, and areas following the prohibition of cross-country travel by regulation (36 CFR 261.13). The Rule defines Travel Management decisions as those that include the construction or designation of NFS trail routes (FSM 7715).

The designation of motorized trail routes for motor vehicle use is guided by the following policy:

Forest Service Manual (FSM) policy directs that:

- The results of travel analysis should be used, as applicable, to develop a proposed action for travel management decisions (FSM 7715.03.3).
- Travel analysis for the purpose of designating roads, trails, and areas for motor vehicle use is separate from travel analysis for purposes of identifying the minimum road system (FSM 7712.2).
- Travel analysis should be documented in accordance with FSH 7709.55, section 21.6 and should identify access needs and opportunities based on current budget levels and realistic projections for funding. A report pursuant to the methods described in Publication FS-643 “Roads Analysis: Informing Decisions about Managing the Forest Transportation System,” can be used (FSM 7712.4.5).
- Public Involvement in proposed designations should be sought as required by 36 CFR 212.52 (FSM 7712.5.7)

FSM policy directs the agency to consider the "minimization criteria" contained in CFR 212.55(b) and FSM 7715.5 when designating routes and areas for motor vehicle use (FSM 7715.03.5).

General criteria:

- In designating NFS trails for motor vehicle use, consider effects on NFS natural and cultural resources, public safety, provision of recreation opportunities, access needs, conflicts among uses of NFS lands, the need for maintenance and administration of roads, trails and areas that would arise if the uses under consideration are designated, and availability of resources for maintenance and administration (FSM 7715.5.1a)
- While important, the scarcity or abundance of resources to maintain and administer designated roads, trails, and areas should not be the only consideration in developing travel management proposals (FSM 7715.5.1c)

Specific criteria:

Applicable to the designation of trails and areas under 36 CFR 212.55(b). Consider the effects on the following, with the objective of minimizing:

- Damage to soil, watershed, vegetation, and other forest resources
- Harassment of wildlife and significant disruption of wildlife habitats
- Conflicts between motor vehicle use and existing or proposed recreational uses on NFS lands, and
- Conflicts among different classes of motor vehicle uses on NFS lands

Other Considerations (FSM 7715.6)

In addition to the general and specific criteria in FSM 7715.5, the following should be considered in designating roads trails and areas:

- Existing and future needs of motor vehicle users
- Non-motorized uses
- Unauthorized routes, as appropriate
- The Forest service's ability to administer and maintain the routes and areas under consideration
- Changes in motor vehicle technology

1.6.2 Deschutes National Forest Land and Resource Management Plan

This environmental assessment is tiered to the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the Deschutes National Forest Land and Resource Management Plan, as amended. The Forest Plan guides all management activities on the forest. It establishes overall goals and objectives and standards and guidelines for proposed activities, including specific management direction for resource planning. Major Forest Plan amendments that pertain to this project are: the National Newberry Volcanic Monument, Inland Native Fish Strategy (INFISH), and the Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales (Eastside Screens). This environmental assessment also tiers to the Northwest Forest Plan (1994).

The Rim Butte project proposes to designate new travel routes for Class II OHVs based on direction in the Deschutes National Forest Land Resource Management Plan (LRMP); the Travel Management Rule and Forest Service Policy. Proposed trails are located within portions of the former Lava Rock and the existing East Fort Rock OHV planning areas that are allocated by the LRMP as General Forest (Management Area 8). The Forest wide LRMP goal for Trail System Management includes direction to provide trail additions or modifications of all difficulty levels to meet increasing and changing demands in dispersed recreation (LRMP, 4-32).

The project also follows direction from Forest-wide standards and guidelines for:

Trail System Management (LRMP 4-32 to 4-33)

- TR-1 The trail system will be developed to provide a variety of experiences.
- TR-2 New, reconstructed and relocated trails will be located to take the greatest advantage of environmental features.
- TR-3 Trails will be located or relocated whenever possible where they will not be disrupted by developmental activities such as logging or road building. Where disturbance of a trail cannot be avoided cleanup should be concurrent. Reassurance markers and signs will be maintained to avoid inconvenience to trail users.
- TR-4 Trails may be constructed in any management area unless specifically excluded or constrained by the Management Area direction.
- TR-6 Volunteer groups and individuals will be encouraged to maintain and construct parts of te trail system.
- TR-7 As a general rule, the forest will be open to all modes of trail travel except where specifically closed.
- TR-10 Trails permitting multiple travel modes will be monitored for conflicts among users. When conflicts arise all avenues of resolution will be explored. The intent is to use the minimum regulation necessary to resolve conflicts.
- TR-11 Priorities for completing proposed trail projects will be based on responses to increased use need for resource protection and availability of funds.
- TR-19 In areas of the forest where there are extensive motor vehicle closures a better public service will be provided by designating trails or areas where OHV's can operate legally. Each district will identify such opportunities as appropriate.
- TR-21 IN addition to winter use of OHV's the forest will provide additional opportunities for summer use of OHV's and other OHV's such as motorcycles. Part of the Forest Service road system that is not maintained for public use and that is not involved in logging operations may be opened for their use. Closures will be coordinated with ODFW.

Cultural Resource Management

- CR-2, states that historic properties located during survey inventories will be evaluated for eligibility to the National Register.
- CR-3, states that in concert with inventories and evaluations, the Forest will develop thematic National Register nominations and management plans for various classes of historic properties.
- CR-4 indicates that project level inventories or the intent to conduct such shall be documented through environmental analysis for the project.

The Rim Butte project area is delineated around the vicinity of the proposed trails for analysis purposes. It includes several Management Areas (MAs): General Forest, Scenic Views, Old Growth, and State of Oregon lands (see Figure 2 and Table 2). The Alternative 2 trail is 98% in general forest, with 2% in the scenic views allocation. The Alternative 3 trail is 100% inside the general forest land management allocation.

Table 2 LRMP Management Areas in Project Area

Management Allocation	Acres	Percent of Project Area
General Forest	50,949	82 %
Scenic Views Partial Retention Foreground and Middle Ground	7,602	12 %
Old Growth	3,156	5 %
Other Ownership (State of Oregon)	42	1 %
Total	61,751	100 %

General Forest (MA-8, 50,949 acres): Within the General Forest MA, timber production is to be emphasized while providing forage production, visual quality, wildlife habitat, and recreational opportunities for public use and enjoyment. The objective is to continue to convert unmanaged stands to managed stands with the aim of having stands in a variety of age classes with all stands utilizing the site growth potential. This is achieved through stand treatments which include (but are not limited to) controlling stocking levels; maintaining satisfactory growth rates; protecting stands from insects, disease, and damage; controlling species composition; and regenerating stands that are no longer capable of optimum growth performance (LRMP, page 4-117).

Recreation in MA-8 (LRMP, pp. 4-117 and 4-118).

- M8-4 OHV use is allowed. Closures and restrictions will be established where off-road vehicles use will threaten or damage other resource values. Over-the-snow vehicles may be permitted when the depth of continuous snow cover is adequate to protect resources.
- M8-5 Mange this area to provide the recreation activity, setting, and experience of the Recreation Opportunity Spectrum of Roaded-Natural or Roaded

Scenic Views (MA-9, 7,602 acres): The project area contains scenic views partial retention middle ground (3,544 acres) and partial retention Foreground (4,058 acres) and partial retention scenic views. The goal of scenic views management areas is to provide high quality scenery representing the natural character of central Oregon. The general theme and objectives of scenic views is for landscapes seen from selected travel routes and use areas are to be managed to maintain or enhance their appearance. To the casual observer, results of activities either would not be evident, or would be visually subordinate to the natural landscape. Timber harvest is permitted, but only to protect and improve the visual quality of the stands both now and in the future. For species other than ponderosa pine, the desired condition requires obtaining visual variety through either spatial distribution of age classes and species mixes, through density manipulation, or through a mixture of age classes within a stand (LRMP, page 4-121).

- M9-1 New recreational developments and changes to existing developments are permitted as long as they are consistent with the desired visual conditions.
- M9-2 Parking facilities, structures and other recreational facilities will normally be placed where they are not visible from significant viewer locations.

- M9-88 Signs should only be used where necessary for the user's safety and enjoyment of the Forest. They should be located and designed to blend with the elements found in the characteristics landscape wherever possible.

Old Growth (MA-15, 3,156 acres): The old growth forest is to be managed to provide 1) large trees, 2) abundant standing and downed dead trees, and 3) vertical structure except in LP where a single canopy is common. The distribution and size of the OGMAs are based upon habitat requirements for pine martens in mixed conifer, goshawk in ponderosa pine, and three-toed woodpecker in the lodgepole pine. Vegetation can be manipulated to perpetuate or enhance old growth characteristics.

- M15-3 Concentrated use by off-highway vehicles and snowmobiles will not be permitted but incidental use of OHV's and snowmobiles will generally be permitted.

Other Ownership (42 acres): The State of Oregon has been contacted and currently has no plans for any projects in this parcel of private land.

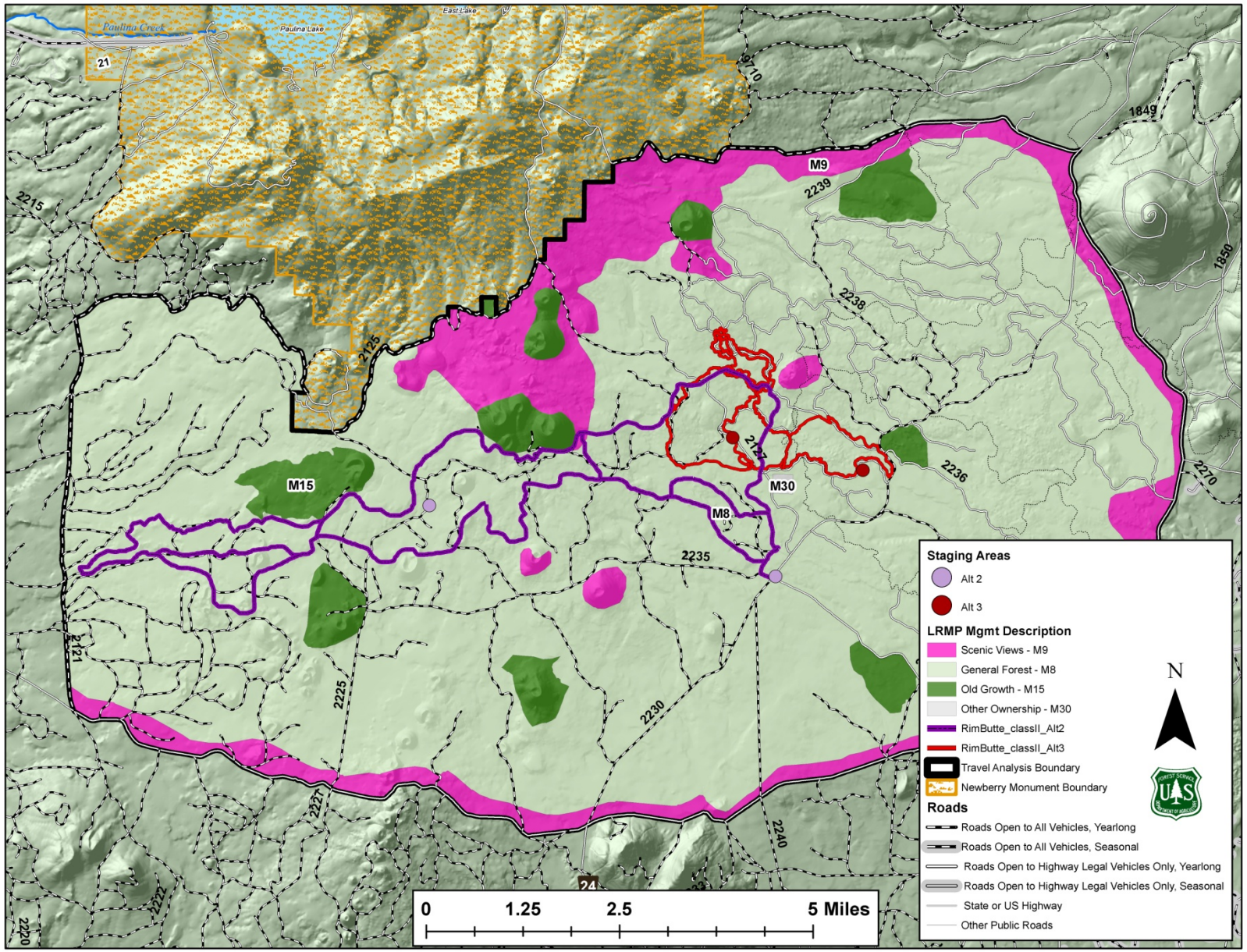


Figure 2 Deschutes Land Management Allocations

1.7 Other Law, Regulation, and Policy

Analysis and documentation has been done according where applicable to direction contained in the American Antiquities Act of 1906, The National Historic Preservation Act of 1966, as amended; The Endangered Species Act of 1973, as amended; the National Environmental Policy Act of 1969, as amended; The National Forest Management Act of 1976; The Multiple-Use Sustained-Yield Act of 1960; the Migratory Bird E.O 131186; and the Executive Order 131112 (invasive species).

The American Antiquities Act of 1906: The American Antiquities makes it illegal to appropriate, excavate, injure, or destroy any historic, prehistoric ruin or monument, or any object of antiquity, situated on lands owned by the Government of the United States, without permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated.

The National Historic Preservation Act of 1966, as amended: The National Historic Preservation Act requires Federal agencies to consult with American Indian Tribes, State and local groups before nonrenewable cultural resources, such as archaeological and historic structures, are damaged or destroyed. Section 106 of this Act requires Federal agencies to review the effects project proposals may have on the cultural resources in the Analysis Area.

The Endangered Species Act of 1973, as amended: The Endangered Species Act is to "provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such tests as may be appropriate to achieve the purpose of the treaties and conventions set forth in subsection (a) of this section." The Act also states "It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act."

The National Environmental Policy Act (NEPA) of 1969, as amended: The National Environmental Policy Act is "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damaged to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nations; and to establish a Council on Environmental Quality" (42 U.S.C. Sec. 4321). The law further states "it is the continuing policy of the Federal Government, in cooperation, to use 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 the present and future generations of Americans. This law essentially pertains to public participation, environmental analysis, and documentation.

The Council on Environmental Quality (CEQ) promulgated the regulations for implementing NEPA (40 CFR parts 1500-1508). The CEQ has recently provided guidance on considering past actions in cumulative effects analysis (Memo to Heads of Federal Agencies, June 24, 2005).

The National Forest Management Act (NFMA) of 1976: The National Forest Management Act guides development and revision of National Forest Land Management Plans and has several sections to it ranging from required reporting that the Secretary must submit annually to Congress to preparation requirements for timber sale contracts. There are several important sections within the act, including Section 1 (purpose and principles), Section 19 (fish and wildlife resources), Section 23 (water and soil resources), and Section 27 (management requirements).

Multiple-Use Sustained-Yield Act of 1960: The Multiple Use – Sustained Yield Act of 1960 requires the Forest Service to manage National Forest System lands for multiple uses (including timber, recreation, fish and wildlife, range, and watershed). All renewable resources are to be managed in such

a way that they are available for future generations. The harvesting and use of standing timber can be considered a short-term use of a renewable resource. As a renewable resource, trees can be re-established and grown in again if the productivity of the land is not impaired.

Migratory Bird E.O. 13186: On January 10, 2001, President Clinton signed an Executive Order (E.O. 13186) titled "Responsibilities of Federal Agencies to Protect Migratory Birds." This E.O. requires the *"environmental analysis of Federal actions, required by NEPA or other established environmental review processes, evaluates the effects of actions and agency plans on migratory birds, with emphasis on species of concern."*

Executive Order 13112 (invasive species): This 1999 order requires Federal agencies whose actions may affect the status of invasive species to identify those actions and within budgetary limits, "(i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species… (iii) Monitor invasive species populations… (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded;…(vi) promote public education on invasive species… and (3) not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species… unless, pursuant to guidelines that it has prescribed, the agency had determined and made public… that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions."

1.8 Proposed Action

The Deschutes National Forest proposes to designate approximately 33 miles of Class II OHV trails in the Rim Butte area to provide a loop trail system with a variety of technical challenge levels. Designated routes would be located on areas of existing disturbance, such as skid trails, as much as possible. Areas of new trail would require minimal disturbance of vegetation and soil to define the trail tread, although in some cases trees and shrubs may be cut. Down wood and rock obstacles would be left in most cases to create technical difficulty. The proposed action would include two staging areas along with concrete walled vault toilets and campsites for trail users (Figure 6). Proposed trail locations were identified by trail planners from the Central Oregon Combined off Highway Vehicle Operations (COHVOPS) and have been briefly reviewed by stakeholder user groups (Figure 3).

1.9 Public Involvement and Scoping

Public involvement associated with the Rim Butte project has included contacts and interactions with members of local OHV user groups. The IDT interacted with club members of the Deschutes County 4-Weelers on April 16th, 2012 during a field trip to the BLM Cline Butte OHV trail system west of Redmond. Users demonstrated their jeep capabilities on technical trails within that system and expressed their desire for technical trails any forthcoming OHV proposals.

A description of the Rim Butte project was first published on the web on May 2nd, 2012 at http://data.ecosystem-management.org/nepaweb/nepa_project_exp.php?project=39213. This project was published in the Deschutes National Forest Schedule of Proposed Action (SOPA), a quarterly publication, in July 2012 and has appeared in each quarterly SOPA since then. The SOPA quarterly report is distributed to interested individuals, organizations, and agencies Forest-wide and is automatically updated and available on the Deschutes and Ochoco National Forest webpage at http://www.fs.usda.gov/goto/centraloregon/projects.

A description of the Rim Butte proposed action was mailed for scoping on May 3rd, 2012 to approximately 145 forest users and concerned publics. Approximately 100 letters, emails, or phone calls of response were received during the scoping period. Comments were evaluated for content and

assessed during Alternative development by the Interdisciplinary Team (IDT). The majority of responses were received from OHV users who expressed general support for the project, although with concerns that there was not enough technical trail miles with higher levels of difficulty included in the proposal. Input from other citizens or user groups was minimal, although a general concern for the process and designation of additional motorized trail routes was expressed by Wildlands CPR in Eugene, Oregon. Randy Rasmussen, a stakeholder from the American Hiking Society who was involved during the planning stages of the former Lava Rock OHV proposal, was contacted by phone and found to have left the Central Oregon area.

Additional contact with both motorized and non-motorized trail users regarding the Rim Butte project has occurred through continued meetings of the Bend/Ft Rock Trail Use Group (TUG). Central Oregon Combined OHV Operations (COHVOPS) members have attended motorized riding club meetings, including the Central Oregon Motorcycle and ATV Club (COMAC), the Deschutes County 4-Wheelers and the Pacific Northwest Four Wheel Drive Association. Forest Service personnel met to discuss the Rim Butte project with Deschutes County 4-Wheelers club members Randy and Mona Drake on July 20, 2012 to present them with maps of the Alternative developed by the IDT for feedback and a review in the field. The Forest received a positive response via phone after they observed the area locations of trails proposed under Alternative 3. They also re-iterated a desire to be interactive with the development and implementation of this project, including the location and technical design of the trail routes.

On May 28th, 2013, a legal notice in The Bulletin (the newspaper of record) initiating the 30-day comment period. Comments were accepted until June 26, 2013. During the comment period, the Forest received approximately 22 comment letters with a range of comments. Comments were provided on various topics, some expressed concern while others provided support or recommendations for the project. All the comments submitted during this planning process have been considered. The USFS response to comments is included in Appendix C of this EA.

1.10 Issues

The Forest Service separated the issues into two groups: Key and analysis issues. Key issues describe a dispute or present an unresolved conflict associated with potential environmental effects of the proposed action. Key issues are used to formulate Alternatives, prescribe mitigation measures and focus the analysis of environmental effects. Key issues are tracked through issue identification (Chapter 1), Alternative development and description (Chapter 2), and environmental consequences (Chapter 3).

1.10.1 Key Issues

Key Issue 1 – Wildlife, Soil and Social Resource Values

Measurement –Number of buttes and proximity in miles to trails

Comments received during public scoping raised concerns regarding the potential disturbance to soils, wildlife, and vegetation related to OHV use. Additionally, resource specialists on the IDT identified potential impacts to non-motorized uses such as recreational hiking and traditional cultural values associated with the multiple buttes within the analysis area. The current absence of motorized trail routes or roads on these landforms creates low disturbance refugia for wildlife and provides desirable opportunities for non-motorized recreational and social experiences in these areas. In addition, these buttes have steep slopes that are susceptible to erosion and physical disturbance from motorized vehicles. The designation of motorized trail routes on or adjacent to these buttes could have a negative effect on all of these resource values.

Buttes within ½ mile of proposed motorized trail routes are used as a measure to evaluate potential impacts to wildlife, soil and social resource values. The number of buttes within ½ mile of the proposed routes was calculated along with the average distance to those buttes. See Table 3 Comparison of Alternatives, for comparison of these measures between Alternatives. Figure 3 shows the proposed trail locations and nearby buttes for both Alternatives. Figure 4 displays each butte with a half mile buffer and overlapping locations of proposed trail

Figure 3 Trail locations for both Alternatives and nearby buttes

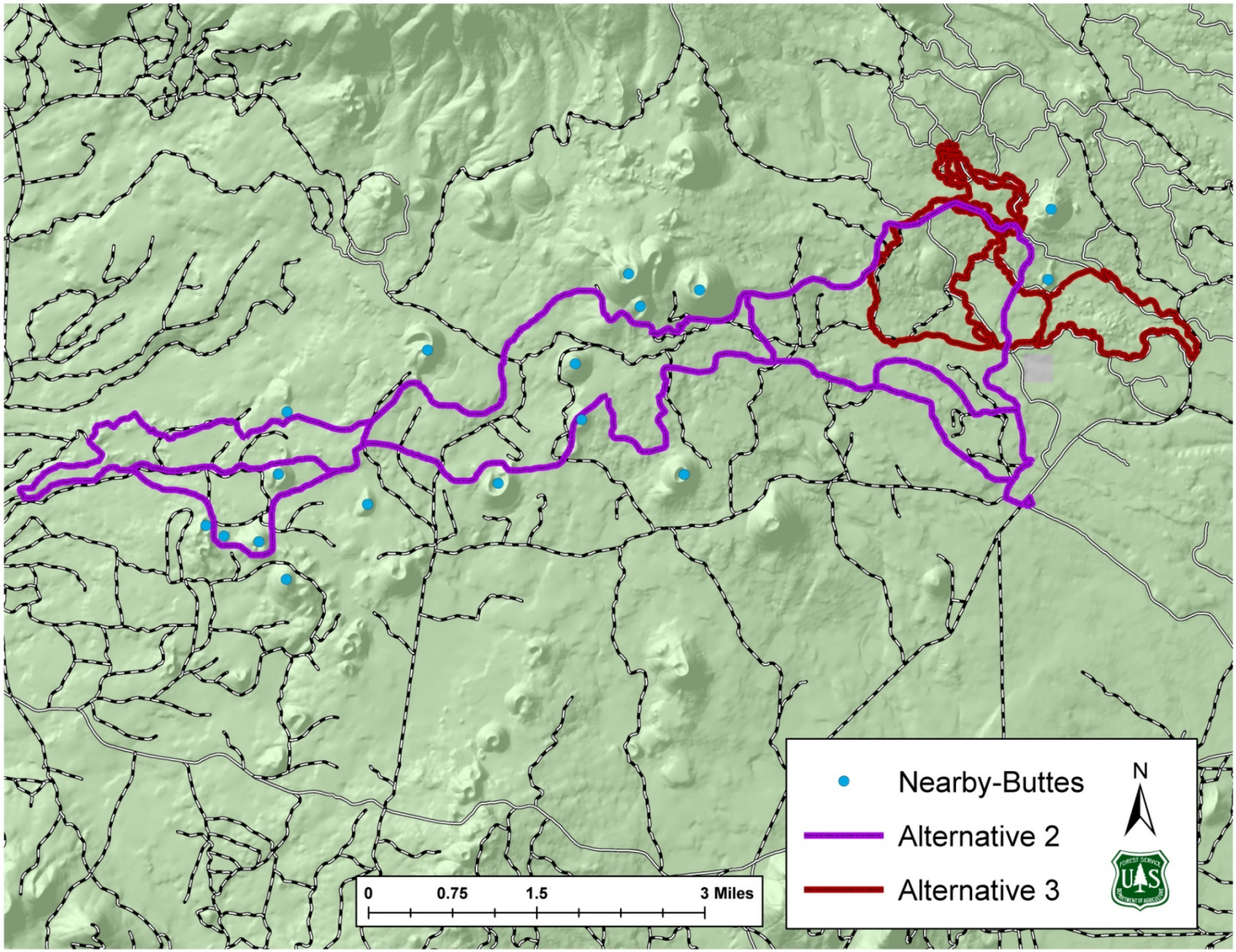
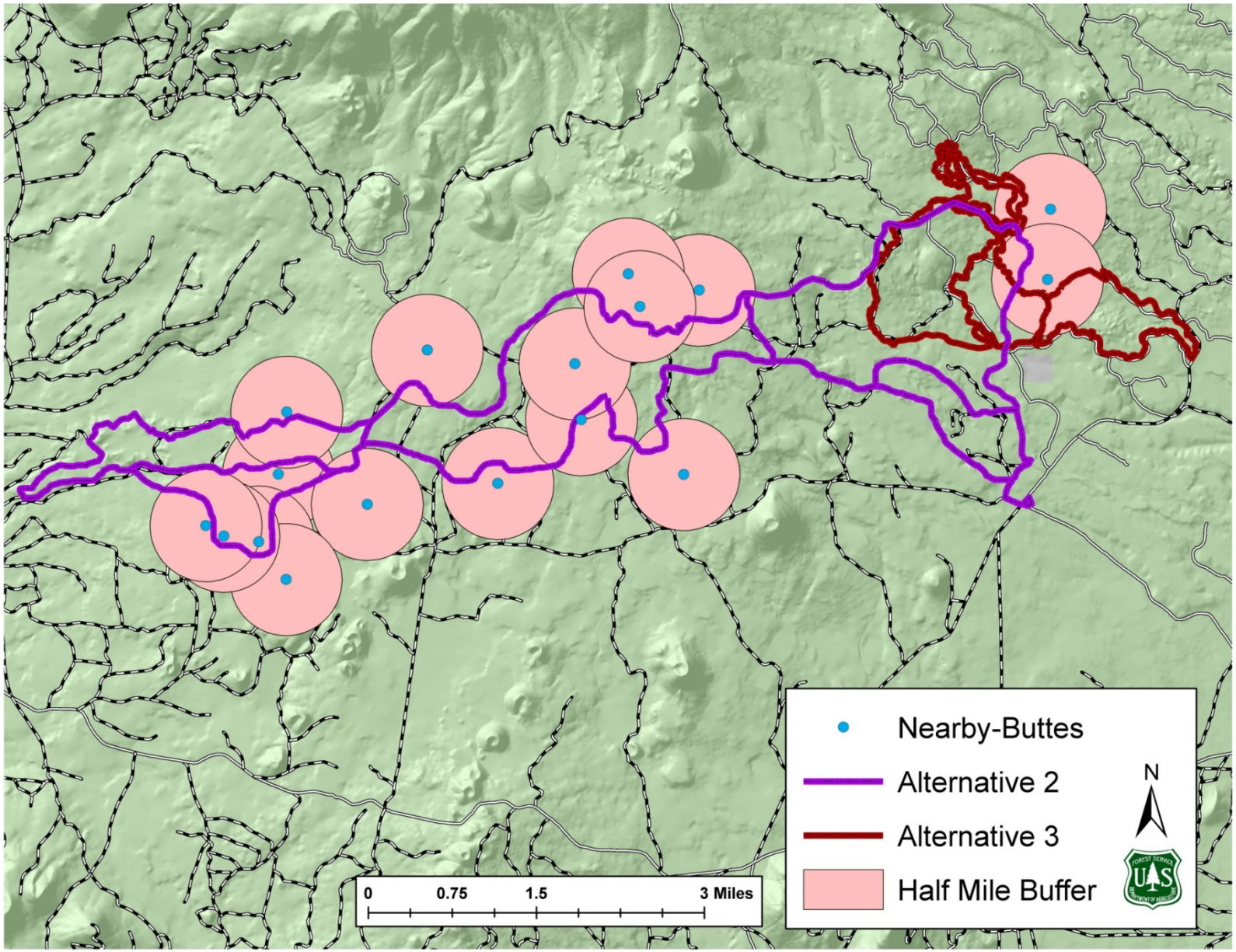


Figure 4 trail routes and buttes within ½ mile of the trail



Key Issue 2 – Need for Technical Trail Miles

Measurement Miles of technical trail

Several comments to the scoping letter focused on the need for proposed trails to be technical in nature. Existing trail systems on the Deschutes are lacking in technical trail miles and the primitive Level 2 roads and skid trails scoped as trail routes under the Proposed Action would offer few technical trail miles rated as extremely difficult. Commenters suggested that trail design should take advantage of natural rock features to add difficulty and require users to engage 4WD when traveling the proposed trail routes (Figure 5). Miles of trail rated as technical are used as a measure of this Key Issue.

Figure 5 Examples of technical trail sections from Cline Buttes OHV Area

1.10.2 Analysis Issues

Analysis issues are environmental components that are considered in the environmental consequences analysis (Chapter 3). These issues are used as a way to compare the Alternatives, though they did not result in differing design elements between Alternatives. These issues: 1) are generally less focused on the elements of Purpose and Need than are the Key Issues; 2) reflect the discussions of the effects of the proposed activities to those resources; and 3) are important for providing the Responsible Official and the public with complete information about the effects of the project.

Wildlife: The following items were analyzed and compared by Alternative:

Endangered, Threatened and Proposed Species or Habitat

Pacific Northwest Regional Sensitive Wildlife Species

Management Indicator Species

Snags and Downed Wood Habitat

Migratory Birds

Old-growth Management Areas

Botany and Invasive Plants: Potential effects to Proposed, Endangered, Threatened, and Sensitive (PETS) plant species were considered and no PETS plants were found in the project area. Proposed management activities have the potential to spread invasive plants or create disturbed ground that could allow the introduction of invasive plants into areas that have not previously had a recent history of invasive plants.

Cultural Resources: Proposed activities could have an effect on cultural resources, however, all known eligible cultural resource sites would be protected and avoided using resource protection measuures.

Portions of the analysis area have been identified with cultural resource sites. Proposed ground-disturbing activities such as trail construction and tree removal have been designed to avoid sites or conducted to avoid adverse effects.

Recreation: Proposed activities would provide for public safety for those utilizing developed and dispersed areas of the project area. The EA considers potential impacts to the recreational use.

Soil Quality: Soil quality is addressed through the effects of project activities and detrimental soil disturbance. Effects are minimized and, following activities, are compared to stated LRMP Standards and Guides.

Transportation: The existing transportation system is discussed in the context of a Travel Analysis completed for the project under the guidelines of the codified Travel Management Rule and Forest Service Handbook guidance. Road issues are discussed in relation to road densities and LRMP Standards and Guides for wildlife, and for project and public access within the project area.

1.11 Travel Analysis

A travel analysis was completed by an interdisciplinary team to inform the travel management decision to be made under the Rim Butte project. This analysis is in accordance with Forest Service policy codified under the Travel Management Rule (FSM 7712; 36 CFR Part 212.51) and is included in Appendix B of this document. The scope and scale of the analysis was determined to be smaller than the ranger district boundary by the responsible official (FSM 7712.1.3). An analysis area of approximately 65,000 acres was defined to incorporate the proposed trail systems in both Alternatives and a reasonable area bounding these systems. This area includes portions of eight 12th field subwatersheds located within the Lower Little Deschutes and Pine Lake – Devils Garden 10th field subwatersheds.

1.12 Decision to be Made

The scope of the project and the decision to make are limited to trail location and construction, connected action, and necessary mitigation. Chapter 2 details the design of these actions. The project is limited to National Forest System land.

The Responsible Official for this proposal is the District Ranger of the Deschutes National Forest. Based on response from the 30-day comment period, any changes made to the Environmental Assessment, and the disclosed analysis with mitigation, the Responsible Official will make a decision and document it in a Decision Notice. The Responsible Official can decide to:

- Select one of the action Alternatives that has been considered in detail, or
- Modify the selected Alternative, or
- Select the no action Alternative, and
- Identify what mitigation measures would apply.

The decision regarding which Alternative to implement will be determined by comparing how well each meets the project purpose and need and the manner in which each Alternative responds to the issues and public input.

Chapter 2 Alternatives

2.1 Introduction

This chapter describes and compares the Alternatives considered for the Rim Butte OHV Jeep Trails project. This chapter is intended to present the Alternatives in comparative form, define the issues and provide a clear basis for choice among the options by the decision maker and the public (40 CFR 1502.14).

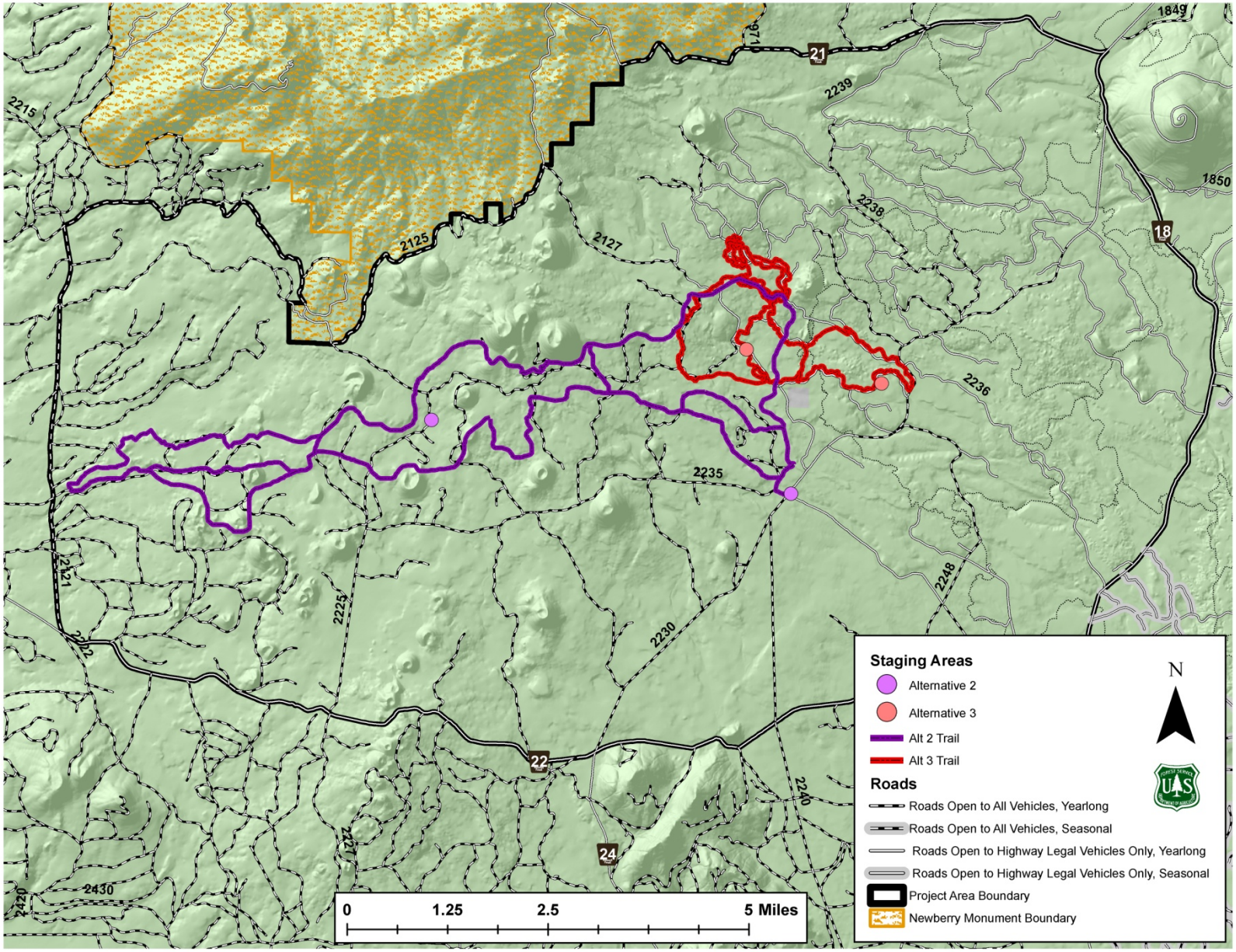


Figure 6 Alternatives 2 and 3 along with proposed staging areas

2.2 Alternatives Considered in Detail

2.2.1 Alternative 1 – No Action

This Alternative serves as a baseline for comparison of the effects of all of the Alternatives. Under Alternative 1, current direction would continue to guide management. There would be no change in the level of ongoing motorized or non-motorized recreation activities within the project area. All custodial activities such as road maintenance, law enforcement, and response to emergencies, including wildfire, would continue. No new technical Class II trails would be provided and users would continue to have limited miles of technical Class II trails to use within the Deschutes National Forest. Trails designated for 4-wheel drive vehicles (Class II) on the forest are currently limited to 20 miles of trail in the Edison Butte area, near Mt Bachelor, and a designated rock crawling area within Groundhog Butte pit (Table 1).

2.2.2 Alternative 2 (Proposed Action)

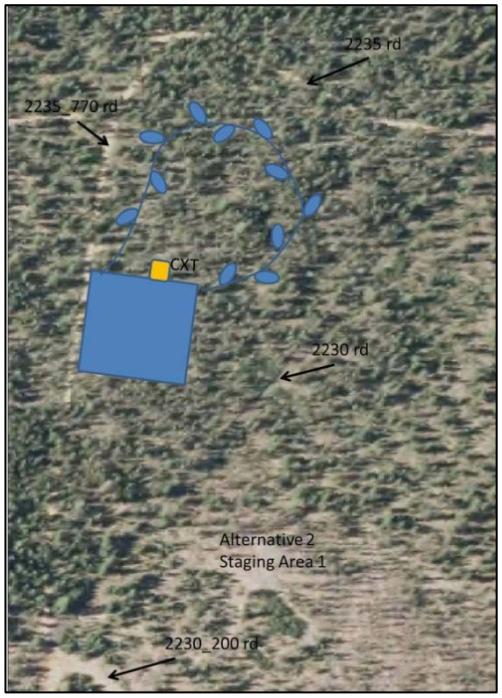
Alternative 2, the Proposed Action, would create 32.8 miles of Class II OHV trails. Designated trail routes would be located on existing skid trails and primitive Level 2 roads capable of providing difficult and more difficult trail ratings. This Alternative is consistent with management direction set forth in the Deschutes National Forest Plan. Figure 6shows the proposed trail routes and Table 3shows the specific features and design elements by Alternative.

This Alternative would:

- Establish about 32.8 miles of Class II OHV trail
- Remove occasional trees under 21 inches diameter at breast height (dbh) to establish trail routes
- Create approximately 11 miles of technical trail or 30% of the total proposed route.
- Create two staging areas with access routes that would cover a total of 6 acres, 3 acres each (Figure 7 and Figure 8)
- Remove roughly 1,675 trees at the two staging areas
    - 1,625 at the eastern staging area near the 2230 road
    - 35 at the western staging area near the 2225 road
- Create primitive campsites at each staging area (Figure 7 and Figure 8) including spur road access to the sites.
    - 11 sites at the eastern staging area near the 2230 road
    - 6 sites at the western staging area near the 2225 road
- Install two concrete-walled vault toilets, one at each staging area
- Install an informational kiosk and minimal controls utilized mostly for resource protection and site definition. Minimal controls and site definition may include using existing rock and tree features along with wood bollards placed at trail entrances which would limit trail use to appropriate vehicles and help provide definition. Along the trail, pairs of carsonite posts may be used to indicate the trail route where natural trail defining features are absent. Site definition at staging areas may include natural barriers, bollards and rocks used to define certain areas.

Trail Routes: Designated trail routes would be flagged on the ground and then driven by a group of vehicles to establish the trail tread. The majority of trail miles would have a designed trail width of 80 inches and some brushing and tree removal would occur along these routes. Most felled trees and existing obstacles on the ground would be left to provide difficulty. Extremely difficult technical trail sections on solid bedrock would have a designed tread width ranging between 80 and 240 inches in order to provide multiple "lines" across obstacles within a single trail tread. Technical trail miles would also include bump outs around extremely difficult obstacles in order to allow users to skip technical sections of trail or pass each other without incident. Signs would be installed to reinforce the newly created trail routes once they are identified.

Staging areas: Parking areas and overnight camping sites would be cleared of trees and brush and leveled. Cut trees would be removed from the site and either sold, chipped or burned for disposal. Crushed rock may be placed on the newly cleared staging areas if use levels are high enough to warrant additional surfacing. Figure 7 and Figure 8show parking areas as blue boxes and overnight campsites as blue pods. The toilets are also shown as smaller squares in these figures.



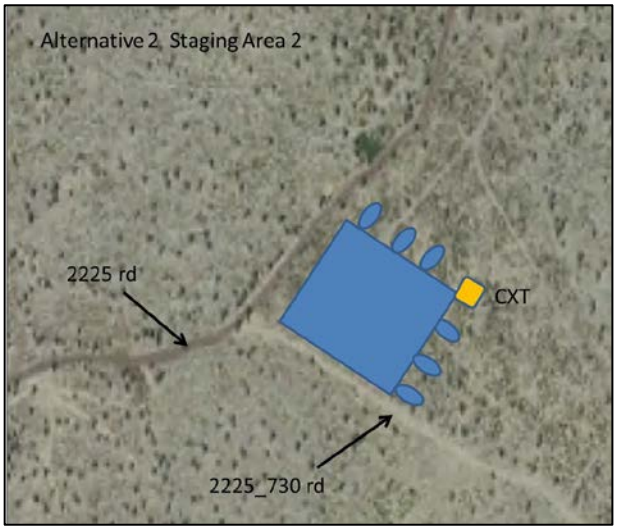


Figure 7 (Left) Aerial photo of Alternative 2 eastern staging area between 2230 road and 2235700 road.

Figure 8 (Right) Aerial photo of Alternative 2 western staging area at junction of 2225730 road and 2225 road.

2.2.3 Alternative 3

Alternative 3 would create 17.6 miles of Class II OHV trail in an area that has surface rock capable of providing technical trail miles rated as more difficult and extremely difficult. This Alternative is consistent with management direction set forth in the Deschutes National Forest Plan and responds to

both Key Issues identified during planning. Figure 6 shows the proposed trail routes and Table 3 shows the specific features and design elements by Alternative.

This Alternative would:

- Establish 17.6 miles of Class II OHV trail
- Remove occasional trees under 21 inches diameter at breast height (dbh) to establish trail routes
- Provide 14 miles of technical trail or approximately 80% of the total proposed trail system.
- Create two staging areas that would cover a total of 6 acres, 3 acres each (Figure 9 and Figure 10) including spur road access to these sites.
- Remove roughly 755 trees at the two staging areas
    - 625 at the eastern staging area near the 2127400 road
    - 130 at the western staging area near the 2127700 road
- Create primitive campsites at each staging area (Figure 9 and Figure 10) including access for these sites.
    - 5 sites at the eastern staging area near the 2127400 road
    - 11 sites at the western staging area near the 2127700 road
- Install two concrete walled vault toilets, one at each staging area

  Trails would be established using the same techniques described in Alternative 2 (section 2.2.2).
- Install an informational kiosk and minimal controls utilized mostly for resource protection and site definition. Minimal controls and site definition may include using existing rock and tree features along with wood bollards placed at trail entrances which would limit trail use to appropriate vehicles and help provide definition. Along the trail, pairs of carsonite posts may be used to indicate the trail route where natural trail defining features are absent. Site definition at staging areas may include natural barriers, bollards and rocks used to define some sites.

Trail Routes: Designated trail routes would be flagged on the ground and then driven by a group of vehicles to establish the trail tread. The majority of trail miles would have a designed trail width of 80 inches and some brushing and tree removal would occur along these routes. Most felled trees and existing obstacles on the ground would be left to provide difficulty. Extremely difficult technical trail sections on solid bedrock would have a designed tread width ranging between 80 and 240 inches in order to provide multiple “lines” across obstacles within a single trail tread. Technical trail miles would also include bump outs around extremely difficult obstacles in order to allow users to skip technical sections of trail or pass each other without incident. Signs would be installed to reinforce the newly created trail routes once they are identified.

Staging areas: Parking areas and overnight camping sites would be cleared of trees and brush and leveled. Cut trees would be removed from the site and either sold, chipped or burned for disposal. Crushed rock may be placed on the newly cleared staging areas if use levels are high enough to warrant additional surfacing. Figure 9 and Figure 10 show parking areas as blue boxes and overnight campsites as blue pods. The toilets are shown as smaller squares in these figures.

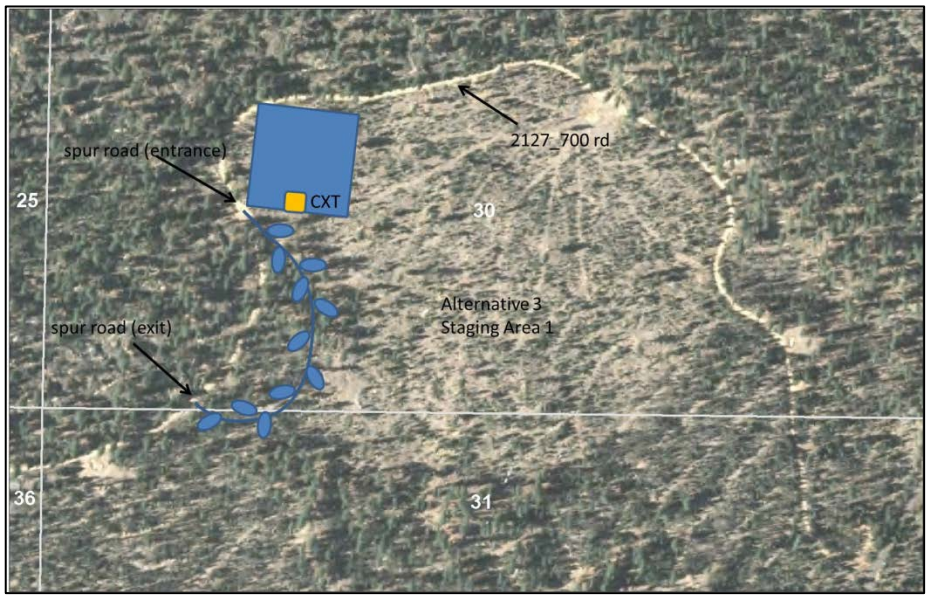


Figure 9 Alternative 3 Aerial photo of western most staging area near 2127700 road

This staging area would consist of a through road with 10 or 12 camping spots as nodes off of it for camping and a single vault toilet (shown as a square).

Figure 10 Alternative 3 Aerial photo of eastern most staging area near the 2127400 road

This staging area would consist of a parking lot surfaced with crushed rock and five campsites around the perimeter with a single vault toilet (square in northeast corner of staging area).

2.3 Comparisons of Alternatives

Table 3 Comparison of Alternatives

Alternative Elements	Alt 1	Alt 2	Alt 3
Trail Characteristics			
Trail Construction on Existing Disturbance	0	4.7	1.4
Trail Construction that is New Disturbance	0	28.1	16.2
Total Miles	***0***	***32.8***	***17.6***
Number of Staging Areas	0	2	2
Total Acres Needing to be Cleared for Staging Areas (3 ac/staging area)	0	6	6
Trail Width (inches)	0	80” [5]	80”
Area Cleared for Trail Tread (acres)	0	27	14
Issue: Technical Miles			
% Trail Designed As Technical Miles[6]	0	30% (10 miles)	80% (14 miles)
Issue: Values (Wildlife and Heritage Values)			
Number of buttes within ½ mile of trail	0	17	2
Average distance to buttes within ½ mile[7]	0	0.28	0.19
Infrastructure			
Toilets	0	2	2
Campsites	0	17	15
Trees Removed for clearing of staging areas[8]	0	1675	755

2.4 Protection Measures and Monitoring

The following summarized items are part of Alternative 2 and Alternative 3, unless otherwise indicated, and provide the measures necessary to keep project impacts at acceptable levels. These items would be applied to the project as it is implemented on the ground.

[5] Some locations with extremely technical sections may be up to 240 inches wide. The larger sections would be provided in technical areas where more than one approach to an obstacle may be desirable.

[6] Technical miles were estimated based on several field visits during which the routes were surveyed and located. They are not an exact count of the miles of trail that meet a specific standard of technical conditions; but rather are a general estimate for purposes of comparing the two alternatives.

[7] See Figure 4 for a map of buttes considered and their proximity to the two action alternatives.

[8] Most (75%) of the trees to be removed as part of the staging area development are sapling size. No trees over 21 inches dbh would be removed. Trees would be piled and burned or sold if a market existed for the material.

2.4.1 Resource Protection Measures

Project design criteria are management requirements or actions common to most projects that provide resource protection to ensure activities are consistent with the Deschutes Forest Plan Standards and Guidelines. Design criteria would be in place unless directed otherwise or waived by Forest Service personnel. Common design criteria are listed in Table 4.

Table 4 Resource Protection Measures

Number		Alternative
	Wildlife	
1	Do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during the listed periods. Northern goshawk March1 – August 31 (WL-11) Cooper's hawk April 15 – August 31 (WL-19) Sharp-shinned hawk April 15 – August 31 (WL-28)	2, 3
2	**Woodpeckers**: because all woodpecker species are associated with snags the following resource protection measure is recommended, retain all snags of all species greater than 10" diameter at breast height unless they present a health or safety risk.	2, 3
3	**Northern Goshawk:** do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during March1 – August 31 (WL-11). Coordinate immediately with district wildlife biologist if any of these accipiter species is detected during project activities.	2, 3
4	**Cooper's Hawk**: do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during April 15 – August 31 (WL-19).	2, 3
5	**Sharp-shinned Hawk**: do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during April 15–August 31 (WL-28). Immediately 2, 3coordinate with district wildlife biologist if any of these accipiter species is detected during project activities.	2, 3
	Soils	
6	Practices listed in the National Core Best Management Practices (BMPs) Technical Guide (USDA, 2012) under BMP Fac-2: Facility Construction and Storm water Control and BMP Road-9: Parking and Staging Areas would be implemented during construction to control erosion and manage storm water discharge. These practices include, but are not limited to, the use of methods such as: • straw waddles to contain overland flows during construction • grading of parking surfaces to disperse storm water • designating areas for equipment staging, stockpiling of materials, and parking to minimize the area of disturbance	2, 3

Number		Alternative
	• use of suitable hardening measures to minimize damage to parking area surfaces that experience heavy use or are used during wet periods	
Botany		
7	Clean all equipment associated with trail creation and maintenance before entering National Forest System lands. Remove mud, dirt, and plant parts from project equipment before moving it into the project area.	2, 3
8	Any fill material brought into the project would be examined by the district botanist or her designee for the presence of invasive plants.	2, 3
9	Post weed awareness messages and prevention practices at strategic locations such as the project staging areas.	2, 3
10	Forest Service personnel (most likely those associated with the OHV program) would monitor the new trail system for the presence of weeds at least once annually, and infestations would be promptly treated (i.e. they would not be allowed to proceed with their flowering/fruiting process).	2,3
Heritage		
11	The District Archeologist would review the proposed trail route and staging area near road 2127-300 after the route has been staked and before it is constructed.	2
12	If any cultural resources are discovered during project implementation, all project related activities in that area would cease immediately. Workers must immediately notify the onsite supervisor who would contact the Deschutes National Forest Archaeologist. One of the Forest archaeologist would initiate the consultation process as outlined in Section 800.13 of the Advisory Council on Historic Preservation's regulations 36 CFR Part 800.	2, 3

2.4.2 Monitoring

Heritage Resources

Site monitoring would occur for the sites near the trail. Monitoring would occur in coordination with Recreation specialists during trail layout.

Noxious Weeds

Forest Service personnel (most likely those associated with the OHV program) would monitor the new trail system for the presence of weeds at least once annually, and infestations would be promptly treated (i.e. they would not be allowed to proceed with their flowering/fruiting process).

Recreation

The use of staging areas and trails would be monitored by COHVOPS personnel and volunteers to gage the effectiveness of the system and identify resource disturbance outside of designated routes.

Chapter 3 – Environmental Consequences

This section of the environmental assessment considers the environmental consequences of implementation of the various Alternatives. The following discussion of effects follows CEQ guidance for scope (40 CFR 1508.25(c)) by categorizing the effects as direct, indirect, and cumulative. The focus is on cause and consequences. For this analysis, in general, direct and indirect effects have been discussed in the context that most readers are accustomed to: those consequences which are caused by the action and either occur at the same time and place, or are later in time or farther removed in distance but are still reasonably foreseeable (40 CFR 1508.8).

Reasonably foreseeable actions include those Federal or non-Federal activities not yet undertaken, for which there are existing decisions, funding, or identified proposals. Identified proposals for the Forest Service include those actions where the Forest Service has a goal and is actively preparing to make a decision on one or more Alternative means of accomplishing that goal and the effects can be meaningfully evaluated (36 CFR 220.4 (a)(1)).

Measures to mitigate or reduce adverse effects caused by the implementation of any of the actions proposed are addressed in Chapter 2, (Table 4). Effective mitigation avoids, minimizes, rectifies, reduces, or compensates for potential effects of actions. The temporal and spatial scale of the analysis is variable depending upon the resource concern being evaluated, particularly for cumulative effects. The landscape within the Rim Butte project area boundary is the focus of this document, but adjacent lands are considered in portions of this analysis process.

Changes from Draft to Final EA

The primary changes made in Chapter 3 since the Draft EIS was published were in response to public comment. A section on climate change was added under Other Disclosures (section, 3.12.12, *Climate Change*). Clarity was added to the recreation section by defining what actions could be expected with “minimal controls” and “site definition” for both trail and staging area creation. A brief description of expected maintenance for the trail system was also added to the recreation section. Appendix C was added to describe the response to 30-day comments received from the public and interested organizations.

3.1 Basis for Effects Analysis

The interdisciplinary team (IDT) includes Forest specialists for each discipline (see Chapter 4 for team members and their qualifications). Specialists on the IDT prepared technical reports to address the affected environment and expected environmental consequences of proposed actions of the Rim Butte project. All reports are maintained in the project file, located at the Bend/Fort Rock Ranger District office in Bend, Oregon. In some cases, this chapter provides a summary of the report and may only reference technical data upon which conclusions were based. In all instances, the majority of each of

the specialist reports is included in this EA. When deemed appropriate, those parts of specialist reports that are not included in this EA are incorporated by reference (40 CFR 1502.41).

3.1.1 Role of Science

Science information improves the ability to estimate consequences and risks of decision Alternatives. The effects of each Alternative are predicted based on science literature and the professional experience of the Interdisciplinary Team (IDT) specialists. The conclusions of the IDT specialists are based on the best available science and current understanding. Relevant and available scientific information is incorporated by reference and a complete bibliography is included at the end of this FEIS. Referenced material is a consideration of the best available science.

3.1.2 Regulation and Direction

The Environmental Consequences disclosures in this EA include discussion of cumulative effects. Where there is overlap in time and space this information is disclosed. In order to understand the contribution of past actions to the cumulative effects of the proposed action and Alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. Most of these actions and natural events are displayed in Table 5and Table 6.

The cumulative effects analysis in this EA 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. Current conditions have been impacted by many previous actions 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 may risk ignoring the important residual effects of past natural events, which may contribute to cumulative effects as much as human actions.

By looking at current conditions, we capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. 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 EA 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 would 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).

3.1.3 Past Present and Reasonably Foreseeable Future Actions

The following tables (Table 5 and Table 6) lists the groups of actions that have contributed to the existing conditions within the project area. Table 5 lists past actions and events that may contribute to the current conditions in the project area and in the Cumulative Effects Area. Table 6 lists ongoing or reasonably foreseeable future projects. Where possible these project and activities are mapped in Figure 11and Figure 12**.** The Travel analysis boundary shown in red in this figure is the same as the project area boundary. Figure 14 shows the analysis scales that were used for cumulative effects analysis

Table 5 Past Actions and Events that Contribute to Current Conditions in the Project Area and Cumulative Effects Area (Figure 11)

Past Actions	Timing	Description	Residual Effects
Road Access			
Forest System Roads All within the Project Area	1920's to Present	234 miles of open road; 124 miles of closed road (Maintenance Level 1).Open road density excluding level 1 roads is 2.63 miles per square mile.	Current transportation system road density is 3.97 miles per square mile; provides public and agency access; fragments habitat; and allows for wildlife disturbance
Wildfires			
Topso Butte Fire	1990	549 reported acres burned	In some cases previous fires have changed vegetation conditions either killing trees or burning up dead wood. In some cases, snags were created but their tenure of the landscape is varied depending on fire intensity and weather conditions. In most cases the residual effects of these fires are not continuing to have an effect on the Rim Butte planning area.
Red Butte Fire	1992	140 reported acres burned	
Jack in the Box Fire	1988	535 reported acres burned	
Vegetation Management/Fuels Reduction Projects			
Overstory Removal	1983-2006	3575 acres treated	Thinning, regeneration harvest, and other management occurred throughout the planning area consistently over the last 40 years. Past harvest has contributed to the current vegetative structure in the area and is reflected in the current condition assessment for forested vegetation and fuels. Of note in the vegetation management projects are the Central and Beasel. Between 2000 and 2004 commercial treatments including salvage, sanitation and seed tree cuts occurred on roughly 5700 acres
Partial Removal	1976-2007	1609 acres treated	
Salvage	1987-2007	3620 acres treated	
Commercial Thinning	1975-2011	2170 acres treated	
Shelterwood Creation	1976-2006	1193 acres treated	
Shelterwood Removal	1974-2012	3939 acres treated	
Single Tree Selection	1988-2006	1545 acres treated	

Clearcut	1975-2006	3896 acres treated	
Range			
Crater Buttes Allotment	Ongoing	Crater Buttes is Administratively closed	No longer in use, does not have ongoing effect.
Cabin Lake Allotment	Ongoing	active allotment is all east of the 2240 road and of Sugar pine Ridge	Ongoing grazing but no overlap with either Alternative of the Rim Butte trail. Allotment does fall within the Travel Analysis area.

Table 6 Ongoing or Reasonably Foreseeable Future Actions, in the Project Area and surrounding watersheds (Pine Lake-Devil's Garden Watershed, Long Prairie Watershed) that may contribute to Cumulative Effects (Figure 12)

Project Name/Activity	Timing	Description	Predicted or Ongoing Effects
Geothermal Leases			
Geothermal Leases	Ongoing/existing	There is currently no development planned on the leases that overlap the project boundary. Most of the activity is on the west and north flanks of Paulina Crater. These sections are where the USFS has allowed the BLM to lease subsurface mineral rights to other companies. Currently none of these leases are producing any products.	These leases do not authorize ground-disturbing so there are no effects that can be considered in the cumulative effects analysis. Development of the resource would undergo further NEPA.
Geothermal Leases- Future Potential	Possibly 2013/2014	There are a few sites that may be analyzed in the next couple years for potential leases. They would be similar to the existing geothermal	These leases would not authorize ground-disturbing activities so there are no effects that can be considered in the cumulative effects analysis. Development of the resource would

Project Name/Activity	Timing	Description	Predicted or Ongoing Effects
		leases listed above.	undergo further NEPA.
Vegetation Management/Fuels Reduction Projects			
Post Sale Treatment	2013	Several units in the Mix Post Sale Treatment Units and Red Butte Lodgepole Salvage projects would be post sale treated in 2013. This includes thinning small trees.	Thinning would continue and may involve use of chainsaws and mechanical equipment. Activities may occur close to the Rim Butte Trail but should not impact access or use of the trail.
Woodcutting in Ice and Rim Firewood Areas	1990's to present	Personal use firewood cutting continues in these areas where off road travel is allowed for the explicit purpose of wood collection. Users can fall dead standing lodgepole pine and collect down material within these areas	Use has declined as the areas have become "cut out" and no longer provide high levels of dead wood. Expect continued use from a small number of woodcutters usually those who are familiar with the area and know where to find remaining pockets of dead wood.
Botany			
Invasive Plant Treatment Deschutes & Ochoco National Forests	Ongoing	Across both National Forests, approves sites specific treatment of existing weed sites with ten new effective herbicides; also approves an early-detection / rapid response strategy.	Implementation would include treatment of invasive plants with herbicide, primarily along roads. Reduction in extent of invasive plant sites and better prevention of introduction and spread.
Roads			
Lava Rock OHV Trail Project	Planning-on hold	Designate 109 miles of Class III, and 45 miles of Class II trails. Close level 2 roads in excess of administrative and public access needs. Timing of implementation currently unknown.	With implementation of 154 miles of trail, and the existing 341 miles of trail there would be a total of 495 miles of OHV trails on the Deschutes National Forest.

Project Name/Activity	Timing	Description	Predicted or Ongoing Effects
Developed Recreation South Lava Trailhead China Hat Campground South Ice Cave	Present/ongoing	In general, the Rim Butte project area receives very few recreational users due to its access from major population centers, lack of trails, low visual quality, and lack of developed recreation opportunities.	Little change in recreation use would occur at these campsites and trailheads.
Dispersed Recreation	Present/ongoing	There are a handful of dispersed recreation sites clustered on the west end of the Alternative 2 Rim Butte trail route, these sites support motorized access and are used throughout the camping season.	Sites would continue to be open to motorized dispersed users. Use would occur between spring and fall season. Continued soil compaction of the immediate area. When campsites are full users may spill into other, less frequently used dispersed areas.
East Fort Rock OHV Use	Present/ongoing	Use would continue from March through October on established trails	No increase or change in use is anticipated.
Road Closures	Planning	124 miles of Maintenance Level 2 roads have been closed (level 1) to all but administrative use. These roads are shown in Figure 15. Figure 14 shows the remaining road system that is open for public use.	Many roads in this area were closed to public use with previous projects. Forest users did not see a change in the existing system unit the production of our NVUM maps which show only roads open to public travel. These roads, now level 1, still exist on the ground but are not open to the public for motorized use.
Travel Management Analysis	Present/Ongoing	In 2011 the forest identified a designated system of roads and trails for motorized travel. Off road motorized travel is now closed unless specified open for specific uses.	New regulations would reduce off-road cross-country travel. Motor Vehicle Use Maps (MVUM) maps are being distributed to the public. These maps show the roads that are currently open for motorized use. Figure 14 shows the MVUM map as displayed to the public with both Alternatives, the staging areas and the travel analysis boundary shown as well.

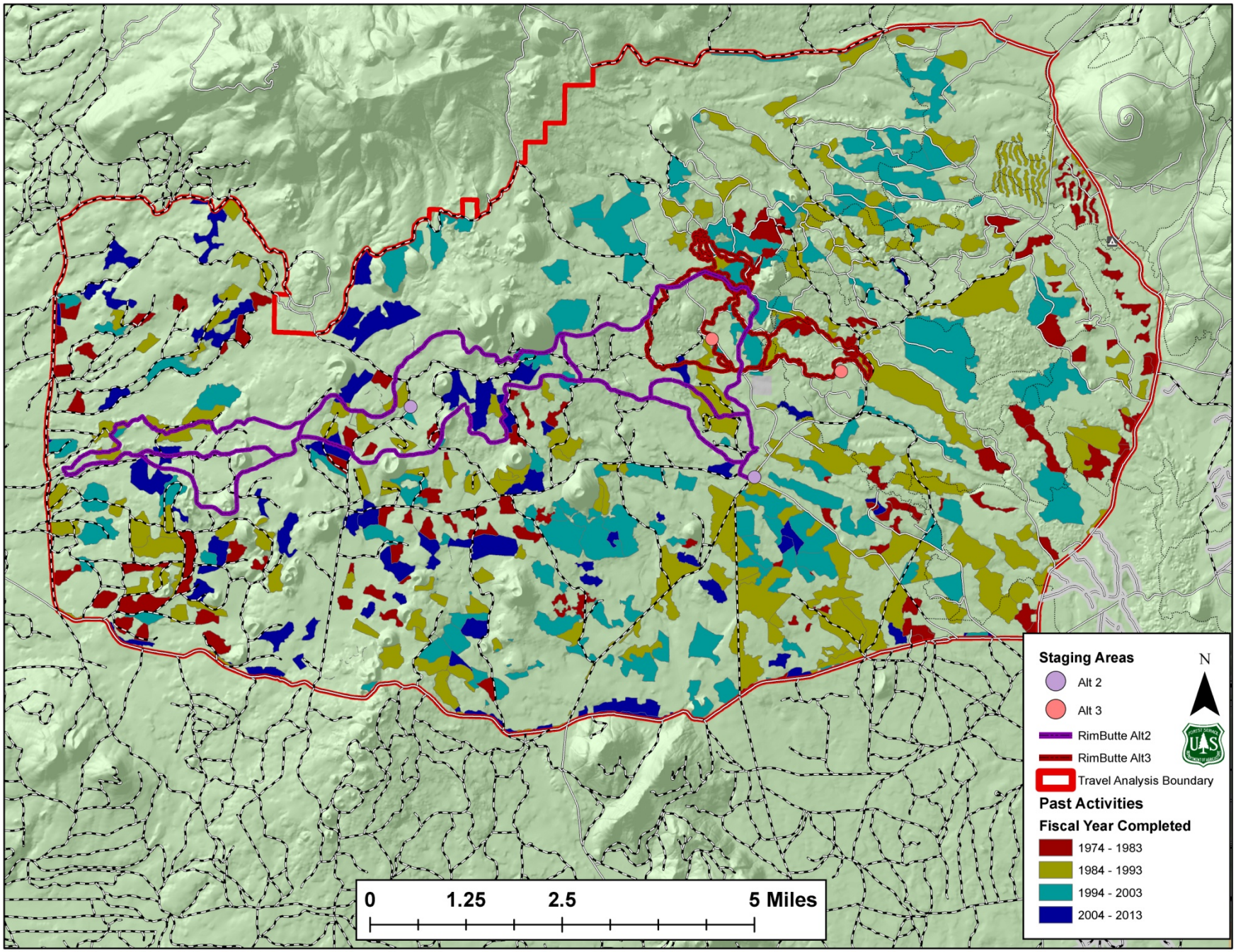


Figure 11 Past Timber Harvest by Decade in the Project Area

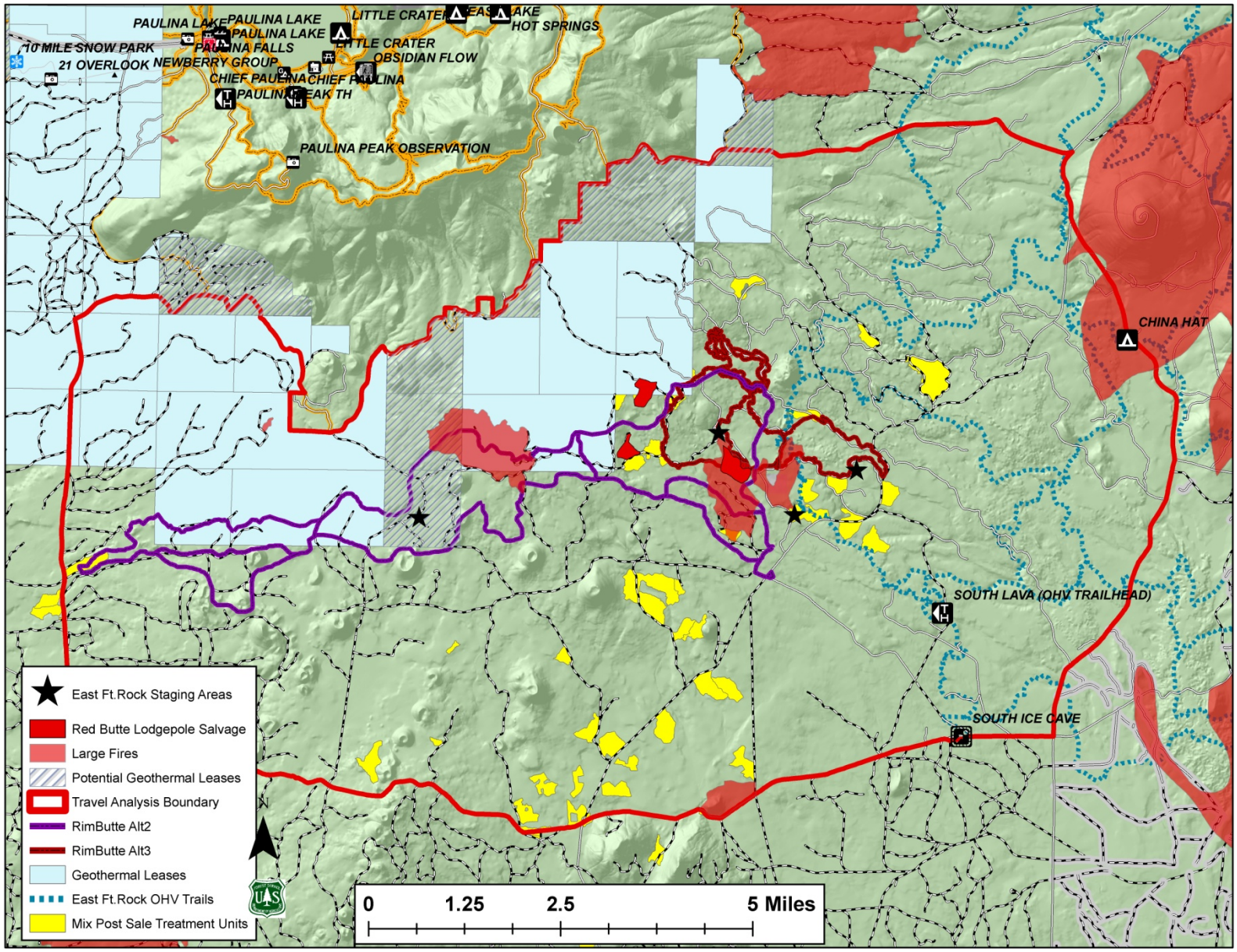


Figure 12 Past and Ongoing Activities in the Project Area

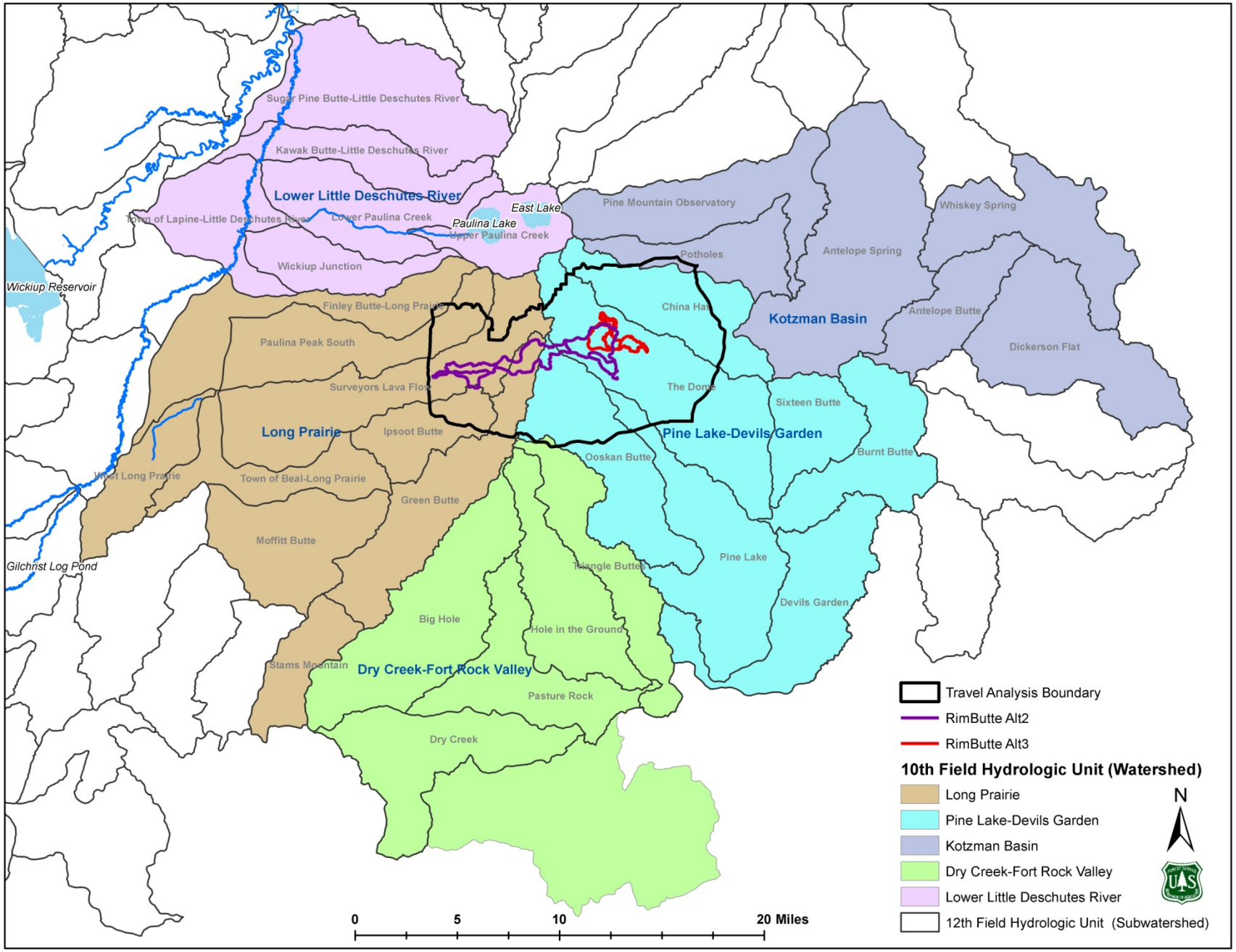


Figure 13 Analysis Scales Used to determine Effects for Rim Butte Project

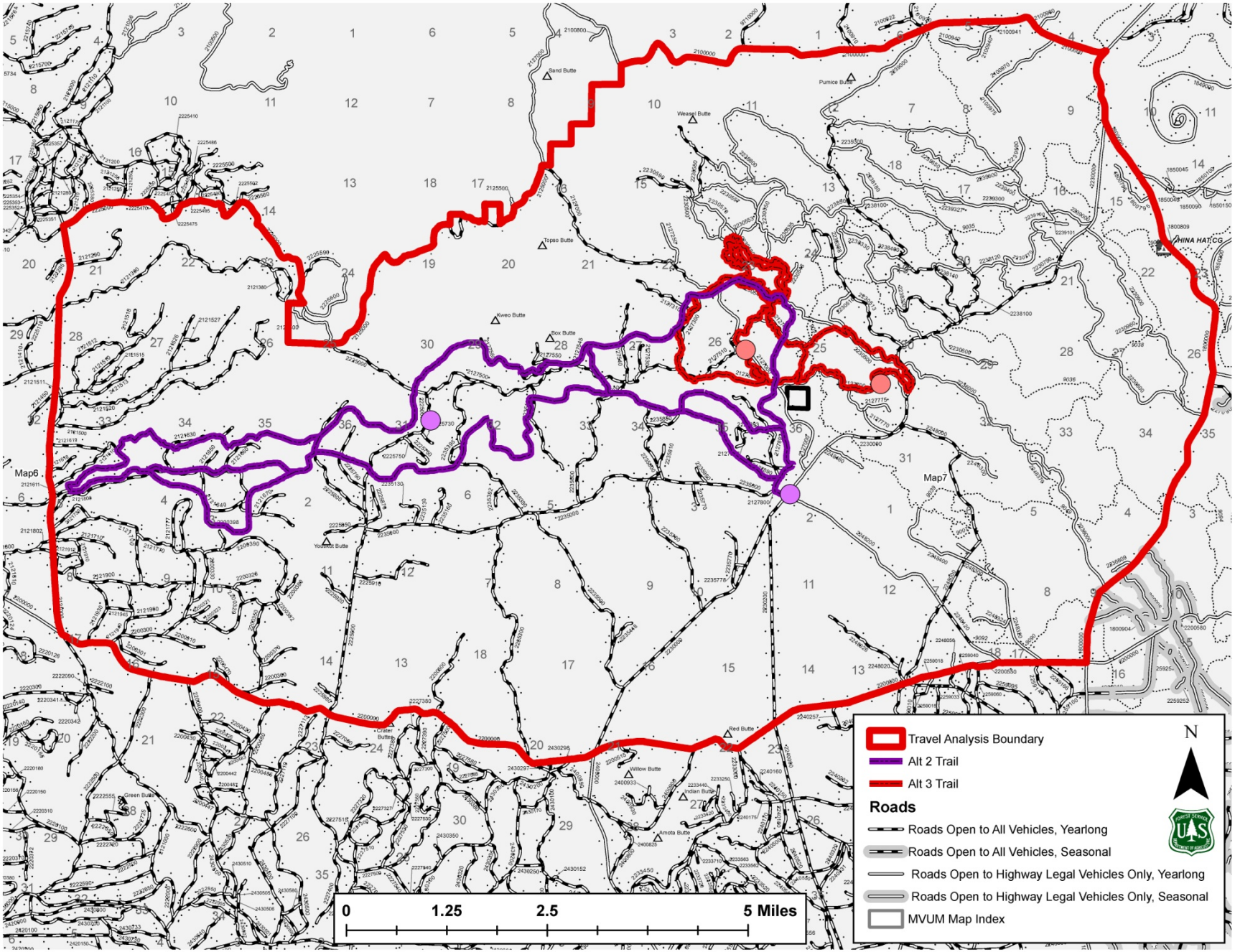


Figure 14 MVUM Map with Rim Butte Trail Alternatives

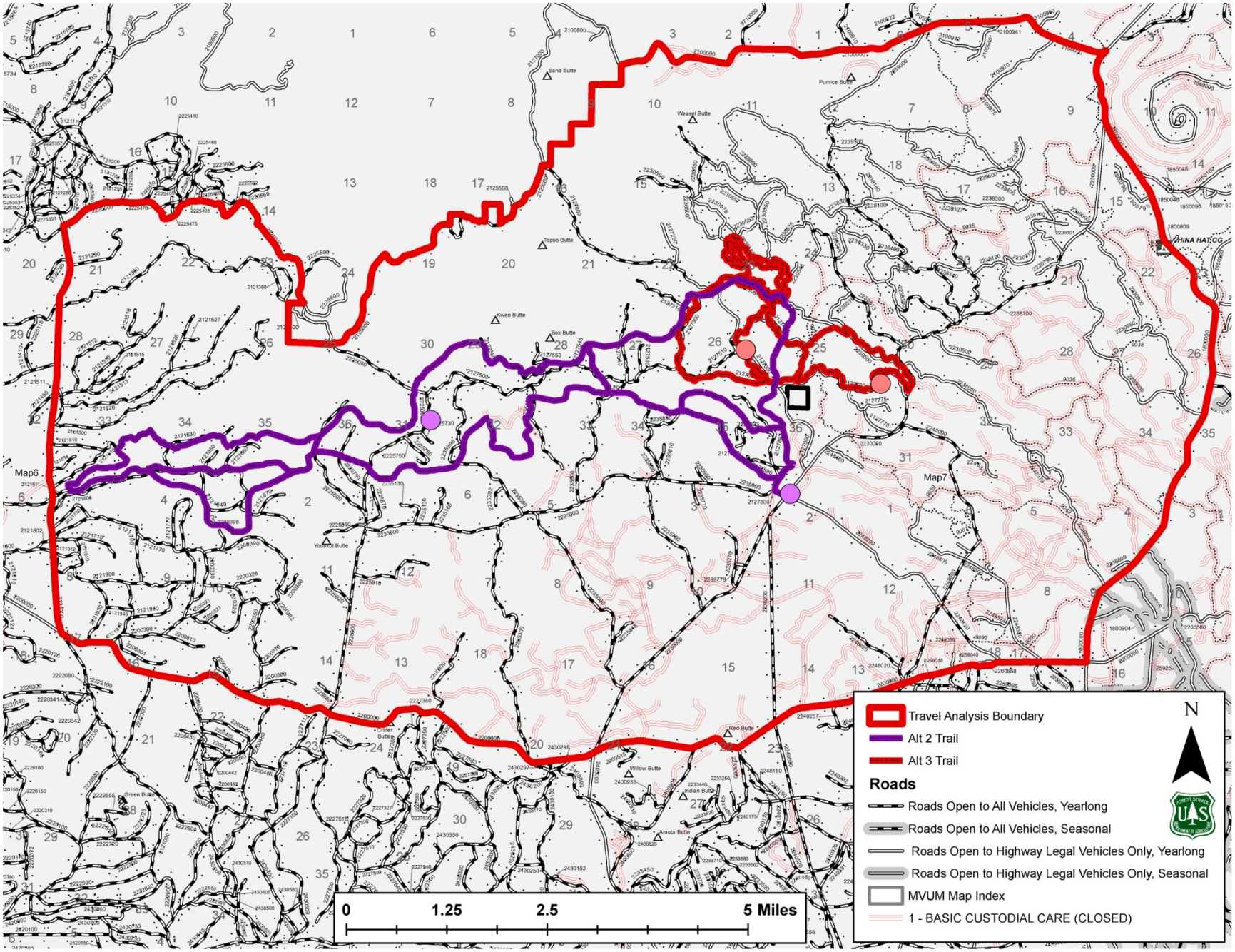


Figure 15 MVUM Map with Level 1 (Closed) Roads

3.1.4 Project Record

This EA incorporates by reference the Project Record (40 CFR 1502.21). The Project Record references all scientific information that was considered for the analysis, including reports, literature reviews, review citations, academic peer reviews, science consistency reviews, and results of ground- based observations to validate best available science. This chapter provides a summary of the specialist reports, biological assessments, and biological evaluations in adequate detail to support the decision rationale. The Project Record is available for review at the Bend-Fort Rock District Office, 63095 Deschutes Market Road, Bend, Oregon 97701, Monday through Friday 7:45 a.m. to 4:30 p.m.

3.1.5 Summary of Effects by Alternative

Effects were summarized by Alternative based on analysis presented in Chapter 3. In this table, evaluation criteria that show a measurable difference among Alternatives are shown in Part 1. Part 2 summarizes evaluation criteria across which Alternatives do not differ greatly. This process helps to clarify tradeoffs for the decision maker and provides an overview of the material in the chapter that follows. This tradeoff analysis process was described in Marcot et. al., 2012.

Table 7 Summary Of Effects by Alternative

Alternative 1	Alternative 2	Alternative 3
Recreation		
This Alternative would not provide any changes to the current recreation resource	There are 17 buttes within a half mile of the trail system. would provide an estimated 10 miles of technical trail (30% of the total 32.8 miles) This option provides the most miles of trail	There are 2 buttes within a half mile of the trail system. Would provide an estimated 14 miles of technical trail (80% of the total 17.6 miles). This option provides the most technical miles of trail
Wildlife		
Wildlife: Endangered, Threatened and Proposed Species or Critical Habitat		
Implementation of any of the Alternatives would have **no effect** on gray wolf.		
Implementation of any of the Alternatives would have **no effect** to the northern spotted owl.		
Implementation of any of the Alternatives would have **no effect** on northern spotted owl critical habitat.		
Implementation of any of the Alternatives would have **no effect** on North American wolverine. Since there are no effects to this species this action would not the viability of wolverine on the DNF.		
Wildlife: Pacific Northwest Regional Sensitive Wildlife Species		
Implementation of this Alternative would have no impact to Townsend's big-eared bat.	Implementation of either action Alternative may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species.	Implementation of either action Alternative may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the

Alternative 1	Alternative 2	Alternative 3
		population or species.
Implementation of this Alternative is expected to have **no impact** on pallid bats.	Implementation of either of these Alternatives may adversely impact individuals or habitat because of potential disturbance to bats using lava flows as day root. Implementation is not likely to contribute a trend toward federal listing or loss of viability to the population or species because of potential disturbance to bats using lava flows as day roosts.	Implementation of either of these Alternatives may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species because of potential disturbance to bats using lava flows as day roosts.
Implementation of this Alternative would have **no impact** on spotted bat.		
Implementation of this Alternative would have **no impact** on fringed myotis.	Fringed Myotis: Ongoing recreational caving would continue to preclude summer use of the potential roost habitat with frequent human visitation. Current winter use restriction on South Ice Cave would continue to conserve winter habitat for fringed myotis. Existing motorized vehicle use would continue to displace individual bats but is not expected to noticeably increase human visitation to sensitive roost locations. Implementation of the Rim Butte OHV trail would increase human disturbance to potential bat roosting habitat through construction, maintenance and use but there is a high-degree of uncertainty with the potential implementation of the project.	
Implementation of this Alternative would have **no impact** to Lewis' woodpecker.	Predicted impacts to Lewis' woodpecker are expected to be infrequent and would not result in unit-wide habitat reductions for the species. Potential tree removal associated with either of the action Alternatives is much less than 1% of the available habitat for Lewis' woodpecker. Implementation of either action Alternative would have no effect on Lewis' woodpecker viability on the Deschutes National Forest.	
Implementation of this Alternative would have **no impact** to white-headed woodpecker.	Predicted impacts to white-headed woodpecker are expected to be infrequent and would not result in unit-wide habitat reductions for the species. Potential tree removal associated with either of the action Alternatives is much less than 1% of the available habitat for white-headed woodpecker. Implementation of either action Alternative would have no effect on Lewis' woodpecker viability on the Deschutes National Forest.	

Alternative 1	Alternative 2	Alternative 3
Wildlife: Management Indicator Species (MIS)		
Since there would be no habitat reduction under this Alternative there would be no affect to northern goshawk viability on the Deschutes National Forest.	**Northern Goshawk**: this project would affect much less than 1% of the predicted northern goshawk nesting habitat on the Deschutes National Forest. The potential disturbance associated with construction, use and maintenance of the proposed route would cause a slight downward trend for northern goshawk on the Deschutes National Forest but the species would remain viable across the planning unit.	**Northern Goshawk**: implementation of this Alternative would result in a slight negative trend in viability for the northern goshawk but the species would remain viable across the planning unit. When compared to Alternative 2 the potential impacts to northern goshawk are reduced under this Alternative due to the smaller road effect area and shorter route.
This Alternative would not affect the viability of Cooper's hawk on the DNF.	**Cooper's hawk**: Construction, use and maintenance of the trail could displace foraging or nesting Cooper's hawk. Staging area clearing can reduce some foraging opportunities for Cooper's hawk but the proposed locations are not in modeled nesting habitat. There are multiple historic Cooper's hawk nests near the proposed routes so potential displacement is expected. Implementation of this Alternative would have a slight negative trend for Cooper's hawk viability on the DNF, but the species is expected to remain viable on the Deschutes National Forest.	**Cooper's hawk**: The disturbance type for Cooper's hawk is the same for this Alternative as Alterative 2, but the level of disturbance is expected to be far less under Alternative 3. This is due to the reduced amount of potential nesting habitat and the lack of documented nests near the route.
sharp-shinned hawk Implementation of this Alternative would not affect species viability for the sharp-shinned hawk on the DNF.	**sharp-shinned hawk**: the majority of mapped sharp-shinned hawk nesting habitat in the analysis area is not within the road effect area for this Alternative. Individuals foraging in the area might be temporarily displaced during trail construction, use and maintenance but since so much of the proposed route is on existing roads a baseline disturbance exists. The increased road effect area does not occur in areas mapped as sharp-shinned hawk nesting habitat. Since the potential impacts are not expected to be extensive implementation of this Alternative would have a slight negative trend for sharp-shinned hawk viability on the	**sharp-shinned hawk:** the potential impacts to sharp-shinned hawk are the same under the this Alternative but since more of this route is in areas predicted to support nesting sharp-shinned hawks there is increased potential for nesting individuals to be disturbed during trail construction, use and maintenance. Since the potential impacts are not expected to be extensive implementation of this Alternative would have a slight negative trend for sharp-shinned hawk viability on the DNF but the species would

Alternative 1	Alternative 2	Alternative 3
	DNF but the species would remain viable on the planning unit.	remain viable on the planning unit.
Red-tailed hawk: Implementation of this Alternative would not affect species viability on the Deschutes National Forest.	**Red-tailed hawk**: any species occurrences are expected to be infrequent as the nearest nests are over a mile away. The construction of this route has potential to displace foraging individuals but is not expected to disturb nesting hawks because of the lack of habitat. Implementation of this Alternative would have a slight negative trend for viability on the DNF but species viability across the planning unit would remain.	**Red-tailed hawk** This Alternative would have similar impacts to red-tailed hawk as Alternative 2 but since the proposed route is substantially shorter the overall impacts are expected to be reduced. There is still potential for individuals foraging in the area to be displaced. This species does not appear to be very sensitive when foraging based on their utilization of highways and other major roads. Implementation of this Alternative would have a slight negative trend for viability on the DNF but species viability across the planning unit would remain
Wildlife: Endangered, Threatened and Proposed Species or Critical Habitat		
Elk: Implementation of this Alternative would not affect the viability of elk on the Deschutes National Forest.	**Elk:** The biggest potential impact to elk associated with this Alternative is the increase in road effect area. Elk avoid roads and larger security areas are important. This Alternative would increase the road effect area by 1,641 acres above the baseline. This is a relatively minor (4.7%) increase in the road effect area but it still would result in less security area for elk. The increase in road effect area is not expected to result in a noticeable increase in illegal harvest because the trail to be constructed is not accessible to a large variety of vehicles and is specific to OHV jeeps. Implementation of this Alternative would have a slight negative affect on elk viability on the Deschutes National Forest but the species would remain viable across the unit.	**Elk:** As with Alternative 2 the biggest potential impact to elk is the increase in road effect area. This Alternative would increase the road effect area by 120.95 acres above the baseline. This is a very small increase of .35% increase in the road effect area but it still would result in a minor loss of elk security area. The increase in road effect area is not expected to result in a noticeable increase in illegal harvest because the trail to be constructed is not accessible to a large variety of vehicles and is specific to OHV jeeps and the vast majority of the trail is adjacent to roads open to the public. When compared to Alternative 2 this Alternative presents less potential impacts to elk.

Alternative 1	Alternative 2	Alternative 3
Mule deer: Implementation of this Alternative would not affect mule deer viability on the Deschutes National Forest because current road densities are close to recommendations in the DNF LRMP and vehicle use in the analysis area is low.	**Mule deer**: Implementation of this Alternative would have a slight negative affect on mule deer through increased motorized routes and reduced effectiveness of existing wildlife connectivity corridors. Mule deer viability across the Deschutes National Forest would be maintained.	**Mule deer**: Implementation of this Alternative would have a slight negative affect on mule deer through increased motorized routes and reduced effectiveness of existing wildlife connectivity corridors. Mule deer viability would be maintained across the Deschutes National Forest. When compared to Alternative 2 this Alternative would have less impact to mule deer because trail construction in connectivity corridors would occur near existing roads and the entire route is within the existing road effect area.
Implementation of this Alternative would not affect species viability for American marten on the Deschutes National Forest.		
Woodpeckers: Implementation of this Alternative would not affect woodpecker viability on the DNF because there is no removal of habitat and roads that are in the analysis area are well established	**Woodpeckers:** Implementation of this Alternative would result in a slight negative trend in viability for woodpecker species analyzed. Potentially affected habitat is much less than 1% of the available habitat for all woodpeckers analyzed so continued viability across the planning unit is expected. For all species analyzed this Alternative would affect more potential habitat than Alternative 3.	**Woodpeckers:** Implementation of this Alternative would result in a slight negative trend in viability for woodpecker species analyzed. Potentially affected habitat is much less than 1% of the available habitat for all woodpeckers analyzed so continued species viability across the planning unit is expected. For all species analyzed Alternative 3 would affect less potential habitat than Alternative 2.
Snags and Downed Wood: This Alternative would not reduce the available snags for wildlife in the analysis area as there is no action identified.	**Snags and Downed Wood:** Implementation of this Alternative would remove a minor number of snags associated with individual trees presenting a human safety risk. This is assumed to be snags within one-tree length of the road that could be dangerous. Implementation of this Alternative is not expected to reduce the number of snags available to wildlife at the larger subwatershed scale but would reduce some snags available in a localized area.	**Snags and Downed Wood:** Implementation of this Alternative would remove a minor number of snags associated with individual trees presenting a human safety risk. This is assumed to be snags within one-tree length of the road that could be dangerous. Implementation of this Alternative is not expected to reduce the number of snags available to wildlife at the larger

Alternative 1	Alternative 2	Alternative 3
		subwatershed scale but would reduce some snags available in a localized area. When compared to Alternative 2 this Alternative would have less impact to snags and down wood because the route is shorter and the potential removal would be less.
Wildlife: Migratory Birds		
Migratory Birds: There are no anticipated impacts to flammulated owls, pygmy nuthatch or chipping sparrow under this Alternative. There is no modification of habitat and any individuals occupying areas near exiting roads have likely become acclimated or avoid these areas.	**Migratory Birds:** Tree removal is expected to be incidental and accommodate the technical nature of the trail. Staging area clearing is outside of potential habitat so these activities would not reduce potential habitat. While some trees would be removed along the proposed route the removal would not rise to changing the stand characteristics. Implementation of this Alternative is consistent with the conservation recommendations found in the Landbirds of the East-Slope of the Cascade Mountains (Altman 2000).	
Wildlife: Old-growth Management Areas		
There would be no effects to old-growth management areas under this Alternative. No new disturbance would occur. Existing routes are all outside of old-growth management areas so wildlife within the current road effect area are acclimated to the disturbance.	While Alternative 2 does not enter old-growth management areas it would reduce effectiveness of some of these areas as trails are very close to the boundary and species in the area could be displaced and disturbed. There would be an increase in road effect area in old-growth management areas as trail placement adjacent to one old-growth management area would be new disturbance.	A comparison of action Alternatives indicates Alternative 3 presents fewer potential impacts to the existing old-growth management areas. Motorized use is not excluded from the connectivity corridors but this could impede some wildlife passage when trail is in usage. The stand structure characteristics would remain if tree removal is incidental.
Wildlife: Key Issue: Wildlife Resource Values (proximity to buttes)		
There would be no change in disturbance to the buttes in the Rim Butte OHV project vicinity.	Alternative 2 would result in increased motorized use in the vicinity of seventeen buttes. Some of these are at the edge of the buffer area and a noticeable increase in visitation to these is not expected. There are three that are adjacent to the proposed route and that proximity could encourage exploration onto them. Much of the route that goes to these buttes would be new construction and could increase access	Alternative 3 would increase motorized use in the vicinity of two buttes and both are near existing open routes. These buttes do not have routes established to the top. Alternative 3 would be better for retaining butte habitat because fewer buttes can potentially be affected.

Alternative 1	Alternative 2	Alternative 3
	to places that were previously remote.	
Botany TES Species		
There are no anticipated effects to TES plants.	There are no anticipated effects to TES plants within the project. This Alternative would result in more disturbance than Alternative 3 and creates a higher probability of damage or degradation to potential BOPU habitat than Alternative 3.	There are no anticipated effects to TES plants within the project. This Alternative would result in less disturbance than Alternative 2 and creates a lower probability of damage or degradation to potential BOPU habitat than Alternative 2.
Botany Noxious Weeds		
The area would continue to receive low recreational use and forest management activities, which would be accompanied by a risk of weeds being introduced to the area.	The presence of a new motorized trail system would carry a risk of weed introductions/weed spread.	The presence of a new motorized trail system would carry a risk of weed introductions/weed spread.
Roads and Access		
mileage of open and closed roads 2.4 miles per square mile	33 miles of motorized trail routes would be added as designated motorized trail only routes Motorized" density (roads and trails) would be 2.7 miles per square mile new roads would need to be constructed Increase in both highway-legal and non-highway-legal traffic within the analysis area. Further implement decisions for roads identified in the Central Environmental Assessment (1999). This would include signed and physical closures of Maintenance Level 1 roads. These actions are in support of the above mentioned Travel Management Plan.	17 miles of motorized trail routes Motorized" density (roads and trails) would be 2.54 miles per square new roads would need to be constructed Increase in both highway-legal and non-highway-legal traffic within the analysis area. Further implement decisions for roads identified in the Central Environmental Assessment (1999). This would include signed and physical closures of Maintenance Level 1 roads. These actions are in support of the above mentioned Travel Management

Alternative 1	Alternative 2	Alternative 3
		Plan.
Fisheries		
There would be no effects to water, riparian, and fisheries resources from implementation of either of the action Alternatives since these resources are not found within the project area. There would be No Effect to Essential Fish Habitat (EFH) and no impacts to any Oregon Department of Environmental Quality Water Quality Impaired Water body (303(d)).		
Scenic Resources		
Existing use would continue with no existing trees being removed . No additional improvements for a designated system of technical jeep trails in a suitable and sustainable location that minimizes impacts to resources while providing a worthwhile trail experience.	Any stand-out features such as scenic views of the buttes would not be changed by the proposed action in this Alternative. No large ponderosa pine would be cut to establish trails or staging areas. The removal of a few selected trees and thinning of staging areas would not create a major change to the appearance of the area. Vegetation management construction of recreation staging areas or trails not occur within Medium Scenic Integrity Level (SMS) or Partial Retention (VMS) standards and guidelines met.	Visual diversity would improve the visitor experience retaining clumps of existing trees outside the trail tread and adjacent to parking and camping sites. No large ponderosa pine would be cut to establish trails or staging areas. The incidental removal of smaller diameter lodgepole and ponderosa pine along trail corridors and within staging areas would open views to larger ponderosa pine throughout the area and enhance scenic quality.
Soils		
No construction activities would occur and the extent of exposed mineral soil would not increase. Erosion control measures would not be necessary. Soil productivity of upland soils within the project area would not change.	Staging areas would commit approximately 6 acres of the soil resource to long-term parking and camping facilities. This Alternative would commit approximately 27 acres of the soil resource to development of Class II recreation opportunities. Alternative 2 would commit nearly twice as many miles as Alternative 3 to compacted native surface	Staging areas would commit approximately 6 acres of the soil resource to long-term parking and camping facilities. This Alternative would commit approximately 14 acres of the soil resource to development of Class II recreation opportunities. Routes designated under Alternatives 2 and 3 are in different locations but are on similar

Alternative 1	Alternative 2	Alternative 3
	trail routes. Routes designated 2 and 3 are in different locations but are on similar land types capable of supporting native surface trail routes without excessive consequences to adjacent soils. The proposed trail location avoids disturbing sensitive soils with a high hazard for surface erosion. Motorized traffic on technical trails occurs at slow speeds that are less likely to displace soil from the trail tread Class II vehicles are less likely to wander from the designated trail tread than Class I and III OHVs traveling at higher speeds. Long-term affects to soil productivity adjacent to the areas committed to facilities are expected to be minimal and localized. Disturbance to the soil resource associated with clearing operations for new trail segments would be inconsequential.	land types capable of supporting native surface trail routes without excessive consequences to adjacent soils. The proposed trail location avoids disturbing sensitive soils with a high hazard for surface erosion. Motorized traffic on technical trails occurs at slow speeds that are less likely to displace soil from the trail tread Class II vehicles are less likely to wander from the designated trail tread than Class I and III OHVs traveling at higher speeds. Long-term affects to soil productivity adjacent to the areas committed to facilities are expected to be minimal and localized. Disturbance to the soil resource associated with clearing operations for new trail segments would be inconsequential.
Potential Wilderness Areas		
There would be no effects to potential wilderness areas as a result of any of the Alternatives.		
Heritage Resources		
The existing condition of all known sites within the project area would not be affected by project activities.	Sites would be avoided and the resource protection measures would ensure protection and avoidance of one eligible site near the trail.	Sites would be avoided and the resource protection measures would ensure protection and avoidance of one eligible site near the trail.

3.2 Recreation

3.2.1 Recreation –Introduction

Most visitors to National Forest lands use vehicles to access their preferred activities and settings, whether it is hiking, mountain biking, equestrian riding, fishing, or camping. For the majority of people, the vehicle is just a means of transportation to and from their recreational activity. For some, the vehicle use itself is the recreational activity. Increasingly specialized vehicles that allow users to drive over extremely rugged terrain provide operators with opportunities to challenge both their equipment and driving ability. This type of challenging driving is prohibited off of designated routes as a result of the implementation of Travel Management in 2011. Environmental concerns and a lack of designated trails on technical terrain have limited the opportunities for this form of recreation. The area identified for designating motorized trail routes under the Rim Butte project provides technical terrain desired for this activity and minimizes environmental concerns.

3.2.2 Recreation –Regulatory Framework

Forest-Wide Standards and Guidelines that apply to Trail System Management include:

- TR-1 The trail system will be developed to provide a variety of experiences (LRMP, 4-32).
- TR-2 New, reconstructed, and relocated trails will be located to take the greatest advantage of environmental features (LRMP, 4-32).
- TR-19 In areas of the Forest where there are extensive motor vehicle closures a better service will be provided by designating trails or areas where OHV's can operate legally. Each District will identify such opportunities as appropriate (LRMP, 4-33).
- TR-20 The Forest will work with the State All-Terrain Vehicle committee on the planning and construction of Off Highway Vehicle (OHV) trails and facilities (LRMP, 4-32).

Standards and Guidelines specific to the General Forest Management Area (M-8) for the management of trails include:

- M8-1 The majority of campgrounds and picnic areas will be managed at development Level 2. Some will be managed at Level 3, but none will exceed Level 3. Stands on these sites will be treated to retain the character that contributes to the value of the site for recreation (LRMP, 4-117).
- M8-4 Generally, Off-highway vehicle use is allowed. Closures and restrictions will be established where off road vehicle use will threaten or damage other resource values, such as plantations, soils, and wildlife (LRMP, 4-117).
- M8-5 This Management Area will be managed to provide the recreation activity, setting, and experience of the Recreation Opportunity Spectrum (ROS) category of Roaded Natural or Roaded Modified (LRMP, 4-118).

Facilities constructed on federal lands are subjects to standards and guidelines outlined in both the Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) and are generally captured in the supporting FS Outdoor Recreation Accessibility Guidelines (USFS, 2006).

3.2.3 Recreation – Existing Condition

The Rim Butte project area is located south/southeast of the Newberry National Volcanic Monument and north of FSR 22 (Finley Butte Rd). The Rim Butte project area currently has a Recreation Opportunity

Spectrum (ROS) of Roaded Natural as defined by the Deschutes National Forest Land Resource Management Plan (LRMP). The area is considered to have a Recreation Management Development Level of Moderately Modified (3) in which some site modification has occurred and trails may be formalized. The Recreation Experience is defined as having a forest environment that is essentially natural with a degree of solitude combined with some opportunity to socialize with others (LRMP, Appendix 3-2).

Existing non-motorized recreation use in the Rim Butte analysis area is limited as a result of the distance from major population centers and a lack of developed recreation opportunities, including trails. The South Ice Cave Picnic Area provides parking for day-use picnicking and exploring South Ice Cave and is the only existing developed non-motorized recreational infrastructure that supports or encourages non-motorized use within the analysis area. There are signs that hunters use the area during hunting season and there may be some use of dispersed camps at other times of the year. Known caves north of the project area are somewhat limited in size and appear to receive a low amount of use from the caving community. Buttes throughout the area offer dispersed hiking opportunities, although a lack of developed trails and trailheads appears to limit the number of non-motorized recreation people that utilize the area.

Motorized recreation in the area is also relatively limited. System roads in the area are used by recreation people primarily as routes to reach adjacent destinations such as the Newberry National Volcanic Monument and the South Lava and China Hat Staging Area campgrounds associated with the East Fort Rock OHV trail system. South Lava has a single-vault pit toilet with 4 group camping sites and China Hat provides 12 camp sites and has a single vault, concrete walled toilet as well as potable water from late May through early October. South Lava provides parking and the primary access to approximately 48 miles of existing Class I and Class III OHV trails within the Rim Butte analysis area. This staging area and trails receive moderate to low use on the weekends and low use during the weekdays, primarily a result of the distance from major staging areas and a limited season of use resulting from snow accumulation in the area. The China Hat Staging Area Campground is on the eastern edge of the Rim Butte project area and generally provides access to Class I and Class III OHV trails in the central and northern portions of the East Fort Rock OHV system.

Legal use of motorized travel routes by OHVs within the Rim Butte analysis area outside the East Fort Rock OHV System boundary are limited to Level 2 roads and designated shared use roads. Although legal OHV access to the motorized travel routes within this portion of the analysis area is currently provided from the South Lava staging area via the shared use roads 2248 and 2230, there is currently limited use of Level 2 roads within this area by OHVs using the East Fort Rock OHV system. Level 2 roads within the portion of the East Fort Rock OHV System area that overlaps the Rim Butte analysis area are not currently open to non-street legal OHVs legal use. As a result, the China Hat Staging Area Campground does not currently provide legal OHV access to the Rim Butte area for non-street legal OHVs.

Recreation Existing Condition –Safety and Education

The COHVOPS safety and education program assists in the implementation of an effective monitoring, maintenance, and enforcement program. A strong emphasis is placed on user education that helps develop user responsibility for maintaining trails through voluntary cooperation and a self-policing atmosphere. A combination of COHVOPS field rangers, volunteers and user group members conduct education patrols on the ground to educate the public and minimize user violations.

Informational kiosks are located at trailheads and other key locations to provide interpretive opportunities, maps and information on general area regulations, user safety, wildlife, and other important resource topics. Maps and signing are intended to help users plan daily trips and increase utilization of the trail systems. Maps also provide an opportunity to inform users on regulations, ethics, user safety, and equipment requirements. Trail system maps are updated and reprinted as needed for distribution on websites, as well as at local vendors and agency offices.

Recreation Existing Condition –Law Enforcement

The Forest Service has the responsibility of enforcing the laws of the United States, including Titles 16, 18 and 21 United States Code (USC) and the Code of Federal Regulations (CFRs) promulgated under the authority granted in 16 USC §551. Regulations can be found in CFR, Title 36, Part 261, Subpart A, B and C. The CFRs are implemented to address violations that affect NFS lands. These include, but are not limited to, interference with Forest Officers, disorderly conduct, occupancy and OHV use of Forest roads and trails.

A successful enforcement program is demonstrated by a very high rate of user compliance, which is generally the case within the existing motorized OHV trail systems in central Oregon. An enforcement presence provided by COHVOPs Forest Service employees, Forest Protection Officers (FPOs), and Forest Service Law Enforcement Officers (LEOs) encourages public awareness of responsible use, increases compliance with rules and regulations and promotes the protection of natural resources. Enforcement officers can increase user awareness of rules and regulations, and generally reduce acts of violence, violations, and other related offenses. Their presence also allows for faster response times to accidents, emergencies, search and rescues, and violations. However, there are limitations to the amount and extent of this presence at staging areas and on trails within the motorized OHV systems. As a result, voluntary visitor compliance and self-policing is an important component of enforcement.

Voluntary visitor compliance of NFS rules and regulations is primarily gained through the proper engineering of system trails and an effective education program. Easily understandable signs, substantial public education and well-engineered barriers to prevent illegal use are essential components for minimizing impacts on natural and social resources from a developed trail system. These components also support trail and riding ethics and promote OHV education and user safety. With these components in place, law enforcement is allowed to focus on a smaller number of “willful violators”. FPOs have authority to issue citations for CFR violations committed on NFS lands such as littering, resource damage, and OHV violations of area closures. LEOs can assert their federal and state arrest authority on more serious CFR violations, state law violations, and other federal crimes. FPOs and LEOs also gain compliance from offenders through education, warnings, and citations through public education during field contacts.

Recreation Existing Condition –Operational Maintenance

Successful operation and maintenance of the OHV program on the Bend/Fort Rock District depends on COHVOPS Forest Service staff, partners and volunteers. COHVOPS has negotiated with OHV groups and individuals to help construct and maintain designated motorized trails. Many volunteers have donated the use of their personal vehicles and chainsaws to perform needed services for the long-term maintenance of trails. COHVOPS currently maintains approximately 48 miles of Class I and Class III trails within the Rim Butte analysis area. In general, the Class II trails proposed for designation would require low levels of maintenance due to their technical nature and user desire for technical difficulty.

3.2.4 Recreation –Direct and Indirect Effects

Recreation –Direct and Indirect Effects – Alternative 1

Alternative 1 would not change the current recreation infrastructure and would have no effects on the recreational experience of motorized or non-motorized users in the area. This Alternative would not address the purpose and need of the project.

Recreation –Direct and Indirect Effects – Common to Alternatives 2 and 3

Both Alternatives would include the addition of two staging areas ranging from 1-3 acres in size with a single vault toilet at each location. Staging areas would have defined parking area for day and overnight use with minimal controls such as natural barriers and signs to separate sites and protect resources.

Minimal controls and site definition may include using existing rock and tree features along with wood bollards placed at trail entrances which would limit trail use to appropriate vehicles and help provide definition. Along the trail, pairs of carsonite posts may be used to indicate the trail route where natural trail defining features are absent. Site definition at staging areas may include natural barriers, bollards and rocks to be used to define some sites. Maintenance of these trails would be minimal and would mostly consist of logging out any down trees that may fall during winter months before the trail is open to summer use.

Informational kiosks would be constructed and installed at each staging site. The proposed facilities development for both Alternatives would be considered to meet the Recreation Management Development category of Level 3, Moderately Modified (LRMP, Appendix 2 and 3) and would be consistent with the ROS designation of Roaded Natural for the area. The proposed level of development would be expected to meet user expectations and needs for a motorized access trailhead.

The addition of OHV trails under either Alternative would incur a slight increase in enforcement and maintenance needs for the COHVOPs program. However, an emphasis on user group self-policing and volunteer maintenance of technical trail routes, as well as the proximity of these trails to the existing East Fort Rock OHV system, would minimize the impacts on the enforcement patrols and maintenance budgets under either Alternative. Alternative 2 proposes twice the number of miles of new trail than Alternative 3, resulting in higher potential impacts to enforcement and maintenance operations on the district.

Recreation –Direct and Indirect Effects – Alternative 2

Alternative 2 would provide an opportunity to add 33 miles of Class II trail mileage to the existing system of designated motorized trail routes on the Forest but does not adequately address the two key issues identified during scoping. Trail locations proposed under Alternative 2 are within a half mile of seventeen buttes in the project area that provide non-motorized recreational and cultural resource opportunities. The experience of non-motorized users on these buttes would likely be negatively affected as a result of this proximity, primarily as a result of noise generated by OHVs in the area.

Alternative 2 would designate the largest number of additional trail miles, but would provide less difficult and fewer miles of technical trail when compared to Alternative 3. Approximately 22 miles of trail routes would be located on existing skid trails or Level 1 or 2 road beds that do not provide the technical rock crawling trail experience requiring the engagement of 4WD that the Class II user groups desire. The lower technical nature of trails in this Alternative would be desirable for the growing number of Class IV OHV users.

Recreation –Direct and Indirect Effects – Alternative 3

Alternative 3 would provide approximately 17 miles of additional trail mileage This Alternative reduces the potential impacts to social values associated with non-motorized and cultural uses within the area by reducing the proximity of trail locations within a half mile of buttes from seventeen to two. As a result, the non-motorized recreation experience associated with hiking these buttes would not be impacted by the presence of new motorized trails. In addition, this Alternative would reduce the temptation for trail users to illegally operate motorized vehicles to access viewpoints or climb sensitive side slopes of the buttes themselves. The two buttes within a half mile of trails proposed under this Alternative are within the East

Fort Rock OHV trail system and have existing Class I/III OHV trails along their base (Cinder Cone) or crossing over the top (un-named butte south of Cinder Cone). None of the trails under this Alternative would add sections on or immediately adjacent to these two features.

Alternative 3 provides 14 miles of technical trail which would be located on hard terrain features identified as desirable by users for 4WD rock crawling opportunities. As result, the trail miles provided under this Alternative would meet the expressed needs of the user group for full day trail experiences on technical trails rated as extremely difficult. Although the higher percentage of technical trail routes proposed under this Alternative may limit stock Class IV OHV use to some degree, trending use of this class includes upgraded modifications that allow for travel on more technical trail routes. Stock Class 1 and Class III OHVs are also likely to be unable to utilize the extremely difficult trail routes, although some Class III rally motorcycles are likely to seek this opportunity.

Trail locations proposed under this Alternative would create a compact trail system in an area approximately 4 square miles in size. The most of the trail miles are located within 300 feet of existing roadways and provide easy escape routes for OHVs of any class when damaged or broken during their travels over rocky and technical terrain. The system also provides a range of trail difficulties that includes the most miles of extremely difficult ratings with easier bypass routes or bump outs that would allow for users to avoid sections that may be too challenging for their skill level.

3.2.4 Recreation –Cumulative Effects

Cumulative effects were analyzed at the project area scale. This scale was chosen for effects analysis to encompass the other major motorized recreational use in the area associated with the East Fort Rock OHV trail system. Class II and IV OHVs are currently not allowed on the existing East Fort Rock trail routes and would not be able to access them legally under this Alternative.

Recreation –Cumulative Effects – Alternative 2

Alternative 2 would affect non-motorized use within the Rim Butte area by adding 33 miles of designated motorized trail routes to the existing 49 miles of motorized trails in the planning area, resulting in a total of 82 miles of designated motorized trails in the planning area. The additive effects on non-motorized recreation in the form of noise would be relatively low since existing motorized use of roads is very low and Class II OHVs generate noise primarily at low volumes as they crawl across technical terrain, resulting in low frequencies more comparable to legal Highway vehicles than Class I and III OHVs. Additional Class I and III trail routes proposed under the Lava Rock OHV project within the Rim Butte project boundary are on hold and unlikely to add to the total miles of designated motorized trails in the foreseeable future. Figure 16 shows existing East Fort Rock OHV trails and the former Lava Rock Planning Area in relation to the proposed Rim Butte trails.

Recreation –Cumulative Effects – Alternative 3

Alternative 3 would affect motorized recreational users due to the overlap of the proposed trail routes under this Alternative with existing East Fort Rock OHV trail routes. Possible effects include an increase in OHV use on trails and the potential for smaller Class I and III OHVs to access the proposed trails, both of which could result in conflicts between the various user groups. Potential effects would exist as long as both trail systems are legal for OHV use. Low use numbers and appropriate signing and access controls (see Chapter 2 project design) should keep user conflicts to a minimum. Potential conflicts are further reduced by the proposed location of the Rim Butte staging areas separate from the existing East Fort Rock OHV system.

Alternative 3 would add 17 miles of designated motorized trails to the existing 49 miles of motorized trails in the planning area for a total of 66 miles of motorized trails in the planning area. This would cumulatively affect the non-motorized recreation experience on two buttes within the project area where proposed trails cross within a half mile buffer that contains existing Class I and III trail routes associated with the East Fort Rock OHV trail system. The additive effects on non-motorized recreationalists in the form of noise would be relatively low since existing motorized use of the East Fort Rock trails in the area is relatively low and Class II OHVs generate noise primarily at low speeds as they crawl across technical terrain, resulting in lower noise volume more comparable to legal Highway vehicles than Class I and III OHVs.

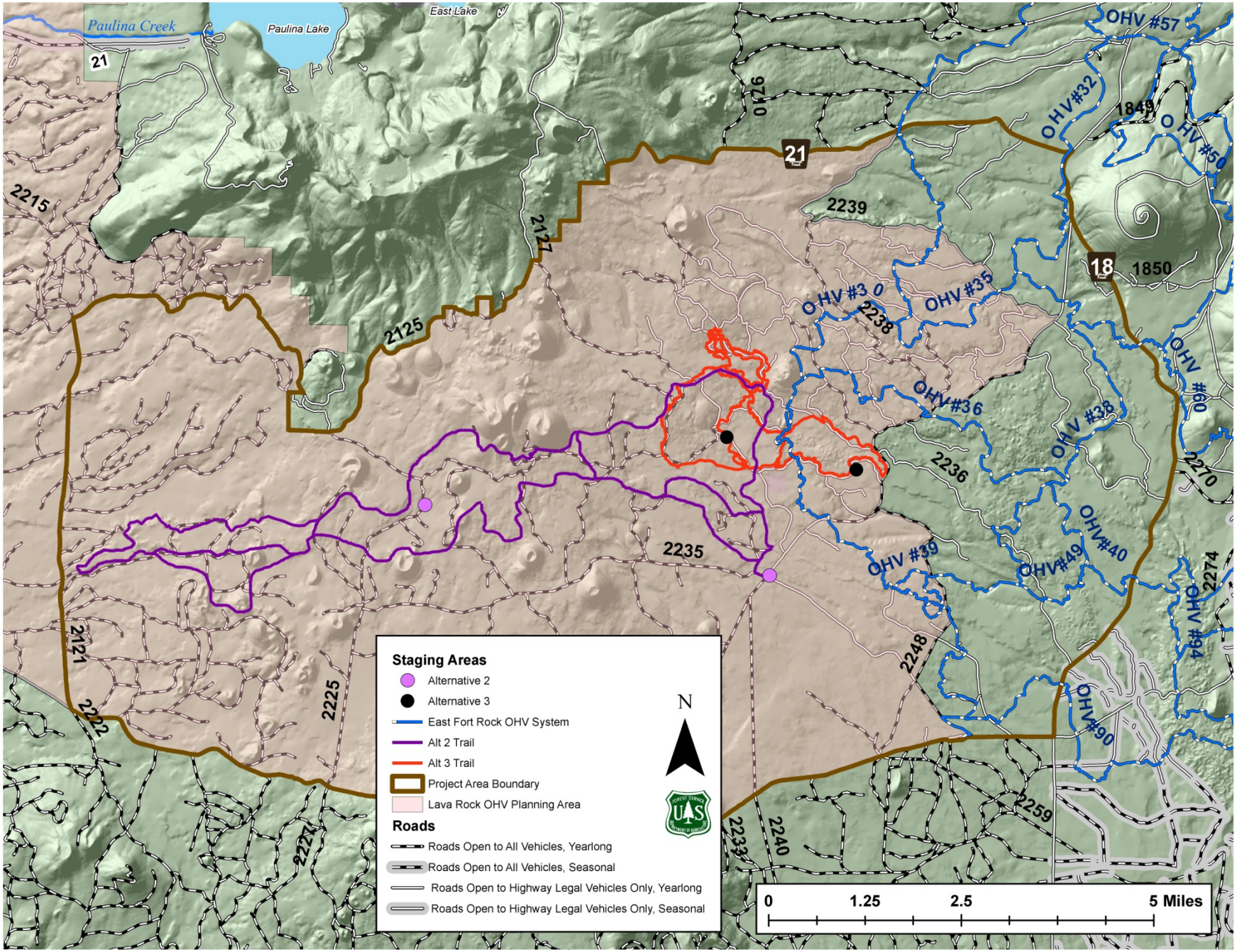


Figure 16 East Fork Rock OHV Trails and Lava Rock Planning Area

3.3 Wildlife

3.3.1 Wildlife Introduction

This document analyzes potential impacts to terrestrial wildlife species associated with the proposed Rim Butte OHV Jeep Trail. A separate biological evaluation was prepared for wildlife listed under the Endangered Species Act of 1973 as amended (ESA) or identified on the USDA Forest Service Pacific Northwest Region Sensitive Species list. Information from that document is included in this report. To protect wildlife resources several protection measures are recommended see Table 4 Resource Protection Measures in Chapter 2 Section 2.4.

3.3.2 Wildlife Regulatory Framework

Potential impacts to terrestrial wildlife species were considered using existing laws, policy and direction listed below:

- Endangered Species Act of 1973, as amended requires that federal agencies ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of federally-listed species, or destroy or adversely modify designated critical habitat [Section 7(a) (2)].
- Forest Service Manual 2670 requires preparation of a biological evaluation for potential impacts to wildlife species listed on Regional Forester Sensitive Species lists. The Pacific Northwest Region Sensitive Species List was reviewed and potential impacts to species presented in the biological evaluation for this project. Information from that report is included in the wildlife specialist report.
- Deschutes National Forest (DNF) Land and Resource Management Plan (LRMP) (USDA FS 1990) provides standards and guidelines for the protection of wildlife resources and identifies Management Indicator Species (MIS) to be analyzed.
- The Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales (Eastside Screens). This document contains guidelines for management of timber sales in late-old structure relative to the historic range of variability, wildlife corridors, snags, coarse woody debris and northern goshawk management.
- Executive Order 13186 outlines a collaborative approach to promote conservation of migratory birds between federal agencies and the USFWS. Migratory bird species identified as Birds of Conservation Concern (USFWS 2008) or focal species in the Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington (Altman 2000) were also considered.

3.3.3 Wildlife Analysis Methods

Motorized trails can impact wildlife through direct habitat loss during construction, ongoing habitat loss during maintenance, displacement of individuals from traffic impacts (noise, dust, etc) and habitat fragmentation (Forman 2000). A 200 meter buffer on either side of the trail was used to define the “road effect area” which is the spatial extent where potential impacts to wildlife are most likely to occur. This is consistent with wildlife impacts analysis for the Travel Management Analysis for the DNF in 2010 and is derived from Forman (2000). Different species and individuals have varying tolerance to motorized routes but a 200 meter buffer is the most likely area where impacts to wildlife can be expected. Large portions of the proposed routes are adjacent to existing Maintenance Level 2 roads which are currently open to the public.

The baseline road effect area was calculated by using a 200 meter buffer on all Maintenance Level 2 roads and designated motorized trails for the Rim Butte OHV Project Area Boundary, which is equal to the Project Area Boundary (Figure 13**).** The baseline road effect area totals 34,257 acres or 55% of the project analysis area. For comparison the additional road effect area associated with the proposed routes was added to the existing to measure relative increase in road effect area for each Alternative. Alternative 2 would have road effect area of 35,898 acres or 4.8% above baseline and Alternative 3 would have a 34,378 acre road effect area or 0.3% above the baseline.

Cumulative effects are defined as "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 other actions" (40 CFR 1508.7). The cumulative effects boundary for terrestrial wildlife species analyzed in this document is also the project area boundary, unless specified in the individual species analysis. This is because the proposed routes are not a substantial portion of the project area and many species have smaller home ranges that would not extend past this boundary.

Past, present and reasonably foreseeable actions that could contribute cumulative effects to wildlife are vegetation management, roads and motorized trails, developed recreation and wildfires. Other actions such as geothermal leasing or livestock grazing are not expected to contribute cumulative effects because they are not ground disturbing or the potential effect area of the activity does not overlap with this action.

Plant association groups within the 200 meter road effect area were use to describe relative impacts of the proposed routes for wildlife species (Table 8).

Table 8 Plant Association Groups within the Road Effect Area by Alternative

Plant Association Group	Alternative 2		Alternative 3	
	Acres	*Percentage*	*Acres*	*Percentage*
Cinder	0	0	2.8	0.2
Lava	7.6	0.2	0	0
Lodgepole pine-Dry	2625.5	59.7	870.5	50.3
Mixed Conifer-Wet	628.0	14.3	166.4	9.6
Ponderosa Pine-Dry	1108.8	25.2	574.1	33.2
Ponderosa Pine-Wet	27.5	0.6	115.4	6.7
Total	**4397.4**	**100**	**1729.1**	**100**

3.3.4 Existing Condition

Vegetation Management

Several vegetation management projects have occurred in the analysis area over the past 40 years. Recent projects include Beasel, Emerald, Topso and Central. Activities have included overstory removal (3,575 acres), partial removal (1,609 acres), salvage (3,620 acres), commercial thinning (2,170 acres), shelterwood creation (1,193 acres), shelterwood removal (3,030 acres), single tree selection (1,545 acres) and clearcuts (3,896 acres). Since many of these activities have occurred over the past 40 years stand regeneration has occurred and these activities have created the variability of forested habitat available for wildlife (Figure 12 Past and Ongoing Activities in the Project Area).

Current vegetation management activities are limited to post-sale work for the Mix and Red Butte timber sales including pre-commercial thinning. Some post-sale activities would occur in 2013 but treatment areas are note expected to be extensive. No large vegetation management projects are proposed in the analysis area in the foreseeable future.

Motorized Trails

The Rim Buttes OHV Jeep Trail analysis area overlaps with the existing East Fort Rock OHV Area and the potential Lava Rock OHV Trail Area. The East Fort Rock OHV Area is an existing motorized trail system that provides 285 miles of Class I and III trails and overlaps with the eastern portion of the Rim Buttes OHV Jeep Trail analysis area (Figure 16). There are approximately 44 miles of East Fort Rock OHV trails in the Rim Buttes analysis area.

Roads

Travel management planning for the DNF was completed in 2011 which closed the forest to off-road travel and this should benefit wildlife through reduction in cross-country travel which would reduce disturbance to individuals (The Record of Decision for the Deschutes and Ochoco National Forests and the Crooked River National Grassland for Travel Management Plan was signed in August, 2011). There are 124 miles of Maintenance Level I roads in the analysis area which are closed to the public but are available for administrative use (Figure 15 MVUM Map with Level 1 (Closed) Roads).

3.3.4 Endangered, Threatened and Proposed Species or Critical Habitat

Table 9 lists the four listed terrestrial wildlife species or habitat known or expected to occur on the Deschutes National Forest.

Table 9 Endangered, Threatened and Proposed Species on the Deschutes National Forest

Common Name	Scientific Name	Status	Habitat
Gray wolf	*Canis lupus*	Endangered	Various forested habitat
Northern spotted owl (NSO)	*Strix occidentalis caurina*	Threatened	Mature mixed conifer
NSO Critical Habitat			Forests that provide high quality NSO habitat as designated in the final ruling.
North American wolverine	*Gulo gulo luscus*	Proposed	High elevation alpine typically with substantial snow accumulation.

Gray Wolf

The gray wolf was originally listed as endangered in 1973. Wolves in the western and central portions of Oregon are listed as endangered, while wolves in the northeast are not listed due to recovery.

Gray wolves use a variety forested habitats with interspersed river valleys and meadows for hunting. They prefer ungulate prey such as deer and elk but will also take other mammals. Pack territories can exceed 400 mi^2 depending on the available habitat and prey resource. Key wolf habitat components

include sufficient year-round prey availability, suitable denning and rendezvous locations, and sufficient area without human exposure (USFWS 1987). Den sites are often underground burrows, but can also include hollow logs, rock caves or other secure locations. Wolves can be active any time but tend to be more active at night.

One gray wolf (OR-7) was documented on the DNF in 2011 as it was dispersing from the Imnaha pack. This wolf moved through central Oregon and into northern California where it remained until recently when it returned to southern Oregon. No wolf observations have been confirmed on the DNF since OR-7. Gray wolves on the DNF are not considered resident or breeding and associated with individuals dispersing from packs in northeast Oregon.

Direct and Indirect Effects– Gray Wolf–All Alternatives

The probability of wolves occurring in the project area during construction activities is very low and the proposed activities would occur during the day so no direct or indirect effects to gray wolf are expected from this project. Implementation of any of the Alternatives would have **no effect** on gray wolf.

Cumulative Effects – Gray Wolf

Cumulative effects to gray wolf were analyzed at the watershed (10th level) scale because the species is a wide-ranging carnivore. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. There are no direct or indirect effects to gray wolf, therefore there would be no cumulative effects expected for the species.

Northern Spotted Owl

The northern spotted owl is currently listed as threatened and was listed because of current and historic habitat loss from timber harvest (USFWS 1990). Suitable spotted owl habitat is grouped into nesting, roosting or foraging (NRF) or dispersal. Typical NRF habitat in the east Cascades is mature multi-storied stands of mixed conifer with canopy cover 40% or higher and large diameter overstory trees (21” dbh or greater). Stands with reduced canopy cover can provide foraging habitat but nesting and roosting habitat also provides foraging habitat.

The analysis area is 20 miles east of the nearest identified northern spotted owl territory and outside of mapped northern spotted owl range on the DNF.

Direct and Indirect Effects– Northern Spotted Owl –All Alternatives

Considering the distance of the analysis area from any documented northern spotted owl there are no anticipated direct or indirect effects to this species. Implementation of any of the Alternatives would have **no effect** to the northern spotted owl.

Cumulative Effects – Northern Spotted Owl

Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. None of these projects would have effects to northern spotted owl because they do not overlap in either space or time as the project is a substantial distance from any known spotted owl nests. There are no direct or indirect effects to Northern spotted owl, therefore there would be no cumulative effect expected for the species.

Northern Spotted Owl Critical Habitat

Critical habitat for the northern spotted owl was recently revised across the species range (USFWS 2012). The previous designation was in 2008 (USFWS 2008) and the revision dramatically increased critical habitat on the DNF. Northern spotted owl critical habitat is only designated within mapped range of the species which is 20 miles west of the analysis area.

Direct and Indirect Effects– Northern Spotted Owl Critical Habitat – All Alternatives

There is no designated critical habitat in the analysis area and therefore no direct or indirect effects are expected. Implementation of any of the Alternatives would have **no effect** on northern spotted owl critical habitat.

Cumulative Effects – Northern Spotted Owl Critical Habitat

Cumulative effects to Northern Spotted Owl Critical Habitat were analyzed at the Rim Butte project analysis area to comply with Forest Plan direction. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. None of these projects would have effects to northern spotted owl critical habitat because they do not overlap in either space or time. Without direct or indirect effects to Northern spotted owl critical habitat there are no cumulative effects expected.

North American Wolverine

The North American wolverine was recently proposed for listing under the ESA as threatened (USFWS 2013). Wolverines were previously identified as a Candidate for listing under the ESA and on the USDA Forest Service Sensitive Species list. They are also a MIS as identified in the DNF LRMP.

It is a wide ranging carnivore found in alpine habitats (Aubrey et al. 2007). Home range size ranges from 60 square miles for females up to 540 square miles for males. They tend to occur at low density on a landscape and are often difficult to detect. Wolverine will consume most any available prey and carrion.

Wolverines have been documented in the Cascade Mountain Range with historic observations in central Oregon (1963-1973) but there are no confirmed individuals on the DNF since 1965. Current wolverine distribution extends into northern Washington but suitable habitat exists throughout the Cascades. The species has also recently been documented in northeast Oregon. There is potential habitat for wolverines in central Oregon but the species is not considered to regularly occur on the DNF.

Denning habitat on the DNF was modeled using north aspects above 5,500 feet in alpine dry, alpine meadow, glacier and rock PAG (Miller 2012). Potential denning habitat on the DNF was estimated at 1,656 acres and concentrated at high elevation areas on the western portion of the district and Newberry Crater. Plant association groups used to generate the denning habitat model are not present in the analysis area.

Direct and Indirect Effects– North American Wolverine – All Alternatives

The lack of wolverine habitat in the analysis area and the low probability that an individual would occur in the area there are no direct or indirect effects anticipated for this species. Implementation of any of the Alternatives would have **no effect** on North American wolverine. Since there are no effects to this species this action would not the viability of wolverine on the DNF.

Cumulative Effects – North American Wolverine

Cumulative effects to North American Wolverine were analyzed at the watershed (10th level) scale because other studies use this scale, and wolverine activities happen at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. None of these projects would have effects to North American wolverine because they do not overlap in either space or time. There are no direct or indirect effects to North American Wolverine, therefore there would be no cumulative effects expected for the species.

3.3.5 Pacific Northwest Regional Sensitive Wildlife Species

Potential impacts to species classified as sensitive by the Forest Service are considered through biological evaluations (FSM 2670.32). This is a separate document created for this project but potential impacts to terrestrial wildlife species analyzed in that document are presented here.

The USDA Forest Service Pacific Northwest Sensitive Species list was reviewed for species that may be present in the analysis area (Table 10). A review of species records, habitat requirements, and existing habitat components, it was determined the following sensitive animal species have habitat or are known to occur in the project area and will be included in this analysis: Townsend's big-eared bat, pallid bat, spotted bat, fringed myotis, Lewis' woodpecker and white-headed woodpecker. More detailed analysis is in the wildlife biological evaluation for the Rim Buttes OHV Jeep Trail.

Table 10 USDA Forest Service 2011 Pacific Northwest Region Regional Forester Sensitive Species List

Common Name	Scientific Name	Habitat
Townsend's big-eared bat	*Corynorhinus townsendii*	Caves
Pallid bat	*Antrozus pallidus*	Caves
Spotted bat	*Euderma maculatum*	Sheer cliffs
Fringed myotis	*Myotis thysanodes*	Caves, abandoned mines and large snags
Pacific fisher	*Martes pennati*	Mixed conifer with complex structure
Bald eagle	*Haliaeetus leucocephalus*	Mature trees/snags near lakes, rivers.
American peregrine falcon	*Falco peregrinus anatum*	Cliffs and riparian areas
Lewis' woodpecker	*Melanerpes lewis*	Large, open ponderosa pine & burned area
White-headed woodpecker	*Picoides albolarvatus*	Large, open ponderosa pine
Bufflehead	*Bucephala albeola*	Lakes with snags
Harlequin duck	*Histrionicus histrionicus*	Rapid streams with large trees
Tule white-fronted goose	*Anser albifrons elgasi*	Marshes and wetlands
Horned grebe	*Podiceps auritus*	Lakes
Tricolored blackbird	*Agelaius tricolor*	Bulrush patches in marshes and lakes

Common Name	Scientific Name	Habitat
Yellow rail	*Conturnicops noveboracensis*	Marshes
Northern waterthrush	*Parkesia noveboracensis*	Shrubby riparian areas with willow and alder
Greater sage-grouse	*Centrocercus urophasianus*	Sagebrush
Oregon spotted frog	*Rana pretiosa*	Streams and marshes with consistent water
Columbia spotted frog	*Rana luteiventris*	Streams and marshes
Crater lake tightcoil	*Pristiloma arcticum crateris*	Perennial wet riparian areas
Evening field slug	*Deroceras hesperium*	Perennial wet riparian areas
Silver-bordered fritillary	*Boloria selene*	Open riparian bogs and marshes
Johnson's hairstreak	*Callophrys johnsoni*	Mature conifer forest with mistletoe
Western bumblebee	*Bombus occidentalis*	Meadows

Townsend's big-eared bat

This bat is non-migratory and uses caves, mines or abandoned buildings for larger roosts, such as maternity colonies or hibernacula. Solitary bats use can use rock crevices, fissures, buildings, bridges and large trees as day or night roost sites. There are more than 350 caves on the DNF and based on previous work 10-15% of these caves could be support maternity colonies or hibernacula. A radiotelemetry study of Townsend's big-eared bats suggested the species has low roost site fidelity during the post-emergence period as rugged lava flows provide day or night roosting habitat allowing flexibility in finding foraging areas (Dobkin 1992).

There are a minimum of nine caves within the analysis area that provide habitat for Townsend's big-eared bats, but local information indicates several other caves and fissures that provide day or night roosting opportunities. Areas with cave potential were identified and verified during field surveys. There are four documented Townsend's big-eared bats in the Kotzman Basin and Pine Lake-Devil's Garden watersheds but locations are not within the analysis area boundary. Given suitable habitat in the analysis area and presence of Townsend's big eared bats within the watershed presence can be inferred.

A primary threat to this species is human disturbance at sensitive roost locations such as hibernacula or maternity colonies (Pierson et al. 1999). Other threats include loss of foraging and roosting habitat through vegetation management practices.

Motorized trails can impact bats by increasing access and visitation to roosts during seasons when bats are sensitive to human disturbance, e.g. hibernacula or maternity colony or when routes are placed close to cave entrances where bats can be impacted by increased noise levels and potential changes to the entrance microclimates.

Direct and Indirect Effects – Townsend's big-eared bat – Alternative 1

Current habitat conditions for Townsend's big-eared bat would not change under Alternative 1. Caves with potential to support this species near existing routes are widely known and visitation is not expected to increase under this Alternative. Some of these caves (South Ice Cave) have winter restrictions to reduce potential disturbance to hibernating bats and spread of white-nose syndrome and these would

remain in effect under this Alternative. Ongoing disturbance within the existing road effect area would continue but bats in the area are likely acclimated or avoid the area because of current disturbance. Implementation of this Alternative would have **no impact** to Townsend's big-eared bat.

Direct and Indirect Effects – Townsend's big-eared bat – Alternative 2 and 3

No previously unidentified caves were located near the proposed route for Alternative 2, but Alternative 3 could increase traffic near two lesser known caves. These caves provide day and night roosting sites but have less potential to be used as maternity or hibernacula sites. Existing vegetation is expected to reduce visibility of these caves from the proposed route and none of the caves are within the 200 meter road effect area.

Technical miles are located on existing lava flows where fissures and cracks provide day and night roosting habitat for Townsend's big-eared bats. Vehicle travel over the rock can disturb roosting bats through noise and vibration. Alternative 3 has more technical miles and could have a greater impact to roosting bats but this effect would be difficult to detect without better knowledge of how the bats roost in these flows. It is likely that bats would avoid roosting near the proposed routes once use becomes more consistent. Implementation of either action Alternative **may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species.**

Cumulative Effects – Townsend's big-eared bat

Cumulative effects to **Townsend's big-eared bat** were analyzed at the Rim Butte project analysis area scale because the scale encompasses important activities. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. The Rim Buttes OHV project is not expected to noticeably contribute to cumulative effects to Townsend's big-eared bats.

Previous timber management activities that removed larger diameter trees in the analysis area have reduced potential bat roosting opportunities but snag and Green Tree Replacement standards in the Eastside Screens are maintaining large snags and future snags as potential day or night roost sites. Since these activities have occurred over 40 years some of the larger diameter trees that Townsend's big-eared bats use are becoming available after vegetation management activities. Current activities such as post-sale work would not alter Townsend's big-eared bat habitat because they do not use these trees for roosting. Since no future large scale vegetation management activities are expected in the foreseeable future the available roosting and foraging habitat for this species would remain steady or increase over the foreseeable future.

Ongoing recreational caving would continue to preclude summer use of the potential roost habitat with frequent human visitation. Current winter use restriction on South Ice Cave would continue to conserve winter habitat for Townsend's big-eared bats. Existing motorized vehicle use would continue to displace individual bats but is not expected to noticeably increase human visitation to sensitive roost locations. Implementation of the Lava Rock OHV trail would increase human disturbance to potential bat roosting habitat through construction, maintenance and use but there is a high-degree of uncertainty with the potential implementation of the project.

Pallid Bat

The pallid bat occurs in western North America including central Oregon. Typical habitat includes lower elevation arid deserts or canyonlands and to a lesser extent coniferous forests (Hermanson and O'Shea 1983). They tend to form large maternity colonies and hibernacula that can reach hundreds of individuals. Day and night roosts can include rocky outcrops, caves, mines, trees and human structures

(Hermanson and O'Shea 1983). The species can have large roost sites with entrances 4-5 meters above ground level to deter predation. They are opportunistic feeders that consume a variety of insect prey including beetles, moths and scorpions.

There are no documented pallid bats on the DNF but there are observations east of the forest boundary. The analysis area provides potential roosting habitat for pallid bats with available caves, rock outcrops and snags. Available habitat and documented presence on adjacent lands suggest pallid bats could occur in the analysis area.

Pallid bats are sensitive to human disturbance and can be negatively affected by activities that increase frequency and duration of human presence at roosts. Recreational caving in the area can reduce effectiveness of potential roosts throughout the analysis area because of frequent human presence.

Direct and Indirect Effects – Pallid Bat – Alternative 1

Existing pallid bat habitat would remain under this Alternative. Caves providing suitable roosts sites would remain and human access to these are likely to remain steady or slightly increase. Existing seasonal cave closures would remain in effect and are expected to maintain winter habitat for the species. Implementation of this Alternative is expected to have **no impact** on pallid bats.

Direct and Indirect Effects – Pallid Bat – Alternative 2 and 3

No previously unidentified caves were located near the proposed route for Alternative 2, but Alternative 3 could increase traffic near two caves. These caves could provide day and night roosting sites but have less potential to be used as maternity or hibernacula sites because they are ground level entrances. Existing vegetation is expected to reduce visibility of these caves from the proposed route and none of the known caves are within the 200 meter road effect area.

Technical miles are located on existing lava flows where fissures and cracks provide day and night roosting habitat for pallid bats. Vehicle travel over the rock can disturb roosting bats through noise and vibration. Alternative 3 has more technical miles and could have a greater impact to roosting bats but this effect would be more localized because the trail locations are more concentrated.

Tree removal in the staging areas is not expected to reduce potential day or night roost habitat for pallid bats because the majority of trees to be removed are smaller diameters than those typically used as day night roost by the species. Given the size of the proposed staging areas potential loss of habitat might reduce some opportunistic roosts but would not noticeably reduce availability in the analysis area.

Implementation of either of these Alternatives **may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species** because of potential disturbance to bats using lava flows as day roosts.

Cumulative Effects – Pallid Bat

Cumulative effects to pallid bat were analyzed at the analysis area scale because it encompasses important activities. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. When these actions are considered the Rim Buttes OHV project is not expected to noticeably contribute to cumulative effects to pallid bats.

Previous timber management activities that removed larger diameter trees in the analysis area have reduced potential roosting opportunities but snag and Green Tree Replacement standards in the Eastside Screens are maintaining large snags and future snags as potential day or night roost sites. Since these activities have occurred over 40 years some of the larger diameter trees are becoming available for day or night bat roosts. Current activities such as post-sale work would not alter pallid bat habitat because they

do not use these trees for roosting. Since no future large scale vegetation management activities are expected in the foreseeable future the available roosting and foraging habitat for this species would remain steady or increase over the foreseeable future.

Ongoing recreational caving would continue to preclude summer use of the potential roost habitat with frequent human visitation. Current winter use restriction on South Ice Cave would continue to conserve winter habitat for pallid bats. Existing motorized vehicle use would continue to displace individual bats but is not expected to noticeably increase human visitation to sensitive roost locations. Implementation of the Lava Rock OHV trail would increase human disturbance to potential bat roosting habitat through construction, maintenance and use but there is a high-degree of uncertainty with the potential implementation of the project.

Spotted Bat

The spotted bat is described as a solitary roosting species as there is little evidence of large concentrations at either maternity colonies or hibernacula (Luce and Keinath 2007). They are found throughout western North America including central Oregon (Rodhouse et al. 2005). Sheer cliffs in proximity to water are often identified as an important habitat feature for roosting but the species also uses caves (Chambers et al. 2001). Maternity roosts in northern Arizona were remote areas that were difficult to access (Chambers et al. 2011). The solitary nature has made the species seem rare but recent work in central Oregon indicates that spotted bats are more widespread than previously thought but occur at low densities across a landscape in suitable habitat (Rodhouse et al. 2005). Foraging areas are often near of over water but can include open ponderosa pine or meadow areas (Luce and Keinath 2007).

Spotted bat have not been identified on the DNF but they are known to occur near the eastern forest boundary (Rodhouse et al. 2005). There is potential roosting and foraging habitat for the species in the analysis area however the area lacks the sheer cliffs and perennial water often associated with the species. Spotted bat presence in the analysis area is expected to be very infrequent and not likely associated with crucial roosting areas because of the lack of important habitat attributes.

Threats to spotted bats include habitat loss through vegetation management or land conversion, especially actions that reduce available water sources and roost loss or modification. Roost loss or modification may be from actions such as recreational rock climbing, mining or reservoir impoundment (Luce and Keinath 2007).

Direct and Indirect Effects – Spotted Bat – Alternative 1

Suitable spotted bat habitat is expected to remain under this Alternative. Currently available roosts would continue to provide habitat and there are no sheer cliffs that would be modified. Vehicle traffic on existing routes would continue but this is not expected to regularly displace spotted bats because these routes are established and any bats roosting near the road are likely acclimated to the traffic pattern. Implementation of this Alternative would have **no impact** on spotted bat.

Direct and Indirect Effects – Spotted Bat – Alternative 2 and 3

There are no direct or indirect impacts anticipated for spotted bats associated with either of the action Alternatives. The probability of spotted bat occurrence near the proposed routes is very low as there are no sheer cliffs or perennial water sources available within 200 meters of the routes. Any spotted bat use of the area is expected to be incidental and the potential for exposure to vehicle noise is unlikely. Trees removed as part of staging area construction are not considered roosting habitat for this species because of the documented association with caves and sheer cliffs. Implementation of either action Alternative would have **no impact** on spotted bat.

Cumulative Effects – Spotted Bat

Cumulative effects to spotted bat were analyzed at the analysis area scale because it encompasses important activities. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. There are no direct or indirect effects to spotted bat, therefore there would be no cumulative effects expected for the species.

Fringed Myotis

Caves and abandoned mines are suitable maternity and hibernacula for fringed myotis as these sites maintain appropriate humidity and temperature conditions. Large trees, bridges and rock crevices can provide day and night roosts. Seasonal migration patterns for fringed myotis are poorly understood, but short-range migrations are likely based on the species wing shape (Keinath 2004).

Foraging activity typically begins 30 minutes after sunset with suspension of foraging during the middle of the night. There is a brief foraging period prior to sunrise. Wetlands, riparian zones and areas with high insect concentrations provide quality foraging habitat. Fringed myotis are prey generalists and will take a variety of insects (Keinath 2004).

The primary threat to fringed myotis is roost loss through abandoned mine closures and persistent roost disturbance from recreational caving. Several popular sites for recreational caving are within the analysis area and some have seasonal closures (October 1-April 30) to protect wintering bats. There is one fringed myotis observation within the analysis area, but this observation is over three miles from any of the proposed routes.

Direct and Indirect Effects – Fringed Myotis – Alternative 1

Existing habitat for fringed myotis would remain under this Alternative. Existing caves would continue to provide roosting habitat and large trees would still be present. Seasonal closure on the South Ice Cave would continue to protect wintering bats. Potential temporary displacement of individuals is possible as motorized routes are still open but these routes are established and any resident fringed myotis are likely acclimated to the disturbance and avoid road corridors. Implementation of this Alternative would have **no impact** on fringed myotis.

Direct and Indirect Effects – Fringed Myotis – Alternative 2 and 3

Caves that are currently available for fringed myotis would continue to provide roosting habitat for the species and all current closures would remain in effect under these Alternatives. The creation and maintenance of the trail has potential to displace day roosting bats using rock crevices and fissures. Substantial portions of the trail are adjacent to existing open roads so bats in the area may be acclimated to this level of disturbance, but some level of displacement is expected. Tree removal for trail construction would be occasional with a focus on smaller diameter trees that are unlikely to provide roosting habitat. Clearing associated with the staging areas is not expected to remove roosting habitat as the trees are smaller than preferred for the species but it does reduce some foraging area. This removal is not expected to have a detectable impact on bats as they are small compared to the available foraging habitat in the subwatershed. Implementation of either of these Alternatives **may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species** for fringed myotis.

Cumulative Effects – Fringed Myotis

Cumulative effects to fringed myotis were analyzed at the Rim butte project analysis area scale because this scale encompasses important activities. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. The Rim Butte OHV project is not expected to noticeably contribute to cumulative effects to fringed myotis.

Past timber management activities in the Central and Beasel (see Table 5) projects have reduced potential day and night roosting habitat for fringed myotis through tree removal, but snag and green tree replacement direction in the Eastside Screens will maintain the larger roosting structures. Forest reestablishment is beginning since these projects were implemented and some areas are becoming foraging habitat again. Ongoing motorized use in areas with high cave density is likely increasing human visitation to potential bat roosts and possibly reducing bat numbers in the area. This project is expected to have minimal impacts to fringed myotis and is not likely to substantially contribute cumulative impacts to bats in the analysis area.

Lewis' woodpecker

This woodpecker is associated with mature ponderosa pine, riparian cottonwoods, and recently burned areas of any forest type (Able et al. 2004). Recent wildfires provide the necessary snags, perch sites and abundant insects to support nesting. The Lewis' woodpecker is considered a weak excavator and depends on large snags in advanced decay or cavities created by stronger excavators. They are a DNF LRMP MIS as part of the woodpecker group and a focal species for ponderosa pine with patches of burned forest in the East Cascade Landbird Strategy (Altman 2000).

There have been no Lewis' woodpecker observations in the analysis area. Potential habitat exists in small isolated patches so species presence in the area is expected to be infrequent. Recent work completed for a forest-wide MIS analysis estimated 84,978 acres of Lewis' woodpecker habitat on the DNF. This analysis also estimated available habitat by subwatershed and those results are in Table 11 for the analysis area. This table shows available nesting habitat for the entire subwatershed not just the portion within the analysis area. The majority of potential nesting habitat in these subwatersheds is outside of the analysis area boundary.

Table 11 Lewis' Woodpecker Habitat by Subwatersheds in the Analysis Area

Subwatershed (12th Field)	Nesting Habitat Acres	Percentage
The Dome	2,778	8%
China Hat	114	1%
Ooskan Butte	1,966	8%
Surveyors Lava Flow	18	<1%
Green Butte	53	<1%
Paulina Peak South	37	<1%
Ipsoot Butte	10	<1%
Pine Lake	2,458	25%

The analysis are has not had any recent large wildfires. There are three large wildfires (Topso Butte, Red Butte, and Jack in the Box wildfires) that created 1,224 acres of Lewis' woodpecker habitat in the analysis area. These wildfires occurred between 1988-1992 so they are no longer providing quality Lewis' woodpecker habitat due to reduced arthropod availability and snag loss. Considering the age of

wildfires and the distribution of the mapped Lewis' woodpecker nesting habitat in these subwatersheds Lewis' woodpeckers are expected to infrequently occur in the Rim Buttes OHV Jeep Trail Analysis Area.

Direct and Indirect Impacts – Lewis' woodpecker – Alternative 1

No direct or indirect effects are expected for Lewis woodpecker under this Alternative. Current habitat is expected to remain the same as there are no planned activities to remove nesting trees or reduce available habitat. Continued motorized use of existing trails and roads can displace individuals using the immediate area, but these routes are established and any woodpeckers occurring in the area already avoid these routes or are acclimated to the disturbance. Implementation of this Alternative would have **no impact** to Lewis' woodpecker.

Direct and Indirect Impacts– Lewis' woodpecker – Alternative 2 and 3

Potential impacts to Lewis' woodpecker would occur through displacement of nesting or foraging individuals during the construction and use of the proposed routes. The proposed routes for Alternative 2 and 3 do not enter high-quality Lewis' woodpecker habitat (i.e., mature ponderosa pine or recent burns) and potential displacement is expected to be infrequent. Tree removal during trail construction would be occasional and not focus on the removal of large snags unless there is need for safety reasons. Staging area creation would clear small areas of trees but these areas were not identified as Lewis' woodpecker habitat because they lack large snags. Implementation of Alternative 2 or 3 **may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species** for Lewis' woodpecker because of potential displacement of nesting or foraging individuals associated with construction and use of the jeep trail.

Predicted impacts to Lewis' woodpecker are expected to be infrequent and would not result in Forest-wide habitat reductions for the species. Potential tree removal associated with either of the action Alternatives is much less than 1% of the available habitat for Lewis' woodpecker. Implementation of either action Alternative would have no effect on Lewis' woodpecker viability on the Deschutes National Forest.

Cumulative Effects – Lewis' woodpecker

Cumulative effects to Lewis' woodpecker were analyzed at the subwatershed scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Previous vegetation management in the analysis area has reduced some Lewis woodpecker habitat but about 30% of the analysis area is in the Ponderosa Pine-Dry PAG and vegetation management activities that promote older ponderosa pine stands would eventually benefit Lewis' woodpecker as these stands become mature. Over time the previous large fires in the analysis area will no longer provide Lewis' woodpecker habitat and without large fires this habitat type will no longer be available. Since the potential impacts to Lewis' woodpecker are predicted to be limited based on the potential impacts of the project and lack of habitat in the area the project would not substantially contribute to cumulative impacts in the area.

White-headed woodpecker

This woodpecker is often associated with old-growth ponderosa pine habitats. Dixon (1995) found white-headed woodpecker densities increased in older ponderosa pine trees and showed a positive association with large ponderosa pine. Other studies have documented white-headed woodpeckers in younger ponderosa pine stands with remnant large diameter ponderosa pine present (Kozma 2011). The mean

diameter of all ponderosa pine trees was 12.9” dbh and ranged from 10-19.7” dbh in nest stands while the mean snag diameter in nest stands was 10” dbh and ranged from 6-12” dbh (Kozma 2011).

White-headed woodpeckers nest in ponderosa pine trees or snags (Dixon 1995, Kozma 2011). Other tree species can be used for nesting and include both live and dead aspen, grand fir, Douglas-fir, sugar pine, and ponderosa and lodgepole pine stumps (Dixon 1995). Most nests are found in snags and nest tree diameter is generally greater than snags in the vicinity (Dixon 1995).

There are no white-headed woodpecker observations in the analysis area but there are several adjacent to the boundary. Potential white-headed woodpecker nesting habitat was estimated for the DNF at 198,330 acres but not all of these acres would support nesting because few snags are currently available. There is potential white-headed woodpecker habitat within the analysis area but it is generally small isolated patches. The combination of potential habitat and documented individuals near the boundary indicates presence within the analysis area. While presence is assumed the small amount of habitat suggests the species is infrequently observed in the analysis area.

Direct and Indirect Effects – White-headed woodpecker – Alternative 1

White-headed woodpecker habitat would remain the same as currently available under this Alternative. Continued use of motorized routes may displace individuals but these routes are established and any birds nesting in the area likely acclimated to this level of disturbance and are expected to avoid the area. Implementation of this Alternative would have **no impact** to white-headed woodpecker.

Direct and Indirect Effects – White-headed woodpecker – Alternative 2 and 3

Implementation of either action Alternative has potential displace individual woodpeckers during construction and maintenance of the trail. For Alternative 3 the road effect area that would occur in the ponderosa pine dry PAG is 1109 acres while in Alternative 3 it is 574 acres. Displacement of foraging individuals is most likely because there is little potential nesting habitat for the species in the road effect zone. Potential habitat is clustered in the north end of the proposed route for Alternative 3 within the road effect area but not in the trail alignment. Implementation of either Alternative **may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species.**

Cumulative Effects – White-headed woodpecker

Cumulative effects to white-headed woodpecker were analyzed at the subwatershed scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. Since the potential impacts to white-headed woodpecker are predicted to be limited based on the potential impacts of the project and lack of habitat in the area, the project would not substantially contribute to cumulative effects in the analysis area.

Previous vegetation management in the analysis area temporarily reduced some white-headed woodpecker habitat but about 30% of the analysis area is in the Ponderosa Pine-Dry PAG and vegetation management activities that promote older ponderosa pine stands would benefit this species as these stands mature.

Continued use of motorized routes is not expected to contribute cumulative effects but if the Lava Rock OHV trail project gets implemented there would be potential habitat loss through the construction, maintenance and use of the trails. Potential habitat loss from this activity is difficult to quantify because of the high degree of uncertainty regarding implementation timing.

Effects Determination Comparison by Alternative

The following Table 12 summarizes effects determinations for USDA Forest Service Pacific Northwest Region Sensitive Species by Alternatives. Effects determinations for the action Alternatives are the same but predicted impacts under Alternative 3 are expected to be less than Alternative 2 because the proposed route is shorter and would have less road effect area than Alternative 2.

Table 12 Effects Determinations by Alternative

Species	Alternative 1	Alternative 2	Alternative 3
Townsend's big-eared bat	NI[1]	MAIINL[2]	MAIINL
Pallid bat	NI	MAIINL	MAIINL
Spotted bat	NI	NI	NI
Fringed myotis	NI	MAIINL	MAIINL
Lewis' woodpecker	NI	MAIINL	MAIINL
White-headed woodpecker	IN	MAIINL	MAIINL

1 –NI = No impact, 2-MAIINL = may adversely impact individuals or habitat, but not likely to contribute a trend toward federal listing or loss of viability to the population or species.

3.3.6 Management Indicator Species (MIS)

Management indicator species (MIS) are identified in the DNF LRMP (USDA FS 1990). Several species are listed as groups, e.g.-waterfowl and woodpeckers, and individual species are described in this document.

Several species previously analyzed are also MIS for the DNF. These include northern spotted owl, North American wolverine, Townsend's big-eared bat, Lewis' woodpecker, and white-headed woodpecker. No effects were predicted for the northern spotted owl and North American wolverine so any Alternative selected would not affect the viability of these species. Only minor impacts were predicted for the Townsend's big-eared bat, Lewis' woodpecker and white-headed woodpecker and the potential habitat with reduced quality is far less than 1% of the available habitat on the DNF so the action Alternatives would have a slight negative trend for viability but the continued presence of these species on the Forest is expected.

Table 13 Deschutes National Forest Management Indicator Species

Species	Status (S)	Habitat	Analysis Area
Northern goshawk	S3 Vulnerable	Mature old-growth forests with high canopy closure and large trees.	Historic nests in the analysis area.
Cooper's hawk	S4 Apparently secure	Mature forests with high canopy closures and tree density.	Historic nests in the analysis area.
Sharp-shinned hawk	S4 Apparently secure	Mature forests with high canopy closures and tree density.	Potential habitat in the analysis area but no documented nest.
Great gray owl	S3 Vulnerable	Mature and old-growth forests near openings or meadows.	No potential habitat in the analysis area.
Great blue heron	S4 Apparently secure	Riparian edges near lakes, streams or marshes.	No potential habitat in the analysis area.

Species	Status (S)	Habitat	Analysis Area
Golden eagle	S4 Apparently secure	Large open areas with cliffs or rock outcrops.	No potential habitat in the analysis area.
Red-tailed hawk	S5 Secure	Large snags and open country interspersed with forest.	Potential to occur and historic nest in the analysis area.
Osprey	S4 Apparently secure	Large snags associated with fish bearing water bodies.	No potential habitat in the analysis area.
American marten	S3 Vulnerable	Mixed conifer or high elevation late-successional forests with abundant down woody material.	Potential to occur
Elk	S5 Secure	Mixed habitats.	Potential to occur
Mule deer	S5 Secure	Mixed habitats.	Potential to occur
Snags/down wood		Snags and down woody material.	
Waterfowl Species			
Common loon	SHB Possibly extirpated breeding S5N Secure non-breeding	Edges of remote freshwater ponds and lakes.	No potential habitat in the analysis area.
Pied-billed grebe	S5 Secure	Open freshwater edges near lakes, ponds, slow rivers and marshes.	No potential habitat in the analysis area.
Horned grebe	S2B Imperiled breeding, S5N Secure non-breeding	Open water with emergent vegetation.	No potential habitat in the analysis area.
Red-necked grebe	S1B Critically imperiled breeding S4N Secure non-breeding	Lakes and ponds in forested areas.	No potential habitat in the analysis area.
Eared grebe	S4 Apparently secure	Open water with emergent vegetation.	No potential habitat in the analysis area.
Western grebe	S3B Vulnerable breeding S2S3N Imperiled/vulnerable nonbreeding	Open water marshes with emergent vegetation.	No potential habitat in the analysis area.
Canada goose	S5 Secure	Lakeshore, rivers and reservoirs especially with cattail and bulrush	No potential habitat in the analysis area.
Wood duck	S4 Apparently secure	Cavity nester near perennial water bodies.	No potential habitat in the analysis area.
Gadwall	S5 Secure	Concealed clumps of grasses in meadows and tall grasslands.	No potential habitat in the analysis area.
American widgeon	S5 Secure	Clumps of grasses in meadows or tall grasslands.	No potential habitat in the analysis area.
Mallard	S5 Secure	Open water with emergent vegetation	No potential habitat in the analysis area.
Blue-winged teal	S4 Apparently secure	Marshes, lakes, ponds or slow moving streams.	No potential habitat in the analysis area.
Cinnamon teal	S5 Secure	Shoreline vegetation.	No potential habitat in the analysis area.

Species	Status (S)	Habitat	Analysis Area
Northern shoveler	S5 Secure	Grassy areas near freshwater.	No potential habitat in the analysis area.
Northern pintail	S5 Secure	Open areas near water.	No potential habitat in the analysis area.
Green-winged teal	S5 Secure	Freshwater marshes with emergent vegetation.	No potential habitat in the analysis area.
Canvasback	S4 Apparently secure	Emergent vegetation.	No potential habitat in the analysis area.
Redhead	S4 Apparently secure	Freshwater marshes with emergent vegetation.	No potential habitat in the analysis area.
Ring-necked duck	S3 Vulnerable	Thick emergent vegetation near shorelines.	No potential habitat in the analysis area.
Lesser scaup	S3B Vulnerable breeding S4N Secure non-breeding	Dry grassy areas near lakes at least 10 feet deep.	No potential habitat in the analysis area.
Harlequin duck	S2B Imperiled breeding S3N Vulnerable non-breeding		No potential habitat in the analysis area.
Common goldeneye	S4 Apparently secure	Cavity nester.	No potential habitat in the analysis area.
Barrow's goldeneye	S3B Vulnerable breeding S3N Vulnerable non-breeding	Cavity nester.	No potential habitat in the analysis area.
Hooded merganser	S4 Apparently secure	Cavity nester.	No potential habitat in the analysis area.
Common merganser	S4 Apparently secure	Cavity nester.	No potential habitat in the analysis area.
Ruddy duck	S4 Apparently secure	Freshwater marshes, lakes, ponds with dense vegetation.	No potential habitat in the analysis area.
Woodpecker Species			
Williamson's sapsucker	S4B Apparently secure breeding S3N Vulnerable non-breeding	Mature or old-growth conifer forests with open canopy cover.	No potential habitat in the analysis area.
Red-naped sapsucker	S4 Apparently secure	Riparian hardwood forest.	No potential habitat in the analysis area.
Downy woodpecker	S4 Apparently secure	Riparian hardwood forest.	No potential habitat in the analysis area.
Hairy woodpecker	S4 Apparently secure	Mixed conifer and ponderosa pine forests.	Potential to occur.
Three-toed woodpecker	S3 Vulnerable	High elevation and lodgepole pine forests.	Potential to occur.
Black-backed woodpecker	S3 Vulnerable	Lodgepole pine forests, burned areas.	Potential to occur
White-headed woodpecker	S2S3 Imperiled/Vulnerable	Mature ponderosa pine	Potential habitat in the analysis area but no observations.
Northern flicker	S5 Secure	Variety of forest types.	Likely to occur

Species	Status (S)	Habitat	Analysis Area
Pileated woodpecker	S4 Apparently secure	Mature to old-growth mixed conifer forest.	No potential habitat in the analysis area.

All MIS: rankings were determined from the NatureServe database for the state of Oregon: S1= critically imperiled, S2 = imperiled, S3 = vulnerable, S4 = apparently secure, S5 = secure

Notes for waterfowl species: Habitat descriptions from Marshall et al. 2006, Bellrose 1916, and Csuti et al. 2001; **B**= breeding on the DNF, **N**= Non Breeding, **H**= possibly extirpated

All MIS were evaluated for potential presence in the rationale for species not considered in detail

- **Great gray owl** habitat is mature forest adjacent to meadow areas which is not available in the analysis area.
- **Great blue heron** are found near perennial lakes and streams which do not occur in the analysis area.
- **Golden eagles** occupy open areas with scattered trees and cliffs which do not occur in the analysis area.
- **Osprey** are closely associated with large water bodies which are absent in the analysis area.
- **Waterfowl** all species listed as MIS are closely associated with perennial waterbodies which are absent in the analysis area.
- **Red-naped sapsucker** and **downy woodpecker** are associated with riparian areas which do not occur in the analysis area.
- **Pileated woodpeckers** are found in mature to old growth mixed conifer stands with high snag density which is not available in the analysis area.

Northern goshawk

Goshawks use large landscapes incorporating multiple spatial scales to meet their life requirements (Squires and Kennedy 2006). At least three scales are recognized during the breeding season: (1) a nest area, composed of one or more forest stands or alternate nests; (2) a post fledging area around the nest used by adults and young from the time of fledging, when the young are still dependent on the adults for food; (3) and a foraging area that comprises the breeding pair's entire home range. Goshawk nest areas are unique in structure, with large trees, dense canopies, and high canopy closure. Nesting habitat encompasses approximately 200 acres surrounded by approximately 75 acres in stem exclusion or understory re-initiation with high canopy closure. The outlying 125 acre area should contain a mix of forest structure with significant areas of open canopy mixed with more closed forest.

Numerous authors have described the size of the post fledging areas. These range from 296-593 acres. This area is potentially important to the persistence of goshawk populations, as it provides fledgling hiding cover and foraging opportunities as fledglings learn to hunt and may correspond to the area defended by the breeding pair. Foraging areas are typically 4,900 acres -5,900 acres of forest mosaic that support a wide range of suitable prey. Foraging areas are usually more open than nesting areas, but should contain large trees, snags, down logs, vegetative layering, and other structural elements important to prey species.

The following are identified potential threats to goshawk habitat and persistence:

- Timber harvest is the principal threat to breeding goshawk populations due to their reliance on mature and old-growth timber, especially for nesting, although not exclusively.
- Fire suppression may lead to increased susceptibility of stand-replacing fire and insect and disease outbreaks, which can result in the deterioration or loss of nesting habitat.
- Loss of foraging habitat due to dense conifer understory as a result of fire suppression. Dense understories may obstruct flight corridors used by goshawks to hunt prey.
- Disturbance due to logging activities conducted near nests during the incubation and nestling periods can cause nest failure due to abandonment.
- High road densities may result in loss of snag and down wood habitat important to goshawk prey.

Forest-wide northern goshawk nesting habitat was modeled using all PAG except juniper, mountain hemlock, and vegetation at higher elevations; dense stands and all seral stages were included. The minimum diameter structure was defined as 10 inches except in lodgepole pine where the minimum diameter was set at 5 inches. Lower diameter limits were used because the region-wide vegetation database quantifies average diameter of the majority of species even though the stand may have sufficient large trees within that meet the needs for nesting. This may over estimate nesting habitat in lodgepole stands, as lodgepole plantations would meet this definition and not have any large trees mixed in. There are 446,402 acres of potentially suitable goshawk habitat on the DNF.

Goshawk habitat exists in the Rim Butte OHV Jeep Trail Analysis Area but in smaller patches over the entire area. There are four historic nests in the analysis area but none are within ½ mile of the road effect area for the proposed routes. Seventeen observations of northern goshawk have been documented in the analysis area with three observations in the road effect area.

Northern Goshawk Resource Protection Measure

Do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during March1 – August 31 (WL-11)

Immediately coordinate with district wildlife biologist if any of these accipiter species is detected during project activities.

Direct and Indirect Effects – Northern goshawk – Alternative 1

Existing roads and trails through the analysis area are likely displacing individual goshawks based on documented presence within the road effect area. There are several nests adjacent to existing Maintenance Level 2 roads indicating that these birds are currently exposed to low traffic levels and possibly acclimated to vehicle presence. Implementation of this Alternative would not affect the viability of northern goshawk on the Forest because there would be no new disturbance that could impact the species. Since there would be no habitat reduction under this Alternative there would be no affect to northern goshawk viability on the Deschutes National Forest.

Direct and Indirect Effects – Northern goshawk – Alternative 2

Mapped goshawk nesting habitat occurs within the potential road effect area and is associated with nearby buttes. The described level of tree removal would not convert any currently available nesting habitat to an unsuitable condition but could displace resident individuals if activities occur during foraging or early in the nesting season when the species can be sensitive to disturbance. The proposed route does increase the road effect area into modeled goshawk habitat that was outside of road influence in the baseline. This would reduce goshawk habitat quality in these patches by introducing a new disturbance.

This project would affect much less than 1% of the predicted northern goshawk nesting habitat on the Deschutes National Forest. The potential disturbance associated with construction, use and maintenance of the proposed route would cause a slight downward trend for northern goshawk on the Deschutes National Forest but the species would remain viable across the planning unit.

Direct and Indirect Effects – Northern goshawk – Alternative 3

Mapped nesting habitat occurs near the proposed route but there is much less when compared to Alternative 2 due to the smaller road effect area associated with Alternative 3. The existing nesting habitat is concentrated around the northern end of the route and on the east side. The proposed route would not increase the road effect area in mapped northern goshawk habitat above the current level of disturbance associated with existing roads.

Some trees could be removed during trail construction but this would not move any currently suitable nesting area into an unsuitable condition. Proposed staging areas are not in mapped northern goshawk nesting habitat and there are no known nests within ½ mile of these locations.

There is potential that the construction, use and maintenance of the trail could displace goshawks in the area but route placement results in a negligible increase in the baseline road effect area.

Implementation of this Alternative would result in a slight negative trend in viability for the northern goshawk but the species would remain viable across the planning unit. When compared to Alternative 2 the potential impacts to northern goshawk are reduced under this Alternative due to the smaller road effect area and shorter route.

Cumulative Effects – Northern goshawk

Cumulative effects to northern goshawk were analyzed at the subwatershed scale because activities happen at this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Past vegetation management that reduced or modified goshawk nesting habitat were accounted for during the forest wide mapping effort and are part of the existing baseline habitat model. Current vegetation management activities are not expected to impact northern goshawk as precommercial thinning would not reduce habitat for this species. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.

Northern goshawks within the East Fort Rock OHV area are likely acclimated to the use of designated motorized travel routes. There are six known goshawk nests identified in the East Fort Rock OHV Area and one designated post fledging area. Northern goshawks in the East Fort Rock OHV Area already avoid existing motorized routes or have become acclimated to some level of disturbance.

A large portion of the Lava Rock OHV Trail System project area overlaps with the Ogden and Rocket analysis areas. These areas have been surveyed for the presence of northern goshawk for the past two years as a part of vegetation management activities. Identified nests in these project areas have existing protections on them. As proposed the Lava Rock OHV Trail system would increase available motorized trails in potential northern goshawk habitat. There is one identified goshawk nest near a proposed trail in the Lava Rock OHV Trail area and mapped nesting habitat occurs throughout that project area. The construction, maintenance and use of these trails has potential to displace foraging or nesting goshawks in that project area. It is difficult to quantify the potential disturbance to goshawks associated with the Lava Rock OHV Trail system because of the uncertainty about implementation. When that project goes forward DNF LRMP standards and guidelines provide nest site protection so eventual impacts are expected to be displacement of foraging individuals.

Potential cumulative effects to northern goshawk are primarily from past vegetation management and continued use of motorized trails. Past vegetation management activities have included in the Deschutes National Forest nesting habitat model and the continued use of motorized trails is expected to infrequently displace foraging individuals. The combined cumulative effects of activities considered are not expected to have noticeable impacts to northern goshawks across the analysis area.

Cooper's Hawk

Cooper's hawk were selected as a terrestrial MIS for the DNF for providing stand diversity and retention of small blocks of 50–80 year old black bark pine stands and mixed conifer stands.

Cooper's hawk nest sites varied from pure stands of ponderosa pine at lower elevations, to mixed stands of ponderosa pine and white fir at mid-elevations, to mixed and pure stands of white fir and lodgepole pine at high elevations. Stands of all age classes in each timber type were represented, however the most common type was mature ponderosa pine overstory with mixed understory of ponderosa pine and white fir. Nests were built in trees with high crown volume, utilizing mistletoe for nest structures.

Cooper's hawk nesting habitat was modeled using all PAGs, except juniper, and mountain hemlock and vegetation at higher elevations. All seral stages and dense stands with minimum structure of 10" dbh were used, except in lodgepole pine where the minimum diameter was 5 inches. The maximum dbh used was 20". Hardwood stands where the canopy cover was greater than 50% was included in the model. Based on this habitat modeling there are 275,340 acres of potential Cooper's hawk nesting habitat on the Deschutes National Forest.

The analysis area has five Cooper's hawk nests that have been identified. Nesting habitat as described above is available in the analysis area but is in small patches that are irregularly distributed. One historic nest is identified within the road effects area for Alternative 2 and no other nests are known within ½ mile of the proposed routes.

The primary threat to Cooper's hawk is habitat alteration and/or destruction which can reduce nest site availability and limit population growth. Habitat loss can also decrease prey abundance and availability.

Cooper's Hawk Resource Protection Measure

Do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during April 15 – August 31 (WL-19).

Direct and Indirect Effects – Cooper's Hawk – Alternative 1

Under this Alternative the existing habitat for Cooper's hawk would remain the same. Nests in the analysis area would continue to experience some level of disturbance from current motorized use of existing routes. These routes are established Maintenance Level 2 roads that are open to the public. Where Cooper's hawks are nesting near the road they are assumed to be acclimated to some level of motorized vehicle presence. While Maintenance Level 2 roads are open to the public they generally require high-clearance vehicles and traffic is not consistent. This Alternative would not affect the viability of Cooper's hawk on the DNF.

Direct and Indirect Effects – Cooper's Hawk – Alternative 2

Construction, use and maintenance of the trail could displace foraging or nesting Cooper's hawk. Staging area clearing can reduce some foraging opportunities for Cooper's hawk but the proposed locations are not in modeled nesting habitat. There are multiple historic Cooper's hawk nests near the proposed routes so potential displacement is expected.

Implementation of this Alternative would have a slight negative trend for Cooper's hawk viability on the DNF, but the species is expected to remain viable on the Deschutes National Forest.

Direct and Indirect Effects – Cooper's Hawk – Alternative 3

There are patches of mapped Cooper's hawk nesting habitat in the road effect area and some is close to the proposed route. No mapped habitat is in the staging areas locations so clearing of these areas is not expected to affect nesting individuals.

Implementation of this Alternative would have a slight negative trend for Cooper's hawk viability on the DNF, but the species is expected to remain viable on the Deschutes National Forest.

The disturbance type for Cooper's hawk is the same for this Alternative as Alterative 2, but the level of disturbance is expected to be far less under Alternative 3. This is due to the reduced amount of potential nesting habitat and the lack of documented nests near the route.

Cumulative Effects – Cooper's Hawk

Cumulative effects to Cooper's hawk were considered at the subwatershed scale because activities happen at this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Past vegetation management that reduced or modified Copper's hawk nesting habitat were accounted for during the forest wide mapping effort and are part of the existing baseline habitat model. Current vegetation management activities are expected to improve Cooper's hawk habitat as precommercial thinning would move currently unsuitable habitat to a potential nesting habitat. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.Cooper's hawks within the East Fort Rock OHV Area are likely acclimated to the use of designated routes. There are two Cooper's hawk nests identified in the East Fort Rock OHV Area outside of the Rim Buttes OHV Jeep Trail Analysis Area. Identified Cooper's hawk nests in the East Fort Rock OHV Area are near designated routes and are assumed to be acclimated to some level of disturbance. The Lava Rock OHV Trail system would increase available motorized trails in potential Cooper's hawk habitat. There are two Cooper's hawk nests identified in the Lava Rock OHV Trail project area and they are close to originally proposed routes. The construction, maintenance and use of these trails would likely displace Cooper's hawk in the project area. It is difficult to quantify the potential disturbance associated with the Lava Rock OHV Trail system because of the uncertainty about implementation. When that project goes forward DNF LRMP standards and guidelines provide nest site protection so eventual impacts are expected to be displacement of foraging individuals.

Potential cumulative effects to Cooper's hawk are primarily from past vegetation management and continued use of motorized trails. Past vegetation management activities have included in the Deschutes National Forest nesting habitat model and the continued use of motorized trails is expected to infrequently displace foraging individuals. The combined cumulative effects of activities considered are not expected to have noticeable impacts to Cooper's hawk across the analysis area.

Sharp-shinned Hawk

Sharp-shinned hawk nest sites are characterized as dense, conifer stands, with dense over stories and sparse understories (most nests were in young (25-50 years) even-aged conifer stands with single-layered canopies). The growth form of trees may be the most reliable parameter by which to characterize nest sites of sharp-shinned hawks. The vegetation at nest sites is usually in the early

successional stages and extremely dense. Nest stands are dominated by trees 7.5 – 37.5 cm (3-15 inches) DBH and average 2,286 trees/ha (926 trees/ac).

The tree species composition varies from pure stands of ponderosa pine at lower elevations, to mixed stands of ponderosa pine and white fir at mid-elevations, to mixed and pure stands of white fir and lodgepole pine at high elevations. Stands of all age classes in each timber type are represented, however the most common type is mature ponderosa pine overstory with mixed understory of ponderosa pine and white fir.

Two forms of habitat loss include development and timber harvest. A less apparent form of habitat loss to sharp-shinned hawks is caused by the growth of forests beyond the early seral stages. Sharp-shinned hawks nest in habitats with specific structure. This specificity makes them susceptible to changes in forest stands brought about by timber harvest. It should be noted though that impacts of timber harvest to sharp-shinned hawks will be unique from site to site depending on the structure of the forest at the time of harvest, the form and intensity of harvest, and the temporal perspective.

Forest-wide sharp-shinned hawk nesting habitat was modeled using white fir, grand fir, Douglas-fir lodgepole pine and ponderosa pine PAG. This included dense canopy with trees at a minimum 5-inch dbh, structure classes 3, 4, and 5 with a 20-inch dbh maximum. The resulting layer was updated by removing stand replacement fire and recent management activities within the last 5 years. The acres of suitable habitat were calculated at the subwatershed level. This effort estimated 486,138 acre of potential sharp-shinned hawk nesting habitat on the DNF. Mapped sharp-shinned hawk nesting habitat in the Rim Butte Analysis Area is located on the eastern portion of the area within the East Fort Rock OHV area. There are no identified sharp-shinned hawk nests in the analysis area.

Sharp-shinned Hawk Resource Protection Measure

Do not conduct disturbing activities (tree removal, grubbing, blasting, etc.) within ¼ mile and/or line of sight from any **active** nest of the following species during April 15–August 31 (WL-28). Immediately coordinate with district wildlife biologist if any of these accipiter species is detected during project activities.

Direct and Indirect Effects – Sharp-shinned Hawk – Alternative 1

There are no anticipated direct or indirect impacts to sharp-shinned hawk under this Alternative. There is no action that would remove or modify potential habitat. Ongoing use of the roads and trails in the analysis area may result in incidental displacement but these routes are established and sharp-shinned hawks in the areas are likely acclimated to this disturbance or already avoid these routes. Implementation of this Alternative would not affect species viability for the sharp-shinned hawk on the DNF.

Direct and Indirect Effects – Sharp-shinned Hawk – Alternative 2

The majority of mapped sharp-shinned hawk nesting habitat in the analysis area is not within the road effect area for this Alternative. Individuals foraging in the area might be temporarily displaced during trail construction, use and maintenance but since so much of the proposed route is on existing roads a baseline disturbance exists. The increased road effect area does not occur in areas mapped as sharp-shinned hawk nesting habitat.

Staging area locations are not in areas mapped as sharp-shinned hawk nesting habitat so potential impact would be limited to foraging individuals. Since the potential impacts are not expected to be extensive implementation of this Alternative would have a slight negative trend for sharp-shinned hawk viability on the DNF but the species would remain viable on the planning unit.

Direct and Indirect Effects – Sharp-shinned Hawk – Alternative 3

The potential impacts to sharp-shinned hawk are the same under the this Alternative but since more of this route is in areas predicted to support nesting sharp-shinned hawks so there is increased potential for nesting individuals to be disturbed during trail construction, use and maintenance. Since the potential impacts are not expected to be extensive implementation of this Alternative would have a slight negative trend for sharp-shinned hawk viability on the DNF but the species would remain viable on the planning unit.

Cumulative Effects – Sharp-shinned Hawk

Cumulative effects to sharp-shinned hawks were considered at the subwatershed scale because relevant activities happen at this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Past vegetation management that reduced or modified sharp-shinned hawk nesting habitat were accounted for during the forest wide mapping effort and are part of the existing habitat model. Current vegetation management activities may reduce potential sharp-shinned hawk habitat through the removal of smaller diameter trees that create dense stand conditions for this species. The extent of habitat loss is not expected to dramatically reduce sharp-shinned hawk nesting habitat as there is suitable habitat throughout these subwatersheds. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.

Sharp-shinned hawks within the East Fort Rock OHV Area are likely acclimated to the use of designated routes. Potential sharp-shinned hawk nesting habitat occurs throughout the East Fort Rock OHV area but larger patches occur on the southern portion. Resident hawks in the East Fort Rock OHV Area already avoid existing motorized routes or have become acclimated to some level of disturbance. The Lava Rock OHV Trail system would increase available motorized trails in potential sharp-shinned hawk habitat. The construction, maintenance and use of these trails would likely displace foraging or nesting sharp-shinned hawks in that project area. It is difficult to quantify the potential disturbance associated with the Lava Rock OHV Trail system because of the uncertainty about implementation. When that project goes forward DNF LRMP standards and guidelines provide nest site protection so eventual impacts are expected to be displacement of foraging individuals.

Potential cumulative effects to sharp-shinned hawk are primarily from past vegetation management and continued use of motorized trails. Past vegetation management activities have included in the Deschutes National Forest nesting habitat model and the continued use of motorized trails is expected to infrequently displace foraging individuals. The combined cumulative effects of activities considered are not expected to have noticeable impacts to sharp-shinned hawk across the analysis area.

Red-tailed Hawk

The DNF LRMP identified red-tailed hawk as a terrestrial MIS for large trees in mixed structural habitat. Red-tailed hawks generally nest in the largest, tallest tree available that provides unobstructed views within their territory. They inhabit a variety of forested to open land ecosystems and elevations from alpine down to desert ecosystems. Tundra and dense forests ecosystems are avoided.

Preferred habitats are open to semi-open coniferous, deciduous and mixed forests, forest edges, grasslands, parklands, rangelands, river bottomlands, and agricultural fields with scattered trees. Forest clearings, alpine meadows, estuaries, marshes, agricultural lands, clear cuts, sagebrush plains, and high elevation environments are also used, though less commonly. Nesting occurs in large mature trees, usually at a forest edge or near an opening in canopy.

Limiting factors in preferred habitat selection are availability of suitable perches and hunting grounds open enough to locate and catch ground prey. Perches can be any object that provides an unobstructed view of a red-tailed hawk territory. These objects are usually high and can be natural, e.g. tree, snag, cliff, rock, or man-made, e.g. utility pole, tower, fence. The perches were used for foraging, roosting, resting, mating, and defending territory.

The Deschutes National Forest estimated red-tailed hawk nesting habitat as all forest types with tree diameters 15 inches and greater in seral stages 5-7, with open canopy cover. Modeling also included dense canopy cover in ponderosa pine and mixed-conifer forest types. This resulted in an estimated 192,492 acres of potential red-tailed hawk nesting habitat on the forest.

There are three red-tailed hawk nests in the analysis area but they are over one mile from any proposed route. Potential habitat exists for the species on the eastern edge of the analysis area.

Direct and Indirect Effects – Red-tailed hawk – Alternative 1

There are no potential direct or indirect effects to red-tailed hawk under this Alternative. No habitat would be modified or nests disturbed. Implementation of this Alternative would not affect species viability on the Deschutes National Forest.

Direct and Indirect Effects – Red-tailed hawk – Alternative 2

Nesting habitat for red-tailed hawk is not abundant in the road effect area for this Alternative. Any species occurrences are expected to be infrequent as the nearest nests are over a mile away. The construction of this route has potential to displace foraging individuals but is not expected to disturb nesting hawks because of the lack of habitat. Implementation of this Alternative would have a slight negative trend for viability on the DNF but species viability across the planning unit would remain.

Direct and Indirect Effects – Red-tailed hawk – Alternative 3

This Alternative would have similar impacts to red-tailed hawk as Alternative 2 but since the proposed route is substantially shorter the overall impacts are expected to be reduced. There is still potential for individuals foraging in the area to be displaced. This species does not appear to be very sensitive when foraging based on their utilization of highways and other major roads. Implementation of this Alternative would have a slight negative trend for viability on the DNF but species viability across the planning unit would remain.

Cumulative Effects – Red-tailed hawk

Cumulative effects to Red-tailed hawk were considered at the subwatershed scale because activities happen at this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Past vegetation management that reduced or modified red-tailed hawk nesting habitat were accounted for during the forest wide mapping effort and are part of the existing baseline habitat model. Current vegetation management activities are expected to improve red-tailed hawk habitat over the long-term as precommercial thinning would move currently unsuitable habitat toward potential nesting habitat. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.

Red-tailed hawks within the East Fort Rock OHV Area are likely acclimated to the use of designated routes. There are seven red-tailed hawk nests in the East Fort Rock OHV Area. Red-tailed hawks in the East Fort Rock OHV Area already avoid existing motorized routes or have become acclimated to some level of disturbance. This species is known to tolerate moderate to high levels of human presence. The Lava Rock OHV Trail system would increase available motorized trails in potential red-tailed hawk habitat. There are five known red-tailed hawk nests in the Lava Rock OHV Trail project area and several of these are near proposed routes. The construction, maintenance and use of these trails would likely displace foraging or nesting red-tailed hawks in that project area. It is difficult to quantify the potential disturbance to Cooper's hawk associated with the Lava Rock OHV Trail system because of the uncertainty about implementation. When that project goes forward DNF LRMP standards and guidelines provide nest site protection so eventual impacts are expected to be displacement of foraging individuals.

Potential cumulative effects to red-tailed hawks are primarily from past vegetation management and continued use of motorized trails. Past vegetation management activities have included in the Deschutes National Forest nesting habitat model and the continued use of motorized trails is expected to infrequently displace foraging individuals. The combined cumulative effects of activities considered are not expected to have noticeable impacts to red-tailed hawks across the analysis area.

Elk

Rocky Mountain elk were chosen as a terrestrial MIS in the DNF LRMP for its socio-economic importance to the hunting community in Central Oregon. Elk management objectives were developed with the Oregon Department of Fish and Wildlife. Objectives for both summer and winter populations are identified with annual monitoring conducted by ODFW to determine the annual huntable population. Eleven key elk habitat areas totaling 59,825 acres are identified in the DNF LRMP and management in these areas would provide habitat conditions needed to support a minimum of 1,500 summer elk and 340 wintering elk.

Elk can be negatively affected by vegetation management activities that reduce hiding and thermal cover. Hiding cover provides security for elk from disturbance (e.g., motorized vehicles, hikers and other recreationists) and predators. Elk avoid areas with high road density when roads remain open for use but may use roads as travel corridors if areas are closed (Rowland et al. 2000). High road density can increase illegal harvest as access to elk populations increase. Winter range is an important habitat type for elk and the availability of this habitat type can be affected by housing development, overgrazing and forage quality decrease.

The Rim Butte OHV Jeep Trail Analysis Area has 254 miles of open roads and 124 miles of administratively closed roads (Table 14). Administratively closed roads are not open to the public but can be used for official activities. Some of these roads were closed as part of the Central EA (see Table 5 for more information on past, present, and reasonably foreseeable future actions) and more effective closures would improve habitat conditions for elk but for analysis purposes Maintenance Level 1 roads are considered closed and improving the effectiveness of the closure would not change road densities in the analysis area. Since the action Alternatives propose motorized trails these routes would not change the road density in the analysis area, but would increase the motorized trail density in the analysis area. Large portions of the proposed routes are near existing Maintenance Level 2 roads which can consolidate existing disturbance.

Table 14 Miles of Road in the Analysis Area

Maintenance Level	Miles
1 (Closed)	124
2 (High Clearance Vehicles Allowed)	231
3 (Passenger Car Allowed)	9
4 (Passenger Car Accepted)	14
5 (Passenger Car Encouraged)	0

There are approximately 44 miles of designated Class I and Class II motorized trail in the East Fort Rock OHV area in the analysis area but OHV can use Maintenance Level 2 roads as trails outside of the OHV area. Current motorized trail density in the analysis area is 0.46 mi/mi^2.

The Rim Buttes OHV Jeep Trail analysis area is considered summer and transition range for elk. There is no identified winter range for this species in the analysis area.

Rowland et al. (2005) found elk avoided heavily traveled roads. Wisdom et al. (2005) found elk were generally farther from roads with traffic rates as low as $\geq$1 vehicle/12 hours during day and nighttime hours. Another study conducted by Wisdom et al. (2005) on the effects of off-road recreation on mule deer and elk, showed elk had greater flight probabilities and movement rates for all four off-road activities measured (ATV, mountain biking, horseback riding, and hiking) compared to no human activity. Elk reactions were more pronounced during the ATV and mountain biking activities than to horseback riding and hiking. Lyon (1979) reported the area of avoidance for elk is generally ¼ to ½ mile from a road depending on the amount of traffic, road quality, and density of cover near roads.

Rowland et al. (2005) reported the primary effect of roads on elk was habitat fragmentation. There are fewer patches of cover large enough to function effectively (Rowland et al. 2000). This study (Rowland et al. 2004) also documented three main direct impacts on elk. They are as follows:

- Elk avoid areas near roads.
- Elk vulnerability to mortality from hunter harvest, both legal and illegal, increases as open road density increases.
- In areas of high road densities, elk exhibit higher stress levels (Rowland et al. 2005) and energetic costs of moving away from roads may be substantial (Cole et al. 1997).

Direct and Indirect Effects – Elk – Alternative 1

Continued use of the designated roads and trails in the analysis area would cause elk to avoid areas near the road. The existing roads can facilitate illegal harvest of elk by increasing access by the public and reducing the security area size for elk in the area. There are no Key Elk Areas or sensitive habitat such as winter range in the analysis area. This area is not considered a heavily used area for elk and potential impacts are expected to be infrequent. Implementation of this Alternative would not affect the viability of elk on the Deschutes National Forest.

Direct and Indirect Effects – Elk – Alternative 2

The biggest potential impact to elk associated with this Alternative is the increase in road effect area. Elk avoid roads and larger security areas are important. This Alternative would increase the road effect area

by 1,641 acres above the baseline. This is a relatively minor (4.7%) increase in the road effect area but it still would result in less security area for elk. The increase in road effect area is not expected to result in a noticeable increase in illegal harvest because the trail to be constructed is not accessible to a large variety of vehicles and is specific to OHV jeeps.

Removal of trees associated with staging areas would also reduce a small amount of elk habitat in the analysis area and the predicted impacts from dispersed camping would also displace elk from the proposed staging area. Implementation of this Alternative would have a slight negative affect on elk viability on the Deschutes National Forest but the species would remain viable across the Forest.

Direct and Indirect Effects – Elk – Alternative 3

As with Alternative 2 the biggest potential impact to elk is the increase in road effect area. Elk avoid roads and larger security areas are important. This Alternative would increase the road effect area by 120.95 acres above the baseline. This is a very small increase of .35% increase in the road effect area but it still would result in a minor loss of elk security area. The increase in road effect area is not expected to result in a noticeable increase in illegal harvest because the trail to be constructed is not accessible to a large variety of vehicles and is specific to OHV jeeps and the vast majority of the trail is adjacent to roads open to the public.

Removal of trees associated with staging areas would also reduce a small amount of elk habitat in the analysis area and the predicted impacts from dispersed camping would also displace elk from the proposed staging area. Implementation of this Alternative would have a slight negative affect on elk viability on the Deschutes National Forest but the species would remain viable across the Forest. When compared to Alternative 2 this Alternative presents less potential impacts to elk.

Cumulative Effects – Elk

Cumulative effects to elk were analyzed at the watershed scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. Since the potential impacts to elk are predicted to be limited based on the potential impacts of the project and lack of habitat in the area the project would not substantially contribute to cumulative effects in the analysis area.

Previous vegetation management in the analysis area has reduced potential hiding cover for elk but these activities have occurred over the past 40 years and regeneration of many of these stands has moved them back to hiding cover. Current vegetation management would move stands to provide hiding cover for elk and there are no reasonably foreseeable actions that would contribute losses in hiding cover for elk.

There are no Key Elk Areas as identified in the DNF LRMP for either the East Fort Rock OHV area or the Lava Rock OHV Trail area. Elk are not expected to regularly occur in the East Fort Rock OHV area because there is very little water available. Elk may occur in portions of the Lava Rock OHV area as it is near some key elk areas in the northern portion. Eventual development of the Lava Rock OHV trail system could result in some future impacts to elk through trail construction, use and maintenance however these impacts are difficult to quantify with the uncertainty regarding implementation. Previous trails locations for this project are not in elk winter range so potential impacts are not expected to have dramatic effects to elk.

Mule Deer

Mule deer were chosen as a terrestrial MIS identified in the DNF LRMP for its socio-economic importance to the hunting community within central Oregon. The Oregon Department of Fish and Wildlife established herd management objectives (MO) based on winter population; annual herd

composition conducted by ODFW was used to set these objectives for the Deschutes National Forest LRMP (4-9). The DNF LRMP uses Management Area seven (MA7) as Mule deer winter range and everything else on the Forest is summer range. The entire analysis area is within deer summer range.

Mule deer populations may be migratory or non-migratory. Non-migratory deer may shift within their home ranges seasonally and share winter range with migratory deer. Migrating deer may move through the summer and winter ranges of other deer, which complicates interpretation of distribution and movement patterns. However, deer movement appears to be more unidirectional in some populations, as influenced by landscape-level topographic and vegetative patterns.

Migratory mule deer exhibit high fidelity to summer and winter ranges. During migration, deer tend to follow broad corridors, influenced by topographic features, which become less distinct as the distance from winter range increases. Transition ranges may be important for weight gain during migration in some years. Winter range, corridors, and transition areas may be important to mule deer survival in severe winters, thus need to be evaluated for potential impact by development and other land use activities. Mule deer may experience resource competition from elk as their populations appear to be increasing in Oregon.

Populations in central Oregon are increasing rapidly as many people move to the area because of the natural beauty, desirable climate, job opportunities, and recreational opportunities. More people results in more roads, infrastructure, and fragmentation that compounds habitat loss. Lower elevation winter range areas are being most impacted by development.

The Oregon Department of Fish and Wildlife began a study focusing on mule deer habitat selection between summer and winter range (East Slope Cascades Mule Deer Project). The study specifically looked at habitat selection between summer and winter range as it relates to various land use, such as major highways, urban development, open road densities, OHV activity, vegetative treatments, and other human related alterations to the landscape. Results from data gathered from October 2005 to November 2010, showed the three primary factors for deer mortality which are poaching associated with open road densities, cougar predation, and deer mortality associated with traffic on Highways 97 and 31.

Areas with high road density can increase illegal harvest of mule deer which is one of the highest mortality sources for mule deer in central Oregon. The DNF LRMP Wildlife Standard (WL-53) has a target road density of 2.5 mi/mi^2 in mule deer summer range to achieve deer summer range habitat effectiveness. Table 15 shows open road densities for subwatersheds in the analysis area. Open road densities for the subwatersheds are close to the 2.5 mi/mi^2 target but range from 1.27 mi/mi^2 to 3.99 mi/mi^2.

Table 15 Road Densities in the Rim Butte Analysis Area

Subwatershed	**Subwatershed in Analysis Area (Figure 13 shows extent)**		**Entire Subwatershed**	
	Open Roads	*All Roads*	*Open Roads*	*All Roads*
The Dome	2.37	4.27	3.19	4.57
China Hat	2.91	4.16	2.63	3.99
Ooksan Butte	1.88	4.17	2.81	3.92
Surveyors Lava Flow	1.02	1.39	1.43	1.80
Green Butte	2.42	3.21	3.99	4.91
Paulina Peak South	3.30	3.30	2.73	2.98

Subwatershed	Subwatershed in Analysis Area (Figure 13 shows extent)		Entire Subwatershed	
Ipsoot Butte	4.43	4.43	3.16	3.84
Pine Lake	1.61	5.05	1.27	1.48

Direct and Indirect Effects – Mule deer – Alternative 1

The primary impact to mule deer in the analysis area is associated with road density. Current road densities exceed DNF LRMP direction by 0.13 mi/mi^2. This indicates that the habitat effectiveness for mule deer in the area is probably moderate with some influence of road density. The highest concentration of roads is on the eastern portion of the analysis area in the East Fort Rock OHV area.

Motorized trails are concentrated on the east side of the analysis area in the East Fort Rock OHV area and many of these are within existing road effect area from the open road system. Deer in this area are likely acclimated to the current traffic levels.

Mule deer are not known to avoid roads because of vehicle traffic so the current infrequent vehicle traffic is not expected to cause mule deer to avoid areas within the analysis area. Implementation of this Alternative would not affect mule deer viability on the Deschutes National Forest because current road densities are close to recommendations in the DNF LRMP and vehicle use in the analysis area is low.

Direct and Indirect Effects – Mule deer – Alternative 2

This Alternative does not increase the road density within the analysis area as no new roads are proposed. It is uncertain how many or when this type of improvement would occur but any work to improve the closures would benefit mule deer by reducing potential illegal harvest opportunities.

Motorized trails often function as roads when considering mule deer responses. There is potential for increased illegal take of mule deer with more motorized trails as this Alternative increases access areas that were relatively secluded. The technical nature of the trail would indicate that potential increase in illegal take would be minimal as access requires specialized vehicles.

Wildlife connectivity corridors that were identified during the Emerald, Central and Beasel projects are within areas identified for trail placement. The trail construction specifications should not create a barrier to movement because the limited tree removal would retain the stand cover characteristics. Most of the trail locations in adjacent to existing roads where connectivity corridors already receive traffic. Increased traffic associated with the trail is expected to have a minimal impact to mule deer connectivity in the analysis area. Connectivity would be maintained over the analysis area.

Implementation of this Alternative would have a slight negative affect on mule deer through increased motorized routes and reduced effectiveness of existing wildlife connectivity corridors. Mule deer viability across the Deschutes National Forest would be maintained.

Direct and Indirect Effects – Mule deer – Alternative 3

This Alternative does not increase the road density within the analysis area as no new roads are proposed. It is possible that some of the existing administrative road closures that were part of the Central EA could be improved under this Alternative to increase the effectiveness of the closure. It is uncertain how many or when this type of improvement would occur but any work to improve the closures would benefit mule deer by reducing potential illegal harvest opportunities.

Motorized trails often function as roads when considering mule deer response. Access for potential illegal harvest would be the same as current conditions because the route is closely placed near existing open roads.

Wildlife connectivity corridors that were identified during the Beasel project are in areas identified for trail placement. The trail construction specifications should not create a barrier to movement because the limited tree removal would retain the stand cover characteristics. Most of the trail locations in adjacent to existing roads where connectivity corridors already receive traffic. Increased traffic associated with the trail is expected to have a minimal impact to mule deer connectivity in the analysis area. Connectivity would be maintained over the analysis area.

Implementation of this Alternative would have a slight negative affect on mule deer through increased motorized routes and reduced effectiveness of existing wildlife connectivity corridors. Mule deer viability would be maintained across the Deschutes National Forest. When compared to Alternative 2 this Alternative would have less impact to mule deer because trail construction in connectivity corridors would occur near existing roads and the entire route is within the existing road effect area.

Cumulative Effects – Mule deer

Cumulative effects to mule deer were analyzed at the watershed scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. Since the potential impacts to mule deer are predicted to be limited based on the potential impacts of the project and lack of habitat in the area the project would not substantially contribute to cumulative effects in the analysis area.

Previous vegetation management in the analysis area has reduced potential hiding cover for deer but these activities have occurred over the past 40 years and regeneration of many of these stands have moved toward hiding cover. Current vegetation management would move stands to provide hiding cover for mule deer and there are no reasonably foreseeable actions that would contribute losses in hiding cover for mule deer.

Ongoing motorized use in the East Fort Rock OHV area is expected to continue to displace some deer in summer range because the level of use is high. There are some seasonal (green dot) closures in the East Fort Rock OHV area that provides hunter access. The Lava Rock OHV Trail project area includes summer, transition and winter range for deer but potential impacts from this project are difficult to assess with the uncertainty regarding implementation and choice of Alternative. However, the proposal would include road closures and additional motorized trail designation/construction. Road closures reduce wildlife harassment and improve habitat effectiveness, while designated trails have the same effects as described for this project. As a result, the total miles of designated motorized trail routes in the affected subwatersheds would increase if all projects were implemented.

American marten

Martens are closely associated with forested habitats that have complex physical structure near the ground. Open areas, such as regeneration logging units, recent severely burned areas, and natural openings are avoided, especially during the winter. Forested riparian habitats are used higher than they are available, which indicates their importance as travel corridors.

Martens tend to be wide-ranging within their home range during the snow-free portions of the year, when they use a variety of habitats. They also are more active during summer than winter, but they do not hibernate. Summer rest sites may be in hollow trees, squirrel nests, mistletoe brooms, ground burrows, and stumps. During winter martens are highly associated with late-successional forest habitat within their home range.

Much of their time during winter is spent resting or hunting beneath the snow in subnivean spaces created by physical structure close to the ground. This complex structure is more characteristic of older forest structural stages than younger forests. These conditions are also more characteristic of moist and cold forest types where fire return intervals are greater, allowing time for dead wood to be recruited and accumulate. Large logs may be particularly important as winter resting structures.

Marten use a variety of structures for resting and denning sites. Resting and denning sites offer protection from predation and thermal stress; thus, availability of quality denning sites likely increases the rates of survival and fecundity in marten. Two types of dens are recognized in the literature: natal dens, in which parturition takes place, and maternal dens, which are occupied by the mother and young. A variety of structures are used for dens, with trees, logs, and rocks accounting for 70 percent of the reported den structures.

Motorized disturbance appeared to have no impact to martens based on a literature review by Claar et al. (1999). Zielinski et al. (2007) conducted a research study on snowmobile and OHV effects on martens and concluded OHVs had no effect. However, Claar et al. (1999) found from their literature review, studies suggesting marten were susceptible to overharvesting from trapping. Roads and motorized trails including snowmobile trails open for winter use could provide trapping access into marten habitats. Other research has indicated that home range sizes tended to be larger as the road density increased (Godbout and Ouellet, 2008).

Denning habitat was modeled using all PAG except juniper and ponderosa pine without the presence of lodgepole pine. Only dense stands were considered denning habitat expect in the lodgepole pine and dry cold white fir PAGs where open and dense were deemed suitable for denning. Those PAGs where lodgepole pine is an early seral species were also considered suitable denning habitat. Minimum average diameter of trees within the stand was defined as equal to or greater than 5 inches for lodgepole pine and equal to or greater than 15 inches for the other PAGs.

Modeling results indicate there are approximately 433,973 acres of potential marten denning habitat on the DNF. The 433,973 acres modeled as denning habitat used only green tree data. However, snags and down wood are important habitat components for marten denning and foraging habitat. Modeling also shows approximately 28,514 acres (7%) of the mapped denning habitat has up to 2.8 snags per acre (0-30% tolerance interval) capable of providing lower quality denning habitat. Only one percent of the mapped denning habitat has greater than 15.2 snags per acre equating to very high quality marten habitat.

Mapped marten denning habitat in the analysis area occurs in a small (~15 acre) piece in the northern part of the analysis area. This block is not within 2 miles of the proposed routes for either Alternative. There are marten observations throughout the analysis are so there is potential occurrence but there does not seem to be high quality denning habitat in the analysis area.

Direct and Indirect Effects – American marten – All Alternatives

No direct or indirect effects to marten are expected from any of the Alternative described. Marten presence in the analysis area is expected to be infrequent based on the lack of denning habitat and infrequency of observations. The species exhibits tolerance to motorized routes, especially those with lower traffic volume. The absence of denning habitat indicates that marten observations in the analysis area are individuals using lower quality habitat or dispersing from other areas. Tree removal as described in the action Alternatives would not occur in marten denning habitat and is not expected to reduce marten habitat quality. Implementation of this Alternative would not affect species viability for American marten on the DNF.

Cumulative Effects – American marten

Cumulative effects to American marten were considered at the subwatershed scale because other studies use this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Past vegetation management that reduced or modified marten denning habitat was accounted for during the forest wide mapping effort and are part of the existing baseline habitat model. Current vegetation management activities are expected to improve American marten habitat as precommercial thinning would move currently unsuitable habitat to a potential denning or foraging habitat over the very long-term. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.

American marten within the East Fort Rock OHV Area are likely acclimated to the use of designated routes. There is no mapped denning habitat in the East Fort Rock OHV Area. American marten in the East Fort Rock OHV Area already avoid existing motorized routes or have become acclimated to some level of disturbance. The Lava Rock OHV Trail system would increase available motorized trails in potential Cooper's hawk habitat. There is no mapped denning habitat in the Lava Rock OHV Trail project area. There are no direct or indirect effects to American marten, therefore there would be no cumulative effects expected for the species.

Woodpeckers

Woodpeckers are analyzed as a group for this project because the predicted impacts to the species are general and expected to be incidental. Most woodpeckers prefer unlogged recently burned areas but the previous large wildfires in the analysis area are aging and becoming less suitable for woodpeckers as standing snags fall and arthropod resources are reduced.

Resource Protection Measure

Because all woodpecker species are associated with snags the following resource protection measure is recommended, retain all snags of all species greater than 10" diameter at breast height unless they present a health or safety risk.

Woodpeckers -- Lewis' Woodpecker

Lewis' woodpecker was previously addressed in this document. The action Alternatives are expected to have little impact to the species and mostly through displacement of individuals. At a forest level there is 84,978 acres of nesting habitat available. Ponderosa Pine Dry PAG can be used as a rough estimate of potential Lewis' woodpecker foraging or nesting habitat that could experience degradation from the road affect area. Five-hundred-and seventy-five more acres would be affected under Alternative 2 compared to Alternative 3.

Woodpeckers -- White-headed woodpecker

White-headed woodpecker was previously addressed in this document. The action Alternatives are expected to have little impact to the species and mostly through displacement of individuals. At a forest level there are 198,330 acres of potential nesting habitat available. The same PAG used for Lewis' woodpecker can be used for white-headed woodpecker so the relative affected habitat would be the same for the action Alternatives.

Woodpeckers -- Black-backed woodpecker

Black-backed woodpecker nests on the Deschutes were found in lodgepole pine trees and 89% of these nests were located in lodgepole pine stands with the remaining nests found in mixed conifer stands dominated by lodgepole pine. They tend to use the least decayed trees and snags for nesting (decay class 1).

Black-backed woodpeckers foraged in all forest types with lodgepole pine. Recently dead trees (<2 years) or live trees were used for foraging, preferring lodgepole pine. This species forages almost exclusively on larvae of bark beetles and wood borers. Prey is obtained from tree trunks primarily by scaling or flaking bark and excavating logs and the bases of large diameter trees. Woodpecker use declines 2-3 years after mortality when trees dry out and bark beetles decline.

This woodpecker has a strong association with prey abundance. The importance of food accounts for the ephemeral use of areas moving in a short time after disturbance with occupation for only 3-5 years while bark beetles and wood borers are abundant. Abundance of wood borers was four times greater at occupied territories than available territories and black-backs used territories that contained higher densities of mountain pine beetle infected trees than available territories.

Black-backed woodpecker nesting habitat was mapped using lodgepole pine dominated forests which include all lodgepole pine PAG in all seral stages in addition to other PAG in the early and mid seral stages where lodgepole pine is dominant. Recent fires (less than 5 years old) with stand replacement or mixed severity were also classified as habitat. Based on this there are 446,003 acres of potential black-backed woodpecker nesting habitat on the DNF. Nesting habitat for this species is distributed evenly through the analysis area. Using the lodgepole pine dry PAG as a rough estimate of habitat potential for species habitat in the road effect area there are 2,625 acres that would be affected under Alternative 2 and 870 acres that would be affected under Alternative 3.

Threats include timber harvest, fire suppression, salvage of fire and bug-killed trees, and conversion of mature and old-growth forests to young stands with little decay.

Woodpeckers -- Three-toed woodpecker

The three-toed woodpecker has been identified as a bark beetle specialist found in high elevation forests near the Cascade crest. The three-toed woodpecker is highly associated with post-fire environments but is also found in unburned forests. Three-toed woodpeckers occupy areas between 4500-5600’ elevation while the black-backed woodpecker occupied lower elevations.

The three-toed woodpecker is a year round resident that occurs in the upper elevations of the Columbia Basin. Source habitats were defined as late-seral subalpine and montane forests including old forests of lodgepole pine, grand-fir/white-fir, Engelmann spruce/subalpine fir, whitebark pine, and mountain hemlock. In the western half of its North American range, American three-toed woodpeckers prefer mature, unlogged conifer forests as well as conifer forests that have undergone some form of disturbance (e.g., burn, flood, windthrow). This species uses higher elevation habitats of mature lodgepole pine stands or stands with a lodgepole component, although forest type may not be as important as the presence of bark beetles.

Three-toed woodpeckers forage in mixed conifer, mixed conifer dominated by lodgepole pine, grand fir forest types containing lodgepole pine, and lodgepole pine forest types. Three-toed woodpeckers primarily forage on dead trees (88-95% of the time) that are recently dead (<3 years). Three-toed woodpecker populations increase 3-5 years post-fire; common in burned areas 1 to 2 years after the fire but declining in years 3 and 4 post-fire. This species generally established territories in moderately burned areas containing patches of live and dead trees and were less common in unburned forests in large, severely burned areas lacking live trees.

Three-toed woodpecker nesting habitat was mapped using lodgepole pine dominated forests which include all lodgepole pine PAGs in all seral stages in addition to other PAGs (i.e. mixed conifer and mtn. hemlock) in the early and mid seral stages where lodgepole pine is dominant. In addition, stand size had to range from 5-15" dbh and be open or closed to be mapped as potential habitat. Recent fires (less than 5 years old) with stand replacement or mixed severity were also classified as habitat.

There are approximately 367,499 acres of potential nesting habitat on the Forest. There is mapped three-toed woodpecker habitat in the analysis area and it is well distributed but there are no species observations in the analysis area. Using the lodgepole pine dry PAG will give a rough estimate of potential three-toed woodpecker habitat within the road effect area. Alternative 2 would have 2,626 acres affected while Alternative 3 would have 870 acres.

Woodpeckers -- Hairy woodpecker

Hairy woodpeckers are found in mixed conifer and ponderosa pine forests and use deciduous stands during the breeding season. They have been observed nesting in relatively open stands with low basal area, low stem densities, and open canopies (39% canopy cover). Ponderosa pine is a preferred nest tree but they are known to nest in other species (lodgepole pine, western larch, Douglas-fir, and aspen) except grand fir. Most nests are in dead trees less than 5 years and preferred snags are 10-20" dbh.

Hairy woodpeckers use both live and dead trees for foraging which is primarily scaling (75%) but also excavated, pecked, and gleaned. They are abundant in recently post-fire burned areas. This species also had greater relative abundance in high severity areas than in moderate severity areas. The increase in hairy woodpecker relative abundance following fire may be due to an increase in bark and wood borer larvae. However, abundance decreased with increasing burn age tapering off by years 4-7 probably due to a decrease in food.

Hairy woodpecker nesting habitat was mapped using mixed conifer, ponderosa pine, and lodgepole pine PAG in early, mid and late seral stages. In addition, stand size had to range from 11-20"dbh in mixed conifer and ponderosa pine and range from 5-20"dbh in lodgepole pine and have open stand characteristics to be mapped as potential habitat. Recent stand replacement fires less than 5 years old were added as habitat. Recent (since 2002) forest management activities that resulted in conditions other than described above were removed from mapped potential habitat.

There are approximately 507,920 acres of potential nesting habitat on the Forest. Hairy woodpecker habitat is abundant in the analysis area and well distributed. There are no large recent wildfires in the analysis area to provide that habitat type. Potential hairy woodpecker habitat that could be disturbed within the road effects area was calculated using the lodgepole pine, mixed conifer, and ponderosa pine PAG. The potential disturbance area is 4,388 acres for Alternative 2 and 1725 acres for Alternative 3.

Woodpeckers -- Northern Flicker

The northern flicker nests in large diameter snags and live trees with moderate to heavy decay. The flicker frequently nests in ponderosa pine forest types, but will also nest in old-growth to mid-successional juniper stands. Most studies have found flickers prefer to nest in open habitats characterized by low basal area, low canopy cover, large snags, and high herbaceous cover. Ponderosa pine stands provided nest sites adjacent to grasslands where flickers foraged.

The northern flicker forages almost exclusively on the ground during the summer specializing on ants and beetle larvae. Foraging locations are characterized by short vegetation and bare ground with tall vegetation being uncommon. Foraging methods shift to excavating dead and down woody material in the fall. Flickers also excavated, pecked, gleaned, and harvested seeds in live and dead trees, down woody material, and stumps.

Northern flicker nesting habitat was mapped using plant association groups from juniper, lodgepole pine, ponderosa pine, grand/white fir, and Douglas-fir in all seral stages. In addition, stand size had to be a minimum diameter of 10”dbh or greater in lodgepole pine and 15” dbh in all other PAGs and have open stand characteristics (based on the canopy cover level thresholds for each PAG) to be mapped as potential habitat. There are approximately 219,576 acres of potential northern flicker nesting habitat on the Forest with habitat in the analysis area available in smaller isolated patches. Potential northern flicker habitat that could be disturbed within the road effects area was calculated using the lodgepole pine and ponderosa pine PAG. The potential disturbance area is 3,760 acres for Alternative 2 and 1,559 acres for Alternative 3.

Direct and Indirect Effects – Woodpeckers– Alternative 1

Under this Alternative there is still potential displacement of woodpecker within the road effects area for existing roads. These roads are well established and it is reasonable to assume that woodpeckers in the area are acclimated to the disturbance or avoid the road effects area. Many of the Maintenance Level 2 roads are currently open to OHV use in the area already.

Implementation of this Alternative would not affect woodpecker viability on the DNF because there is no removal of habitat and roads that are in the analysis area are well established.

Direct and Indirect Effects – Woodpeckers – Alternative 2

All woodpecker species described above have potential to occur in the road affect area for the proposed route. While many of the existing Maintenance Level 2 roads are open to OHV use already the designation of a trail is expected to increase use in the area. Woodpeckers that may have been acclimated to previous use are expected to experience some increased displacement through increased traffic.

Staging area clearing would remove some potential foraging habitat for most species analyzed but these locations are adjacent to existing roads and removal of six acres could have localized affects to individual nesting areas but would not be noticeable at a large scale. The prolonged human presence of vehicle parking and camping is expected to expand the road effect area beyond the current extent associated with the road.

Implementation of this Alternative would result in a slight negative trend in viability for woodpecker species analyzed. Potentially affected habitat is much less than 1% of the available habitat for all woodpeckers analyzed so continued viability across the Forest is expected. For all species analyzed this Alternative would affect more potential habitat than Alternative 3.

Direct and Indirect Effects – Woodpeckers – Alternative 3

Direct and indirect effects to woodpeckers under Alternative 3 are the same as Alternative 2 but the potential habitat disturbance is reduced. Woodpeckers in the area would be affected by increased traffic on existing routes, disturbance and displacement during trail construction and some minor loss of habitat through staging area construction.

Implementation of this Alternative would result in a slight negative trend in viability for woodpecker species analyzed. Potentially affected habitat is much less than 1% of the available habitat for all woodpeckers analyzed so continued species viability across the Forest is expected. For all species analyzed Alternative 3 would affect less potential habitat than Alternative 2.

Cumulative Effects – Woodpeckers

Cumulative effects to woodpecker species were analyzed at the subwatershed scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Past vegetation management that reduced or modified woodpecker habitat were used to during the forest wide habitat mapping effort. Current vegetation management activities are expected to improve woodpecker habitat as precommercial thinning would move currently unsuitable habitat to a potential nesting habitat. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.

Potential cumulative effects to woodpeckers are primarily from past vegetation management and continued use of motorized trails. Past vegetation management activities have included in the Deschutes National Forest nesting habitat model and the continued use of motorized trails is expected to infrequently displace foraging individuals. The combined cumulative effects of activities considered are not expected to have noticeable impacts to woodpeckers across the analysis area.

Snags and Down Wood

Numerous wildlife species depend on snags and down wood material for all or part of their life cycle. Snags can provide structure for cavity excavation, foraging opportunities with arthropods and fungus, and perch locations for hunting opportunities. Down wood provides nutrient cycling, cover for small mammals, foraging opportunities and structures that are used by a number of species (Rose et al. 2001).

Snags and down wood are typically assessed at the watershed scale for large vegetation management projects on the Deschutes National Forest. DecAID (Mellen-McLean et al. 2012) is used to describe snag and down wood characteristics but this project

Since this project is not a timber sale a general discussion of the availability of snags in the analysis area will be used. There is a recommended resource protection measure of retaining snags of all species above 10” diameter at breast height unless they present a human safety risk. Snags of this diameter are more likely to be used by wildlife and retention of these would maintain availability for wildlife species in the area.

Direct and Indirect Effects – Snags and Down Wood – Alternative 1

This Alternative would not reduce the available snags for wildlife in the analysis area as there is no action identified.

Direct and Indirect Effects – Snags and Down Wood – Alternative 2

Implementation of this Alternative would remove a minor number of snags associated with individual trees presenting a human safety risk. This is assumed to be snags within one-tree length of the road that could be dangerous. Implementation of this Alternative is not expected to reduce the number of snags available to wildlife at the larger subwatershed scale but would reduce some snags available in a localized area.

Direct and Indirect Effects – Snags and Down Wood – Alternative 3

Implementation of this Alternative would remove a minor number of snags associated with individual trees presenting a human safety risk. This is assumed to be snags within one-tree length of the road that

could be dangerous. Implementation of this Alternative is not expected to reduce the number of snags available to wildlife at the larger subwatershed scale but would reduce some snags available in a localized area. When compared to Alternative 2 this Alternative would have less impact to snags and down wood because the route is shorter and the potential removal would be less.

Cumulative Effects – Snags and Down Wood

Cumulative effects to snags and down wood were considered at the subwatershed scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered. The area is generally below snag levels that would support large populations of snag dependent species and wildfires in the analysis area are aging to the point where snags are becoming down wood.

Past vegetation management has likely had the largest impact on snag and down wood availability. Snag and down wood standards and guidelines became effective with the DNF LRMP and then amended with the Eastside Screens. Recent projects have considered snag and down wood components with more focus but many of the watersheds in the Rim Buttes OHV Jeep Trail analysis area are below the historic range of variability for larger diameter snags. Current vegetation management activities are not expected to reduce snag availability because post-sale activities such as precommercial thinning do not focus on snag removal. Since no reasonably foreseeable vegetation management activities are expected in the analysis area the impacts of future vegetation management are not expected to contribute cumulative effects.

3.3.7 Migratory Birds

Two documents provide guidance for migratory birds on the Deschutes National Forest. These are the Birds of Conservation Concern list created by the USFWS (2008) and the Conservation Strategy for Landbirds of the East-slope of the Cascade Mountains in Oregon and Washington (Altman 2000).

Birds of Conservation Concern

The Birds of Conservation Concern 2008 (USFWS 2008) identifies species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. The goal is to conserve avian diversity in North America and includes preventing or removing the need for additional ESA bird listings by implementing proactive management and conservations actions (USFWS 2008). Conservation concerns stem from population declines, naturally or human-caused small ranges or population sizes, threats to habitat, or other factors.

Table 16 USFWS Birds of Conservation Concern (USFWS 2008)

Species	Preferred Habitat	Habitat in the Project Area
Greater Sage-Grouse	Sagebrush dominated Rangelands	No
Eared Grebe (non-breeding)	Open water intermixed with emergent vegetation	No
Bald Eagle	Lakeside with large trees	No
Ferruginous Hawk	Elevated Nest Sites in Open Country	No
Golden Eagle	Elevated Nest Sites in Open Country	No

Species	Preferred Habitat	Habitat in the Project Area
Peregrine Falcon	Cliffs	No
Yellow Rail	Dense Marsh Habitat	No
Snowy Plover	Dry Sandy Beaches	No
Long-billed Curlew	Meadow/Marsh	No
Marbled Godwit	Marsh/Wet Meadows	No
Yellow-billed Cuckoo	Dense riparian/cottonwoods	No
Flammulated Owl	Ponderosa pine forests	Yes
Black Swift	Cliffs associated with waterfalls	No
Calliope Hummingbird	Open mountain meadows, open forests, riparian areas	No
Lewis's Woodpecker	Ponderosa pine forests	Yes
Williamson's Sapsucker	Ponderosa pine forests	Yes
White-headed Woodpecker	Ponderosa pine forests	Yes
Loggerhead Shrike	Open country with scattered trees or shrubs	No
Pinyon Jay	Juniper and ponderosa pine stands	No
Sage Thrasher	Sagebrush	No
Virginia's Warbler	Scrubby vegetation within arid montane woodlands	No
Green-tailed Towhee	Open ponderosa pine with dense brush	No
Brewer's Sparrow	Sagebrush clearings in coniferous forests/bitterbrush	No
Black-chinned Sparrow	Ceanothus and oak covered hillsides	No
Sage Sparrow	Unfragmented patches of sagebrush	No
Tricolored Blackbird	Cattails or Tules	No
Black Rosy Finch	Rock outcroppings and snowfields	No

The Rim Buttes OHV Jeep Trail Analysis Area does not provide habitat for most of the migratory birds listed in Table 16. There is habitat for four and three are woodpeckers that were previously analyzed. There is limited habitat for flammulated owls in the analysis area.

Landbirds of the East-Slope of the Cascade Mountains

The conservation strategy for landbirds of the east-slope of the Cascade Mountains in Oregon and Washington (Altman 2000) identifies priority habitat features for focal species. Focal habitat includes ponderosa pine, mixed-conifer, lodgepole pine, whitebark pine, meadows, aspen, and subalpine fir. The Rim Buttes OHV Jeep Trail Analysis Area has ponderosa pine and lodgepole pine habitat available. The focal species for lodgepole pine is the black-backed woodpecker which was analyzed previously and will

not be repeated here. There are four focal species for ponderosa pine with the white-headed woodpecker and Lewis' woodpecker analyzed previously. The two focal species with habitat available in the analysis area are the pygmy nuthatch and chipping sparrow.

Table 17 Priority habitat features and associated focal species for the East-Slope Cascade Strategy.

Habitat	Habitat Feature	Focal Species for Central Oregon
Ponderosa Pine	Large patches of old forest with large snags	White-headed woodpecker
	Large trees	Pygmy nuthatch
	Open understory with regenerating pines	Chipping sparrow
	Patches of burned old forest	Lewis' woodpecker
Mixed Conifer (Late-Successional)	Large trees	Brown creeper
	Large snags	Williamson's sapsucker
	Interspersion grassy openings and dense thickets	Flammulated owl
	Multi-layered/dense canopy	Hermit thrush
	Edges and openings created by wildfire	Olive-sided flycatcher
Lodgepole Pine	Old growth	Black-backed woodpecker
Whitebark Pine	Old growth	Clark's nutcracker
Meadows	Wet/dry	Sandhill Crane
Aspen	Large trees with regeneration	Red-naped sapsucker
Subalpine fir	Patchy presence	Blue Grouse

Using the above lists there are three migratory bird species with potential to occur in the analysis area. Woodpecker species listed were previously analyzed and will not be repeated here. The three species identified for detailed analysis are the flammulated owl, pygmy nuthatch and chipping sparrow. There are minor amounts of mapped flammulated owl habitat in the analysis area but it is not the late-successional mixed conifer identified in the Landbird strategy. Since this species is also a Bird of Conservation Concern it will be analyzed in detail.

Flammulated Owl

Flammulated owls are a focal species of grassy openings and dense thickets within late-successional mixed conifer plant associations. Mapped habitat for this species occurs throughout the analysis area but generally in small patches. There are no documented observations of flammulated owl in the analysis area.

Conservation issues for this species include: loss of mature and old-growth trees and snags for nest and roost sites; loss of open understory because of invasion of exotics and fire intolerant species; requires small patches of dense thickets for roosting; creation of large areas of even-aged stands is detrimental; fuel wood collection reduces the densities of snags (Altman 2000).

Conservation Strategies

- Target conservation efforts near grassland or dry meadow openings.
- Avoid insect control spraying near known nest areas or suitable habitat.
- In restoration efforts, leave patches of dense sapling thickets to function as roost sites.
- Retain large (>30 cm dbh) snags during silvicultural practices.
- Where snags with nesting cavities are a limiting factor and the habitat is otherwise suitable, create snags by fungal inoculation, topping, girdling, etc.
- Where dense roosting thickets are limited within potential or suitable habitat, avoid forest practices that remove brush from the understory.
- Where grassy openings in potential or suitable habitat are being encroached on by shrubs and trees, initiate actions such as manual removal and prescribed fire to maintain these openings.
- Eliminate or restrict fuelwood cutting and application of pesticides in suitable or potential flammulated owl habitat.
- Use nest boxes as a short-term supplement where restoration activities are occurring.

Pygmy Nuthatch

Pygmy nuthatches are cavity nesters and although they can utilize smaller and well-decayed ponderosa pine snags, pygmy nuthatches do compete with other cavity nesters such as the white-breasted nuthatch and white-headed woodpecker for ponderosa pine snags. It has been demonstrated that snags are limiting in the project area; and it is this aspect of their habitat needs that may be adversely impacted rather than the general habitat type of ponderosa pine.

The desired condition in ponderosa pine forest is a large tree, single layered canopy with an open, park-like understory dominated by herbaceous cover with scattered shrub cover and pine regeneration (Altman 2000).

Conservation Strategies

- Manage for large diameter trees through wider tree spacing and longer rotation periods.
- Eliminate or restrict fuelwood cutting in suitable or potential habitat.
- Retain all snags >10 in dbh and all Ponderosa pine trees >17 in dbh.

Chipping Sparrow

Chipping sparrows are a focal species of more open ponderosa pine stands with active regeneration. They are a species that will nest relatively close to the ground in young pine trees (e.g. 4-8 ft. tall). Their habitat is limited by the more even-aged, tall, and high density stand structure of the proposed treatment units.

Conservation strategies

- Evaluate historical plan communities and current landscape conditions when assessing where restoration activities should occur.
- Conduct understory removal and burning outside of the nesting season (April 15-July 15).
- Conduct thinning and/or overstory removal to provide suitable open conditions.

Direct and Indirect Effects – Migratory Birds – Alternative 1

There are no anticipated impacts to flammulated owls, pygmy nuthatch or chipping sparrow under this Alternative. There is no modification of habitat and any individuals occupying areas near exiting roads have likely become acclimated or avoid these areas.

Direct and Indirect Effects – Migratory Birds – Alternative 2

The increase in road effect area may displace individuals as previously undisturbed areas begin to have increased traffic. Areas with potential for an increase in road effect area are not high-quality habitat for these species but presence could still occur.

Tree removal is expected to be incidental and accommodate the technical nature of the trail. Staging area clearing is outside of potential habitat so these activities would not reduce potential habitat. While some trees would be removed along the proposed route the removal would not rise to changing the stand characteristics. Implementation of this Alternative is consistent with the conservation recommendations found in the Landbirds of the East-Slope of the Cascade Mountains (Altman 2000).

Direct and Indirect Effects – Migratory Birds – Alternative 3

The increase in road effect area may displace individuals as previously undisturbed areas begin to have increased traffic. Under this Alternativethe increase in road effect area minimal and any changes in behavior for flammulated owl, pygmy nuthatch or chipping sparrow would not be detectable.

Tree removal is expected to be incidental and accommodate the technical nature of the trail. Staging area clearing is outside of potential habitat so these activities would not reduce available habitat. While some trees would be removed along the proposed route the removal would not rise to changing the stand characteristics. Implementation of this Alternative is consistent with the conservation recommendations found in the Landbirds of the East-Slope of the Cascade Mountains (Altman 2000).

Cumulative Effects – Migratory Birds

Cumulative effects to migratory birds were considered at the analysis area scale because other studies use this scale and Forest Plan direction dictates analysis at this scale. Relevant past present and reasonably foreseeable future actions listed in Table 5 and Table 6 were considered.

Potential cumulative effects to migratory birds are primarily from past vegetation management and continued use of motorized trails. The combined cumulative effects of activities considered are not expected to have noticeable impacts to migratory birds across the analysis area.

3.3.8 Old-growth Management Areas

Old-growth management areas are identified in the DNF LRMP. There are nine different blocks of old-growth management area for a total of 3,127 acres in the analysis area. These old-growth management areas are ponderosa pine, lodgepole pine and mixed conifer types. Table 2 LRMP Management Areas in Project Area shows these old growth areas.

Specifications for connectivity corridors between Old-growth management areas are outlined in the Eastside Screens. They are described as “stands in which medium diameter and larger trees are common and canopy closures are within the top one-third of site potential. Stand widths should be 400 feet wide at the narrowest point”. Several connectivity corridors between old-growth management areas have been identified in the analysis area.

Direct and Indirect Effects – Old-growth Management Areas – Alternative 1

There would be no effects to old-growth management areas or connectivity corridors under this Alternative. No new disturbance would occur. Existing routes are all outside of old-growth management areas so wildlife within the current road effect area are acclimated to the disturbance.

Direct and Indirect Effects – Old-growth Management Areas – Alternative 2

Alternative 2 does not propose trail routes in old-growth management areas but several sections are adjacent to the boundary. There are 139 acres of old-growth management area in the road effect area and there is potential displacement of wildlife in these areas because the trail is so close to the boundary. PAGs in the old-growth management areas in the road effect area are mixed conifer dry, lodgepole pine dry and ponderosa pine dry. Road effects in this zone are likely to displace wildlife and the variety of habitat types could impact more species. The proposed route does follow some roads but some portions would be a new disturbance to these old-growth management areas.

Alternative 2 has 370 acres of connectivity corridor within the road effect area and all of these acres are in the ponderosa pine dry PAG. Most of these were identified during the Emerald project but some were part of Beasel and Central (see Table 5 for more information on past, present and reasonably foreseeable future actions). Incidental tree removal in these connectivity corridors would not substantially change the function of these corridors to connect habitats. Trail location in these corridors follows existing open roads for the most part. Tree removal is described as incidental and for routes constructed in these areas the focus would not be on the larger diameter trees that maintain connectivity. Increased traffic could disrupt daytime movement of wildlife through the area but these areas would continue to provide connections between old-growth habitats.

While Alternative 2 does not enter old-growth management areas it would reduce effectiveness of some of these areas as trails are very close to the boundary and species in the area could be displaced and disturbed. There would be an increase in road effect area in old-growth management areas as trail placement adjacent to one old-growth management area would be new disturbance.

Direct and Indirect Effects – Old-growth Management Areas – Alternative 3

Alternative 3 has 10 acres of ponderosa pine old growth within the road effect area on the east side of the proposed route. As identified the route does not enter the old-growth area but potential disturbance of wildlife using the area is possible. These 10 acres are within the baseline road effect area and do not represent additional disturbance.

There are 528 acres of connectivity corridors in the road effect area and there is substantial overlap with corridors affected in Alternative 2. Most of these corridors have existing roads where the trail is expected to be placed. Impacts to wildlife from Alternative 3 are similar to Alternative 2 but are expected to be reduced. There is substantially less old-growth management area in the road effect zone. More connectivity corridor acres are affected by this Alternative but the function of these are expected to remain similar to current levels as there are existing routes within the corridor and tree removal is expected to be incidental focusing on smaller diameter trees.

A comparison of action Alternatives indicates Alternative 3 presents fewer potential impacts to the existing old-growth management areas. Motorized use is not excluded from the connectivity corridors but this could impede some wildlife passage when trail is in use. The stand structure characteristics would remain if tree removal is incidental.

3.3.9 Key Issue (Wildlife Resource Values)

Buttes were identified as a key issue during initial project scoping as important habitat for wildlife and other resources. The mosaic of forest types that buttes provide are known to support a wide variety of wildlife species. Forest type variety is associated with the difference in aspect and elevation that allows different trees species to occupy differ net sites. Buttes also provide habitat refugia for wildlife because topography can increase the hiding ability for some species. Many of buttes on the Bend/Fort Rock

Ranger District have roads to the top which can reduce the effectiveness of these features as refugia for wildlife sensitive to habitat fragmentation.

The number of buttes within ½ mile of routes proposed under the action Alternatives is used as a measure of the potential impacts of the project on wildlife and cultural resource that may be associated with the buttes in the area.

Direct and Indirect Effects – Wildlife Resource Values – Alternative 2

Alternative 2 would result in increased motorized use in the vicinity of seventeen buttes. Some of these are at the edge of the buffer area and a noticeable increase in visitation to these is not expected. There are three that are adjacent to the proposed route and that proximity could encourage exploration onto them. Much of the route that goes to these buttes would be new construction and could increase access to places that were previously remote.

Direct and Indirect Effects – Wildlife Resource Values – Alternative 3

Alternative 3 would increase motorized use in the vicinity of two buttes and both are near existing open routes. These buttes do not have routes established to the top. Alternative 3 would be better for retaining butte habitat because fewer buttes can potentially be affected.

3.4 Botany

3.4.1 Botany – Regulatory Framework

This is a biological evaluation to document consideration of Threatened, Endangered, and Sensitive (TES) plants related to the Rim Butte Jeep Trails project. It is prepared in compliance with the Forest Service Manual (FSM) 2672.4 and the Endangered Species Act of 1973 (Subpart B; 402.12, section 7 consultation). Effects of this activity are evaluated for those TES plant species on the current Regional Forester's Sensitive Species List (FSM 2670.44, December 2011) that are documented or suspected to occur on the Deschutes National Forest.

3.4.2 Botany – Summary Key Findings (Key Issues)

The Rim Butte Jeep Trails project is consistent with the Deschutes LRMP (1990) direction for TES plant species. Records were checked for previously known TES plant populations (TE-1); and suitable habitat was not located (TE-2). The remaining standards and guidelines for TES plant species do not apply to the Rim Butte Jeep Trails project. The proposed action would have no impact on Proposed, Endangered, Threatened or Sensitive plant species.

3.4.3 Botany – Affected Environment

Botany – Affected Environment – Alternatives 2 and 3

The plant associations associated with Alternative 2 include ponderosa/bitterbrush-manzanita/needle grass; ponderosa/bitterbrush/needle grass; lodgepole/bitterbrush/needle grass; lodgepole/snowbrush-manzanita; lodgepole/manzanita; lodgepole/currant-bitterbrush/needle grass; mixed conifer/snowbrush-manzanita; mixed conifer/snowbrush; and mixed conifer/snowbrush/sedge.

In Alternative 2, the elevations lie between 5200' – 6000', while in Alternative 3, the elevations span a slightly narrower gradient, situated between 5400' – 6000'. The average annual precipitation is between 20-25" for both Alternatives.

In Alternative 2, roughly 10-15% of the proposed disturbance area or similar habitat immediately adjacent to it has been surveyed over the past 20 years or so by Forest Service botanists, and no TES plant sites were located. Within the broader area, much area with similar habitat characteristics has been surveyed, with no or few TES sites located.

In Alternative 2, there are two known historic TES plant sites near the Rim Butte Jeep Trails project, although none occur within the zone of proposed disturbance. These sites contain the pumice moonwort (BOPU) (*Botrychium pumicola*) and are located about ½ mile and 1 mile from proposed trail.

Botany – Affected Environment – Alternative 3

The plant associations associated with Alternative 3 are ponderosa/bitterbrush-manzanita/needle grass; ponderosa/bitterbrush-manzanita/sedge; ponderosa/bitterbrush-snowbrush/needle grass; lodgepole/needle grass-lupine; lodgepole/bitterbrush/needle grass/ lodgepole/currant-bitterbrush/needle grass; and mixed conifer/snowbrush-sedge.

For Alternative 3, roughly 60% of the proposed disturbance area or similar habitat immediately adjacent to it has been surveyed over the past 20 years or so by Forest Service botanists, and no TES plant sites were located. In September of 2012, the author visited the proposed trail alongside the 2127-700 road and its proposed staging area, as well as the 2127 road from the 700 spur to the staging area located there and south on the 2127 to the 2230 road.

Because of the disturbed nature in either action Alternative of much of the proposed trails and their vicinity, and also because there is little potential for suitable BOPU habitat to begin with, there is a low probability of TES plant sites being present along the trails. Further, the author saw no appropriate habitat during her site visit. For these reasons, no TES plant survey is required for this project.

3.4.4 Botany Environmental Effects

Botany – Direct and Indirect Effects – Alternative 1

There are no anticipated effects to TES plants within the project, because the project would not happen.

Botany – Direct and Indirect Effects – Alternative 2

There are no anticipated effects to TES plants within the project, mainly because the degraded condition of the potential terrain over much of the Alternative renders the existence of good quality TES plant habitat to a low probability, but also because the opportunities for appropriate BOPU habitat are infrequent/low. This is because there are relatively few areas containing pumice openings, which is the preferred habitat for BOPU. This Alternative, because it involves much more disturbance than Alternative 3, creates a higher probability of damage or degradation to potential BOPU habitat than Alternative 3.

Botany – Direct and Indirect Effects – Alternative 3

There are no anticipated effects to TES plants within the project. The degraded condition of the terrain over much of the area results in a low probability of existence of quality TES plant habitat. Relatively few areas contain pumice openings, which is the preferred habitat for BOPU and opportunities for BOPU habitat are infrequent and low. This Alternative, because it involves much less disturbance than

Alternative 2, creates a lower probability of damage or degradation to potential BOPU habitat than Alternative 2.

Botany – Cumulative Effects – Alternatives 2 and 3

The addition of a jeep trail would add a permanent linear disturbance to the area that was not previously there. By itself, it would not pose a threat to the long-term existence of BOPU habitat. The larger concern is whether other uses and types of OHV's would begin using the trails where they are not too difficult to navigate, and then user-created, unsanctioned trails begin to be created off of this system. These trails would now be considered illegal, under newly enacted travel management rules. Also, many years of timber harvest and associated activities have disturbed the soil surface and made it less suitable for BOPU. If left undisturbed, these scars would likely heal over time and in areas where pumice openings were present, may eventually be suitable once again for BOPU. Previously-open pumice areas of prime BOPU habitat are now filling in with lodgepole pine. This plays a role in preventing BOPU from becoming more widespread through the project area. Because there are no anticipated effects to TES plants within the project, there would be no cumulative effects as a result of this project when added to other past, present and reasonably foreseeable future actions.

3.5 Botany Noxious Weeds

3.5.1 Noxious Weeds – Introduction

Aggressive non-native plants, or noxious weeds, can invade and displace native plant communities causing long-lasting management problems. Noxious weeds can displace native vegetation, increase fire hazards, reduce the quality of recreational experiences, poison livestock, and replace wildlife forage. By simplifying complex plant communities, weeds reduce biological diversity and threaten rare habitats. Potential and known weeds for the Deschutes National Forest are listed in the Noxious Weeds Specialist Report, which can be found in the project file. In addition to noxious weeds, which are designated by the State, there is a group of non-native plants that are also aggressive though are not officially termed "noxious". These species are also considered in this assessment.

3.5.2 Noxious Weeds – Regulatory Framework

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, Forest Service policy requires that decision documents must identify noxious weed control measures that would be undertaken during project implementation (FSM 2081.03).

A Record of Decision for Preventing and Managing Invasive Plants was signed in October 2005, and incorporates its standards into the Forest Plan of the Deschutes National Forest. Two of those standards specifically address prevention of weed introductions (see Noxious Weed Report, Project Record for full text of standards) into projects of the type that the Rim Butte Jeep Trails project represents. These standards obligate the Forest Service to incorporate weed prevention into its planning documents and implementation phase.

The following goals and guidelines, relative to this project, are listed in the *USDA Forest Service Guide to Noxious Weed Prevention Practices*. This guide discusses weed prevention practices that support the 2/3/99 Executive Order on Invasive Species.

3.5.3 Noxious Weeds – Analysis Methods

The following factors were considered in determining the level of risk for the introduction or spread of noxious weeds.

Vectors (if contained in project proposal) ranked in order of weed introduction risk:

1. Heavy equipment (implied ground disturbance)
2. Importing soil/cinders
3. Off-Highway Vehicles
4. Grazing (long-term disturbance)
5. Pack animals (short-term disturbance)
6. Plant restoration
7. Recreationists (hikers, mountain bikers)
8. Forest Service project vehicles

The project proposal and exisitence of vectors was reviewed to determine if the risk if high, moderate, or low. Following are the definitions:

Table 17 Definitions of plant vector risk

Risk	Vector
High	Known weeds in / adjacent to project area; AND
	Any of vectors #1-8 in project area; AND
	Project operation in/adjacent to weed populations.
Moderate	Any of vectors #1-5 present in project area.
Low	Any of vectors #6-8 in project area; OR
	Known weeds in/adjacent to project area iwthout vector presence.

A risk ranking of HIGH is appropriate for this project because, vehicles would be invited to use the area. There would also be vehicles involved in the construction and maintenance of the trails. These things in turn bring a risk of importing weed seeds or parts to the trail system, since the vehicles using the system will be coming from weed-infested areas (it doesn't matter where they are coming from; there are weeds in any settled area). Following the mitigations will address this issue and will reduce, but not eliminate, the risk. (see Table 4).

3.5.4 Noxious Weeds – Affected Environment

The affected environment for noxious weeds is the same as for TES plant species.

3.5.5 Noxious Weeds – Environmental Consequences

Noxious Weeds – Direct and Indirect Effects – Alternative 1

There would be no direct or indirect effects because the trail would not be built. The area would continue to receive low recreational use and forest management activities, which would be accompanied by a risk of weeds being introduced to the area.

Noxious Weeds – Direct and Indirect Effects – Alternatives 2 and 3

The vehicles used to construct and maintain the trails would carry a risk of introducing weed seeds or parts to the project. Making sure the equipment is cleaned prior to project entry reduces this concern, but does not eliminate the risk.

The presence of a new motorized trail system would carry a risk of weed introductions/weed spread. It is also possible that the presence of the new trail system would create opportunities for some trail users to veer off trail and create new, unsanctioned trails. This would, in turn, create new avenues for weed introductions. Off road use is now illegal under the new Travel Management Rule.

Noxious Weeds – Cumulative Effects – Alternatives 2 and 3

Although there have been numerous timber sales, thinnings, and fuels reduction treatments in the area, the area remains nearly weed-free. The construction and use of the Rim Butte Jeep Trails, however, poses a permanent, substantial new weed introduction/weed spread threat. A strategy for early detection and rapid response for treating weed sites with herbicide, is available as part of the new Deschutes-Ochoco Invasive EIS. This would help control weed proliferation faster and more efficiently than hand-pulling. In addition the area would be monitored annually for noxious weeds and steps would be taken to control noxious weeds located in the area (see section, 2.4.2, *Monitoring—Noxious Weeds).*

3.6 Transportation System

3.6.1 Transportation System – Regulatory Framework

Forest Wide Roads Analysis, 2003: Interdisciplinary recommendations on the road Maintenance Levels and maintenance needs for arterial and collector roads across the Deschutes National Forest.

Project Level Travel Analysis: Completed for the Rim Butte project under direction from the Travel Management Rule when designating new motorized routes. Interdisciplinary assessment of existing conditions, issues and recommendations related to motorized travel routes within the Rim Butte travel analysis area. Included as Appendix B in this document.

Forest Service Manual (FSM) 7733 –guidance for removal of roadside danger trees

Region 6 Danger Tree Policy: guidance for the assessment of danger trees

Highway Safety Act: Safety guidance and regulations on roads maintained for standard passenger cars, including site distances, road widths, and speed limits.

3.6.2 Transportation System – Maintenance Needs

The Rim Butte Off-Highway Vehicle (OHV) analysis area includes 253 miles of open roads under Forest Service jurisdiction located in the southeastern portion of the Bend/Ft Rock Ranger District. FS roads that border this planning area include FS road 2121 (west), FS road 2225, 2125, 21 (north), FS 18 road (east), FS 22 road (south). The planning area access is also supported within via collectors, 2225, 2230, 2235, 2236, 2238, 2239, and 2248. Table 18 shows the arterial and collector roads that provide access to and within the Rim Butte analysis area.

Table 18 Arterial HSA and Collector Access to the Rim Butte Analysis Area

Road #	Mtc. Level	Termini From	Mile From	Termini To	Mile To	Total Miles	Jurisdiction
2200000	4	Forest Boundary	1.69	FS Road 18	18.06	16.37	Forest Service

1800000	3	Forest Road 21	31.40	FS Road 22	40.0	8.60	Forest Service
2100000	2	Milepoint 20.33	20.33	FS Road 18	25.96	5.63	Forest Service
2121000	2	FS Road 22	0.0	FS Road 2225	5.14	5.14	Forest Service
2125000	2	FS Road 2127	0.0	FS Road 2225	3.84	3.84	Forest Service
2127000	2	FS Road 21	2.4	FS Road 2230	8.02	5.87	Forest Service
2225000	2	FS Road 2121	4.42	Mile Point 8.65	8.65	4.23	Forest Service
2225000	2	FS Road 2125	9.65	FS Road 22	15.53	5.88	Forest Service
2230000	2	FS Road 22	0.0	FS Road 18	11.28	11.28	Forest Service
2235000	2	FS Road 2230	0.0	FS Road 2225	5.60	2.80	Forest Service
2236000	2	FS Road 2230	0.0	FS Road 18	4.41	4.41	Forest Service
2238000	2	FS Road 2230	0.0	FS Road 2239	3.73	3.73	Forest Service
2239000	2	FS Road 2230	0.0	FS Road 21	5.95	5.95	Forest Service
2248000	2	FS Road 22	0.0	FS Road 2230	3.95	3.95	Forest Service

FS Roads 18 and 22 are the only Highway Safety Act (HSA) arterial roads in the area and provide access to the area from the communities of Bend and La Pine, which are located approximately 40 miles and 12 miles away, respectively (Figure 1 Vicinity Map). FS road 22 (Finley Butte/South Ice Cave Rd) provides the primary access to the area. Both of these arterials have deferred maintenance needs (Table 19).

Table 19 HSA Arterial Roads Deferred Maintenance

Road #	Mtc. Level	From Mile	To Mile	Miles	Work Deferred
22	3	19.9	26.3	6.43	Reconstruct with 3” lift Bituminous Surface Treatment
18	4	9.1	40.0	30.9	Resurface with 6” Crushed Dense Grade Aggregate

3.6.3 Transportation System – FS Collector Roads (Non-HSA System)

There are 67.7 miles of Forest Service Collector Roads within the analysis area (Table 20). These roads were analyzed in the Forest Wide Roads Analysis and categorized by Maintenance Level. The Collector road system in the planning area has a very broad spectrum of maintenance needs from significant resurfacing and drainage restoration to minimal blading and shaping of roadway maintenance. Aggregate and cinder surfacing on these roads has diminished and created varying needs for re-surfacing, drainage restoration and light to heavy brushing. Road related maintenance along these routes consists primarily of safety related items such as roadside brushing, ditch cleaning, reclaiming of clearing limits for site distance, and felling of danger trees along travel routes bordering and within the project boundary. Danger tree reduction would be in accordance to FSM (Forest Service Manual) 7733 and Region 6 Danger Tree Policy.

Table 20 Forest Service Collector Roads within the Rim Butte Travel Analysis Area

Road #	Mtc. Level	From Mile	To Mile	Total Miles	EA Miles	Work Needed
21	2	20.33	27.60	7.27	3.64	Shape, Restore Drainage
2121000	2	0.0	5.14	5.14	2.57	General Maintenance
2125000	2	0.0	4.40	3.84	1.92	General Maintenance
2127000	2	2.24	8.02	6.10	6.10	General Maintenance
2225000	2	4.42	8.65	4.23	2.21	General Maintenance
225000	2	9.65	15.53	5.88	2.94	General Maintenance
2223000	2	0.0	11.28	11.28	11.28	Resurface w/4” Compacted Aggregate
2235000	2	0.0	5.61	5.61	5.61	General Maintenance
2236000	2	0.0	4.41	4.41	4.41	General Maintenance
2238000	2	0.0	3.79	3.73	3.73	General Maintenance
2239000	2	0.0	5.87	5.95	5.95	General Maintenance
2248000	2	0.0	4.27	4.27	4.27	General Maintenance

3.6.4 Transportation System - Forest Service Local Roads

Local roads within the analysis area (Maintenance Level 2) are generally native surfaced and receive only project specific maintenance. Local roads are distributed across the entire analysis area, with a greater abundance in the southern and eastern portions and the lowest density in the north central portion. There are 164 miles of this type of road. The Roads and Access Specialist Report details all the local Forest Service roads in the project area. Maintenance Level 2 roads are open for mixed use by both highway-legal and non-highway-legal vehicles outside of the East Fort Rock OHV closure area. Associated maintenance on Level 2 roads includes limited brushing and felling of Danger trees for site safety. Danger tree reduction is conducted in accordance to FSM (Forest Service Manual) 7733.

3.6.5 Transportation System – Forest Service Closed Roads

There are 124 miles of Maintenance Level 1 roads within the analysis area. Level 1 roads are closed to the public and are not shown on the Motor Vehicle Use Maps (MVUMs). These roads are available for long-term management needs and travel on these routes is allowed for administrative use and special use permittees. Most of these roads are located in the southern and southeastern portions of the analysis area and were closed under the Central EA (1999). The surfaces of these roads are generally intact and comprised of native surfaces. Non-highway-legal vehicles are currently prohibited on Level 2 roads within the East Fort Rock OHV Area boundary in the eastern portion of the analysis area and on all roads maintained for passenger car use (Maintenance Level 3, 4, and 5).

3.6.6 Transportation System – Existing Road and Trail Density

The Rim Butte OHV analysis area lies within portions of eight separate 12th-field subwatersheds. The open road density in the project area is 2.63 miles per square mile. The density of the total road system footprint (all open and closed roads) in the project area is 3.97 miles per square mile. The following

tables summarize operational and total system road densities for the entire subwatersheds as well as the portions of 12th field subwatersheds within the Rim Butte project area (Table 21).

Table 21 Road Densities for Portions of Subwatersheds in the Rim Butte Project Area (Miles/Square Mile)

Subwatershed (12th Field)	Open Road Density (does not include closed, level 1 roads)		System Road Density (all roads including closed, level 1 roads)	
	Entire Subwatershed	Portion Inside Project Area	Entire Subwatershed	Portion Inside Project Area
The Dome	3.19	2.37	2.37	4.27
China Hat	2.63	2.91	2.91	4.16
Ooskan Butte	2.81	1.88	1.88	4.17
Surveyor's Lava Flow	1.43	1.02	1.02	1.39
Green Butte	3.99	2.42	2.42	3.21
Paulina Peak South	2.73	3.30	3.30	3.30
Ipsoot Butte	3.16	4.43	4.43	4.43
Pine Lake	1.27	1.61	1.61	5.05
Project Area	***2.63***	***3.97***		

Motorized trails within the Rim Butte analysis area include 43.9 miles of Class I and II trails associated with the East Fort Rock OHV area. The current trail density within the entire Rim Butte project area is 0.46 miles/square mile. The density of existing motorized trail routes within the two 12th field subwatersheds in which they are located is shown in Table 22. Trail densities are calculated for the subwatershed area within the Rim Butte Analysis Area and for the 12th field subwatersheds in their entirety.

Table 22 Motorized Trail Route Densities for 12th field subwatershed area within the Rim Butte Travel Analysis Area and for entire 12th field subwatershed (Mile/Square Mile)

Subwatershed Name	Miles Motorized East Fort Rock OHV Trails within Rim Butte Project Area	Motorized Trail Density miles/square mile		Motorized Trail and Open Road Density miles/square mile	
		Entire Subwatershed	Portion in Project Area	Entire Subwatershed	Portion in Project Area
The Dome	26.4	0.47	0.9	3.67	3.27
China Hat	17.5	0.58	0.94	3.21	3.85
TOTAL	***43.9***				

Total motorized travel route densities (trails and open roads) within the two subwatersheds that have trails are also displayed in Table 22. Travel route densities are higher than open road densities by approximately 0.9 mi/mi^2 in both subwatershed areas within the Rim Butte analysis area and approximately 0.5 mi/mi^2 for the entire 12th field subwatershed areas.

3.6.7 Transportation System - Existing Motorized Uses

Transportation System - Existing Motorized Uses – Roads

Existing motorized use of open system roads within the analysis area by the public generally consists of driving street legal motor vehicles to access designated firewood cutting areas, hunt, wander through general forest, or access OHV trails and dispersed camping sites. Arterial roads FS 21, 22 and 18 are primarily used to reach collector roads that enter the analysis area and access the Ice and Rim firewood cutting areas or the East Fort Rock OHV system South Lava staging area. Collector routes within the analysis area also access southern portions of the Newberry Volcanic National Monument. Motorized use of local roads off of collectors generally consists of access to cut firewood and reach general landscape features throughout the area for hunting and dispersed recreation. Overall use of local roads is relatively low in this area, while use levels for arterials and collectors is low to moderate. There are no green dot roads in the analysis area.

Motorized administrative use of open and closed system roads in the area primarily consists of access for general forest and recreational management, including accessing plantations and the East Fort Rock OHV staging areas and trails, respectively.

Transportation System - Existing Motorized Uses – Trails

Motorized use in the analysis area also includes public use of existing East Fort Rock OHV system trails with Class 1 and Class III vehicles. Approximately 43.9 miles of trails are currently within the Rim Butte analysis area, including portions of trail numbers 7, 30, 32, 35, 36, 37, 38, 39, 40, 49, and 90. The South Lava staging area is also located within the analysis area. Although use figures for the trails have not been quantified, their general use is relatively low compared with other areas of the system. This is primarily due to the greater distance from primary staging areas located further north and a shorter use season restricted by snow accumulations. The staging area has a parking capacity for 12 to 25 vehicles, depending on the size or configuration of trailers, and could generate between 36 and 50 riders onto the trails within the analysis area per day. However, use data indicates that weekday use at the staging area is negligible and weekends generate between 1 and 6 groups, or between 3 and 18 riders. Weekend patrols for all of 2009 contacted a total of 18 groups.

There are currently no Class II OHV system trails within the Rim Butte travel analysis area and current use by these vehicles is limited to Level 2 roads outside of the East Fort Rock OHV area boundary. All system roads within the boundary of the East Fort Rock OHV area were closed to non-street legal vehicles under the decision to implement the East Fort Rock OHV Area. Existing use of Level 2 roads outside the East Fort Rock OHV boundary by Class II vehicles appears to be minimal, primarily due to the non-technical nature of these surfaces. Use of these system roads by Class I and Class III OHVs is also not readily apparent, primarily due to the presence of motorized trails designated in the East Fort Rock OHV area.

Transportation System - Existing Motorized Uses – Future Motorized Use

The anticipated future use patterns of motorized vehicles within the analysis area are likely to be reflective of the current trends associated with existing administrative and recreational use. These trends include timber sale-related use during the summer and hunting related traffic in the fall. It is anticipated, however, that the selection and implementation of an action Alternative in this analysis would result in an increase in recreational traffic during the year as a result of increased Class II OHV use.

3.6.6 Transportation System – Environmental Consequences

Transportation System – Direct and Indirect Effects – Alternative 1

Alternative 1 would result in no changes from the existing condition in the Rim Butte Analysis Area. The mileage of open and closed roads, and the associated road densities within the analysis area, would remain the same as reported by subwatershed in Table 21. The mileage and densities of trails would also remain at existing levels since no new motorized trail routes would be designated (Table 22**)**.

Non-highway-legal vehicles would continue to be prohibited on all roads maintained for passenger car use (Maintenance Level 3, 4, and 5) and on Level 2 roads within the East Fort Rock OHV Area boundary closure. All Maintenance Level 2 roads outside the East Fort Rock boundary designated for Mixed Motorized Use would remain unchanged.

Transportation System – Direct and Indirect Effects – Common to Alternatives 2 and 3

No new roads would be constructed to support this project, resulting in no change in open road densities reported in Table 21. However, there would be an increase in designated motorized trail miles resulting in a small increase in motorized trail densities. The designation of new trail routes and the construction of staging areas would result in an increase in both highway-legal and non-highway-legal traffic within the analysis area. As a result, maintenance needs in the form of blading would likely increase on collector roads accessing the staging areas to maintain user comfort and minimize degradation of the road surfaces. Maintenance Level 2 roads would not receive additional maintenance to support the proposed motorized trail system.

Transportation System – Direct and Indirect Effects –Alternative 2

No new roads would be added under Alternative 2. As a result, the open road density would remain the same for all (Table 22).

Alternative 2 would designate approximately 33 miles of motorized trail routes across five 12th field subwatersheds that bisect the Rim Butte travel analysis area boundary. This would result in an increase of motorized trail route densities ranging from 0.07 to 0.94 mi/mi^2 for each subwatershed area within the Rim Butte project area boundary and from 0.02 to 0.24 mi/mi^2 for the entire 12th field subwatershed areas (Table 23). Motorized trail density within the boundary of the project area would increase from 0.46 mi/mi^2 to 0.80 mi/mi^2.

Table 23 Comparison of Alternatives: Motorized Trail Density and Total Open Road and Motorized Trail Density by Subwatershed (Miles/Square Mile)

Subwatershed Name	Alt 2: Additional Trail Miles	Alt. 2: Increase in Trail Density (Miles/Square Mile)		Alt. 2: Total Open Road and Motorized Trail Density (Miles/Square Mile)		Alt 3: Additional Trail miles	Alt. 3: Increase in Trail Density (Miles/Square Mile)		Alt. 3: Total Open Road and Motorized Trail Density (Miles/Square Mile)	
		Portion in Project Area	Entire Sub-watershed	Portion in Project Area	Full Sub-watershed		Portion in Project Area	Entire Sub-watershed	Portion in Project Area	Full Sub-watershed
The Dome	12.84	0.44	0.23	3.70	3.89	17	1.47	0.78	3.84	3.97
Ooskan Butte	3.1	0.19	0.08	2.07	2.89	NA	NA	NA	NA	NA
Surveyors Lava Flow	11.94	0.94	0.24	3.74	1.67	NA	NA	NA	NA	NA
Green Butte	4.66	0.69	0.12	3.11	4.11	NA	NA	NA	NA	NA
Ipsoot Butte	0.32	0.07	0.02	4.50	3.18	NA	NA	NA	NA	NA

Alternative 2 would slightly increase the density of open roads and motorized trails. The density would increase from 3.09 mi/mi^2 to 3.43 mi/mi^2 within the project area. Increases would be similar for each of the individual subwatershed areas within the project area boundary but slightly less for the entire subwatershed area.

The designation of new trail routes and the construction of staging areas would result in an increase in both highway-legal and non-highway-legal traffic within the analysis area. An increase in traffic on major collector roads leading to the staging areas (FS Roads 2225 and 2230) would occur as a result of implementing this Alternative. As a result, more blading of these roads would be needed to eliminate washboards and provide for at least a minimum level of user comfort. There would be a lesser increase in maintenance needs on native surface Maintenance Level 2 roads built to lower standards and intended for use by high clearance vehicles with no expectation of user comfort. Impacts from any increases in Class II vehicle traffic on Level 2 roads in the area is expected to be minimal since they essentially act as a street-legal truck on surfaces that do not have obstacles. Any maintenance needs on Level 2 roads would consist of corrective measures where drainage patterns enhanced by traveled road surfaces threaten to degrade adjacent resource values as a result of increased use.

Transportation System – Direct and Indirect Effects – Alternative 3

Under Alternative 3, no new roads would be added and the open road density would not change (Table 21). Changes to trail miles and density as a result of Alternative 3 are shown in Table 24.

Implementation of Alternative 3 would add 17 miles of motorized trail in the Dome subwatershed. Trail density would be higher in the portion of the Dome in the project area by 0.17 mi/mi^2 compared to Alternative 2 (0.63 mi/mi^2 versus 0.46 mi/mi^2). New motorized trails would result in an increase in OHV trail density in the Dome subwatershed from for the Dome subwatershed area within the project area.

This would result in a change from 0.47 mi/mi^2 to 0.78 mi/mi^2 for the entire Dome subwatershed area (Table 23).

The overall density of open roads and motorized trails would slightly increase from 3.09 mi/mi^2 to 3.26 mi/mi^2 within the analysis area boundary as a result of Alternative 3. Travel route densities within the portion of the Dome subwatershed within the analysis area boundary and the in its entirety are summarized in Table 23.

The designation of new trails and the construction of staging areas would result in an increase in both highway-legal and non-highway-legal traffic within the analysis area. An increase in traffic on major collector roads leading to the staging areas (FS Roads 2230 and 2127) would require more maintenance of these roads to eliminate washboards and provide for at least a minimum level of driver convenience.

Approximately 10 miles of Level 2 system roads paralleling proposed Class II trail routes inside of the East Fort Rock OHV boundary would be designated for shared use under this Alternative (Table 24). As a result, maintenance needs from increases in Class II vehicle traffic on Level 2 roads in the area is expected to be slightly greater than under Alternative 2. However, the increase in traffic by Class II vehicles on these road surfaces is likely to incur minimal impacts to the road surfaces due to low rates of speed. Any maintenance needs on Level 2 roads would consist of corrective measures where drainage patterns enhanced by traveled road surfaces threaten to degrade adjacent resource values or the blading of ruts that may occur as a result of wet season use.

Table 24 Alternative 3 Level II Roads proposed for conversion to shared use (Class I, II, and III)

Road #	Begin and End Termini		Miles
2230500	2230333	2230553	3.20
2230553	2230500	2230560	0.08
2230560	2230500	2230553	0.36
2230545	2230500	Dead End	0.78
2127400	2230500	2127000	1.50
2127700	2230000	2127000	2.30
2127000	2127700	2127300	1.70
2230516	2230500	Buffer	0.09
		Total Miles	**10.01**

3.6.7 Transportation System – Cumulative Effects

Road system effects were analyzed at the project area scale. This scale was chosen because transportation systems are affected locally by decommissioning and closure. Past, present and reasonably foreseeable future activities were analyzed (Figure 11 and Figure 12). The present activity that may affect the road system is the new Travel Management Rule and Motor Vehicle Use Map (MVUM). The MVUM road system is shown in Figure 14. This map and the associated rules would make it possible to enforce road closures and limits to off-road travel. These activities would result in a reduction in user-created roads and impacts from cross-country travel.

3.7 Fisheries

Proposed trails are located in the Pine Lake - Devils Garden 10th field watershed. This watershed has limited surface water and riparian systems. There are no perennial, intermittent, or ephemeral stream channels, seeps, springs, wetlands, riparian areas, or potentially wet soils with seasonally high water tables or soils within the project area. Due to the lack of surface water, there are no fish populations or other aquatic species within the project area. The project area lies within lands managed under the Inland Native Fish strategy (INFISH). However, there because of the lack of riparian and water resources, there are no Riparian Habitat Conservation Areas within the project area.

There would be no effects to water, riparian, and fisheries resources from implementation of either of the action Alternatives since these resources are not found within the project area. There would be No Effect to Essential Fish Habitat (EFH) and no impacts to any Oregon Department of Environmental Quality Water Quality Impaired Water body (303(d)).

3.8 Scenic Resources

3.8.1 Scenic Resources – Introduction

Proposed trails are located in portions of the Long Prairie and Pine Lake – Devils Garden 10th field watersheds. The Proposed Class II trails are bounded by Forest Road 2121 on the west, Forest Road 22 on the south, Forest Road 2230 on the east, and Newberry National Volcanic Monument on the north (T22S, R12E, Section 33 on the northwest corner: T22S, R12E, Section 8 on the southwest corner: T23S, R14E, Section 17 on the southeast corner; and T22S, R14E, Section 24 on the northeast corner.

The analysis will describe the anticipated effects on scenery, aesthetics, and visitor experience within the Scenic Views Management Areas which is along Road 21 (Paulina Lake Road), Road 22 (South Ice Cave Road), Road 18 (China Hat Road), and includes several buttes (Kweo, Ooskan, Box, Cinder Cone) as well as the northern portion of the project area that is adjacent to Newberry National Volcanic Monument.

3.8.2 Scenic Resources – Regulatory Framework

The Forest Plan for the Deschutes National Forest provides standards and guidelines for management areas. The Scenic Views Management Area describes desired future conditions of various settings and how these are to be met by various activities or actions. The Scenery Management System (SMS) includes social impacts to recreation visitors and considers the visitor experience an integral part of the visual impact assessment. This current and more holistic system (1995) is the methodology used and in place for scenic resource analysis although the outdated (1974) Visual Management System (VMS) is referenced.

Scenery Management System Objectives

The project area is located within a Scenic Views Management Area that has a Medium Scenic Integrity Level in the newer SMS and Partial Retention in the older VMS. The newer SMS system that is currently used retains many of the basic inventory elements of VMS although it also more fully integrates both the visitor experience and human values into the analysis process as a way to balance both human and natural needs in managing ecosystems.

The USDA Forest Service developed “Landscape Aesthetics - A Handbook for Scenery Management System” (USFS 1995) used to protect and enhance scenic resources which may be diminished by human activities, such as vegetation management, recreation and/or administrative facility development. The

analysis takes into consideration the balance between Social (human) and Ecological (natural) needs within the analysis area.

The Forest Service implementing regulations currently establish a variety of Scenic Integrity Levels for Scenic Views—MA 9. These standards include:

- High Scenic Integrity Level – SMS - Natural Appearing Landscape

  (Retention - VMS) – MA 9, SV-1 Foreground, SV-3 Middleground
- Moderate Scenic Integrity Level – SMS - Slightly Altered Landscape

  (Partial Retention - VMS) – MA 9, SV-2 Foreground, SV-4 Middleground
- Low Scenic Integrity Level – SMS - Altered Landscape

  (Modification – VMS or General Forest) – MA 8, GFO with Foreground as well as Middleground.

The distance zones for Scenic Views Management Areas for an observer are as follows:

- Immediate Foreground 0-300 feet
- Foreground 0 to ½ mile
- Middleground ½ to 4 miles
- Background 4 miles to horizon

Scenery Management System Objectives are defined in terms of Scenic Integrity Levels which describe existing conditions and whether the landscape is visually perceived to be “complete” or not. The most complete or highest rating for Scenic Integrity Levels means having little or no deviation from the landscape character that makes it appealing and attractive to visitors and local residents. In addition to describing existing conditions, Scenic Integrity Levels also describe the level of development allowed and ways to mitigate deviations from the area’s landscape character.

Usually the most effective way to meet Scenic Integrity Levels is to repeat visual form, line, color, texture, pattern, and scale common to the scenic values of the landscape character being viewed. For example, in natural and natural appearing landscapes, deviations such as created openings can sometimes be visually enhanced through repetition of size, shape, spacing, surface color, edge effect, and pattern of natural openings common to the existing landscape character.

Scenic Resources – Desired Future Condition

The desired condition for ponderosa pine forests is to achieve and maintain visual diversity through variation of stand densities and size classes. Large, old- growth pine will remain an important constituent, with trees achieving 30 inches in diameter or larger and having deeply furrowed, yellow bark characteristics. For species other than ponderosa pine, the desired condition requires obtaining visual diversity through spatial distribution of age classes and a mix of species through density manipulation or openings, or through a mixture of age classes within stands.

Adding structures or additions to existing structures in the landscape can often be accomplished by repeating architectural form, line, color, texture, pattern, and scale that visually relates to the surrounding site features. When repetition is designed to be accurate and well placed, the deviation may blend so well that change is not evident. Refer to LRMP, MA 9, Scenic Views Allocation; and the Scenery Management System (SMS--USDA FS 1995) handbook for more detail.

3.8.3 Scenic Resources – Existing Condition

The Rim Butte project area is located on the southern flank of the Newberry Volcano, with the Newberry National Volcanic Monument forming its northern boundary. The project area contains 7,602 acres of Scenic Views Management Area classified as Medium Scenic Integrity (SMS) or Partial Retention (VMS) which includes 4,058 acres of Foreground and 3,544 acres of Middle ground. Scenic Views - Foreground areas are located along Road 21 (Paulina Lake Road), Road 22 (South Ice Cave Road), and Road 18 (China Hat Road). Scenic Views - Middle ground areas are located along the northern boundary where the project area meets the Newberry National Volcanic Monument boundary and on the various cinder buttes within the project area. There are Old Growth Management Areas located adjacent to the Scenic Views - Middle ground areas in the Kweo Butte and Box Butte areas.

Travel on Roads 22 and 18 reveals a landscape character dominated by ponderosa pine intermixed with lodgepole pine with a brush understory along both sides of the road. There are few open views to surrounding topographical features. These Scenic Views - Foreground areas are fairly monotonous with occasional openings from past vegetative treatment units. Portions of the drive along these roads are slightly more interesting where elevation changes and the roads curve. However, the topography within the project area along the north and west sides of these roads, respectively, is relatively gentle and not visually diverse.

The landscape character along the eastern end of Road 21 is similar to the conditions found on Roads 18 and 22 but begins to change with steeper slopes, undulating terrain, and more diverse vegetation as the road climbs the flanks of Newberry Crater. The area becomes more visually diverse as the road alignment and topography allows for views of buttes and flanks of the Newberry complex to the south.

3.8.4 Scenic Resources – Environmental Consequences

Scenic Resources – Direct and Indirect Effects – Alternative 1

Under this Alternative, there would be no new trails or changes to existing conditions. Existing use would continue with no existing trees being removed and no additional improvements for a designated system of technical jeep trails in a suitable and sustainable location that minimizes impacts to resources while providing a worthwhile trail experience.

Scenic Resources – Direct and Indirect Effects – Alternative 2

The Proposed Action Alternative 2 is to designate 32.2 miles of Class II OHV trails in the Rim Butte area to provide a loop trail system with a variety of technical challenge levels. Designated routes would be located on areas of existing disturbance, such as roads or skid trails, as much as possible. New trails would be designated in some locations and require minimal construction or vegetative disturbance to define the trail tread. Obstacles would be left to create technical difficulty and minimize safety concerns associated with access by non-Class II motorized vehicles.

The proposed routes would meet standards and guidelines for the Scenic Views Management Areas by not climbing any of the buttes that are within areas classified as having Medium Scenic Integrity Levels (SMS) or Partial Retention (VMS). Most of the trails are within the General Forest Management Area (M8) and very small portions are within the Scenic Views Management Areas (M9). Any stand-out features such as scenic views of the buttes would not be changed by Alternative 2. In general, this area has been fairly heavily logged and the removal of a few selected trees and thinning of staging areas would not create a major change to the appearance of the area.

Vegetation management activities or construction of recreation staging areas or trails would not occur within Medium Scenic Integrity Level (SMS) or Partial Retention (VMS) Foreground areas along Roads 21, 22 and 18 so standards and guidelines for these Scenic Views Management Areas would be met. These activities would also not occur in the Medium Scenic Integrity Level (SMS) or Partial Retention (VMS) Middle ground areas of the northern portion of the project area so Scenic Views Management Area standards and guidelines would also be met.

Visual diversity would improve the visitor experience along trail corridors and staging areas by retaining clumps of existing trees outside the trail tread and adjacent to parking and camping sites. A primary Forest objective is to highlight large ponderosa pine. No large ponderosa pine would be cut to establish trails or staging areas. The incidental removal of smaller diameter lodgepole and ponderosa pine along trail corridors and within staging areas would open views to larger ponderosa pine throughout the area and enhance scenic quality. This would be consistent with Scenic Views Management Area standards and guidelines as directed by the LRMP.

Scenic Resources – Direct and Indirect Effects – Alternative 3

Alternative 3 would have fewer trails with 17.6 miles of Class II OHV trails proposed instead of 32.2 miles. Vegetation management activities or construction of recreation staging areas or trails would not occur within Medium Scenic Integrity Level (SMS) or Partial Retention (VMS) Foreground areas along Roads 21, 22 and 18 so standards and guidelines for these Scenic Views management areas would be met. These activities would also not occur in the Medium Scenic Integrity Level (SMS) or Partial Retention (VMS) Middle ground areas of the northern portion of the project area so Scenic Views Management Area standards and guidelines would also be met.

Visual diversity would improve the visitor experience along trail corridors and staging areas by retaining clumps of existing trees outside the trail tread and adjacent to parking and camping sites. A primary Forest objective is to highlight large ponderosa pine. No large ponderosa pine would be cut to establish trails or staging areas. The incidental removal of smaller diameter lodgepole and ponderosa pine along trail corridors and within staging areas would open views to larger ponderosa pine throughout the area and enhance scenic quality. This would be consistent with Scenic Views Management Area standards and guidelines as directed by the LRMP.

Scenic Resources – Cumulative Effects

There are no cumulative effects from either Alternative 2 or Alternative 3 with no manipulation of vegetation or construction of recreational facilities within Scenic View Management Areas classified as having a Medium Scenic Integrity Level (SMS) or Partial Retention (VMS) Foreground or Middle ground.

3.9 Soils

3.9.1 Soils – Regulatory Framework and Management Consistency

Deschutes Land and Resource Management Plan (LRMP) direction contains specific standards and guidelines for the soil resource for each management allocation. Standards and guidelines relevant to General Forest (MA-8) limit the allowable extent of detrimental soil conditions within activity areas as a result of proposed actions (SL-3). Regional guidance provides policy for planning and implementing management practices which maintain or improve soil quality (FSM 2520, R-6 Supplement No. 2500-98-1) and supplements the LRMP standards and guidelines. Standard and Guideline SL-4 directs the use of rehabilitation measures when the cumulative impacts of management activities are expected to cause

detrimental damage on more than 20 percent of an activity area. Standard and Guideline SL-5 limits the use of mechanical equipment in sensitive soil areas.

The primary objective of LRMP direction is to ensure that management activities are planned and conducted to minimize on-site loss of soil productivity on lands dedicated to vegetative production. Lands dedicated to permanent facilities necessary to achieve other land management objectives, such as recreation facilities and administrative sites, remove soil from production and preclude other uses of the soil for as long as these facilities remain in use. As a result, intensively developed sites such as staging areas and trail routes are not considered as productive activity areas to which spatial soil quality standards and guidelines apply. Site specific design criteria are generally implemented to minimize off site movement of soil and peripheral disturbance for activities that dedicate the soil resource to facilities and could not be constructed to limit spatial disturbance within the specific LRMP thresholds.

Construction activities associated with the new staging areas would not disturb sensitive soils with a high erosion hazard or potentially wet soils that would require special mitigation. Soils are sufficiently resistant to erosion to permit limited and temporary exposure of bare soil during development or use. The types and locations of soil disturbance are not expected to cause any indirect, off-site impacts to soils in adjacent areas, such as loss or burial of productive surface soils. Project design would include appropriate Best Management Practices (BMPs) to control surface erosion during and following construction activities. The staging areas would be improved with crushed rock materials with a limited potential for long-term erosion problems following their placement.

The anticipated disturbance associated with the designation of new trail routes would minimally alter soil properties that affect long-term site productivity. Defining trail surfaces would not require the excavation of soil surface layers, although some vegetation would be cleared by using hand tools and saws to cut trees. The action Alternatives are not expected to create impacts that would cause irreversible damage to soil productivity, although these trails are expected to commit the surface to a long-term motorized travel route. The driving of jeeps over the soil and ground would compact mineral soil and break down rock surfaces. There is low risk for the proposed activities to cause soil mass failures (landslides) due to the inherent stability of dominant land types and the lack of seasonally wet soils on steep slopes. Careful planning and the application of erosion-control Best Management practices would be used to minimize surface erosion problems and prevent irreversible losses of the soil resource.

3.9.2 Soils – Analysis Methods

The discussion of soil effects for this project proposal is focused on the locations of the proposed staging areas and trail routes needed to accommodate recreation use objectives. A qualitative assessment of potential soil impacts was conducted to ensure that acceptable soil productivity is maintained for the growth of desired vegetation on undeveloped portions of the staging areas. The analysis also considered the effectiveness and probable success of Best Management Practices (BMPs) to control surface erosion during construction activities and subsequent recreational use.

3.9.3 Soils – Existing Condition

The landscape is characterized by gentle-to-moderately sloping uneven lava plains mixed with numerous cinder cone buttes. Slopes generally range from 0 to 15 percent with the exception of steeper side slopes (25 to 70 percent) associated with cinder cones and the rough edges of lava flows. The sites proposed for staging areas are located on nearly level to gentle slopes. Elevation ranges from about 5,000 feet to approximately 6,800 feet on top of Kweo Butte. Mean annual precipitation averages between 15 to 20 inches.

Dominant soils are moderately deep (20 to 40 inches) with moderate productivity potential for the growth of vegetation. Except for a few barren lava flows, overlaying soils have developed from a layer of airfall pumice and volcanic ash deposits. Surface soils consist of non-cohesive (loose), sandy-textured volcanics with very little structural development due to the young geologic age of the parent material. These volcanic ash-influenced soils have sandy textures with high infiltration and percolation rates that account for low amounts of overland flow. There are no perennial streams or other water bodies within the project area and most of the water yielded from these lands in excess of transpiration uses is likely delivered to subsurface aquifers through percolation. Surface erosion by water is generally not a concern due to low-to-moderate erosion hazards of soils located on gentle to moderately sloping landforms.

Soils derived from volcanic ash and pumice deposits have naturally low bulk densities and low compaction potential. However, mechanical disturbances can still reduce soil porosity to levels that limit vegetative growth, especially where there is a lack of woody debris and surface organic matter to help cushion the weight distribution of ground-based equipment. The sandy-textured surface layers are also easily displaced by equipment operations, especially during dry moisture conditions. The maneuvering of equipment is most likely to cause soil displacement damage on the steeper landforms. In general, the sandy-textured soils are not susceptible to soil puddling (rutting) damage due to their lack of plasticity and cohesion.

Suitability of Soils for Recreation Development

Representative soils on the proposed development sites are well suited for recreation development. Proposed staging areas are located on coarse textured ash soils with low surface erosion hazards, including soil types 7E, 76, and LX (a complex of 76, 64). These soil types are sufficiently resistant to erosion to permit limited and temporary exposure of bare soil during construction phases. Soils on these sites currently have adequate protection from vegetation and organic litter layers to control erosion rates within tolerable limits.

Soils on which trail routes are proposed are well suited for recreational trail development due to their low surface erosion hazards and general stability. Soils range from the coarse textured ash located in the proposed staging areas to competent basaltic bedrock. Existing developed OHV trails of the East Fort Rock OHV system within the eastern third of the project area are currently maintained on similar soils and support motorized use without excessive erosion or detrimental impacts.

None of the proposed recreational developments are located on soils within the project area that are sensitive to management based on identification criteria in the LRMP (Deschutes LRMP, Appendix 14, objective 5). All trail routes avoid sensitive soils on cinder cone buttes with slope gradients over 30 percent. There are no potentially wet soils with seasonally high water tables or soils with a high hazard for surface erosion within the project area.

The existing condition of the soil resource within the project area has mainly been influenced by intensively developed sites (e.g., roads, recreation facilities and trails) and logging facilities used for past timber harvest and yarding activities (Figure 11 and Figure 12). The intensively developed sites have committed the soil resource to a non-productive condition on less than 5% of the project area. Existing impacts to soils within the project area have primarily occurred on and adjacent to heavy use areas (e.g., log landings and primary skid trails) where mechanical disturbances removed vegetative cover, displaced organic surface layers, and/or compacted soil surface layers. Research studies and local soil monitoring have shown that soil compaction and soil displacement account for the majority of detrimental soil conditions resulting from ground-based logging operations (Page-Dumroese, 1993; Geist, 1989; Powers, 1999; USDA, Deschutes Soil Monitoring Reports).

Overall, the existing condition of the soil resource within past vegetative management activity areas meets LRMP standards for maintaining soil productivity. Much of the random disturbance between main

skid trails and away from landings has decreased naturally over time. Frost heaving and freeze-thaw cycles have gradually restored soil porosity in areas with slight to moderately compacted layers near the ground surface. Other factors that have helped the recovery process include root penetration, rodent activity, wetting and drying cycles, and surface organic matter. The establishment of vegetative ground cover and the accumulation of litter and organic matter continue to improve areas of displaced surface soil. Adequate amounts of coarse woody debris and surface organic matter currently exist to protect mineral soil from erosion and maintain the soils ability to retain moisture and provide both short and long-term nutrient supplies for the growth of vegetation.

3.9.4 Soils – Environmental Consequences

Direct effects occur at essentially the same time and place as the actions that cause soil disturbance, such as soil displacement and compaction caused by equipment operations. Indirect effects occur sometime after or some distance away from the initial disturbance, such as increased runoff and downslope erosion from previously compacted areas. Cumulative effects include all past, present, and reasonably foreseeable actions that cause soil disturbance within the same activity areas.

Soils – Direct and Indirect Effects – Alternative 1

Under Alternative 1 (No Action), no additional land would be removed from production to develop staging areas or new trail routes. No trees or other vegetation would be cleared to accommodate recreation use objectives. Since no construction activities would occur, the extent of exposed mineral soil would not increase and erosion control measures would not be necessary.

Surface erosion on existing roads and other management facilities would continue at relatively low rates due to gentle slopes and high infiltration rates of adjacent upland soils. Soil productivity of upland soils within the project area would not change appreciably unless a stand-replacing wildfire causes intense ground-level heating long enough to detrimentally alter soil physical, chemical and biological properties.

Soils – Direct and Indirect Effects – Alternative 2 and 3

Both action Alternatives would construct two new staging areas and develop a system of 80” wide motorized trail routes for Class II OHVs. The staging areas would commit approximately 6 acres of the soil resource to long-term parking and camping facilities under both Alternatives. The primary difference in the extent of disturbance between the two Alternatives is the amount of surface area that would be dedicated to the development of new trail routes. Alternative 2 would commit nearly twice as many miles as Alternative 3 to compacted native surface trail routes. Although the trail routes would be in different locations, they are on similar land types capable of supporting native surface trail routes without excessive consequences to adjacent soils. The proposed trail locations under both Alternatives avoid disturbing sensitive soils with a high hazard for surface erosion.

Alternative 2 would commit approximately 27 acres of the soil resource to approximately 33 miles of trail and Alternative 3 would commit approximately 14 acres of the soil resource to approximately 17 miles of trail for the development of Class II recreation opportunities (Table 25).

Table 25 Comparison of acreage committed to recreational facilities by Alternative

Alternative	Miles of trail	Acres of trail	Acres of Staging Areas
1	0	0	0
2	33	27	6
3	17	14	6

The type of disturbance to the soil resource would be similar between the action Alternatives. Staging areas under both Alternatives would have designated day use parking areas and camping areas with improved surfaces consisting of crushed rock or native surface soils. Although the staging areas would be in different locations, they are on similar land types and would commit approximately the same amount of the soil resource to long-term transportation system and recreational facilities infrastructure. The installation of long-term toilets would require the excavation of soil and rock to make room for the below ground vault. Soils adjacent to these sites would incur localized disturbance as a result of these activities.

The development of the trails would commit the soil resource to a non-productive status across a localized pathway as motorized vehicles travel over rock and soil to define the trail tread. Motorized traffic on technical trails occurs at slow speeds that are less likely to displace soil from the trail tread. Displacement and compaction of the trail tread would be expected to remain localized since Class II vehicles are less likely to wander from the designated trail tread than Class I and III OHVs traveling at higher speeds. As a result, the long-term site productivity of adjacent lands is unlikely to be affected by Class II use in the area. This is supported by observations of soil and vegetation adjacent to the existing East Fort Rock OHV trails that has not been detrimentally impacted as a result of Class I and III use.

Surface erosion from the trail routes and staging areas is also expected to be localized because the dominant soils have a low erosion hazard rating when located on gentle slopes. The proposed staging area sites are located on nearly level and stable ground that is well suited for development. The construction of two staging areas under both Alternatives would temporarily expose areas of mineral soil and increase the potential for accelerated soil erosion. Although some movement of surface soil could occur during construction from a thunderstorm event, the soils are sufficiently resistant to erosion to permit limited and temporary exposure of bare mineral soil during this phase. In addition, the soils surrounding the staging areas have high infiltration rates and gentle topography that minimize overland flows generated during storms that would be capable of becoming erosive. Long-term erosion following the completion of the facilities is unlikely since the parking areas would be hardened by compaction or covered by crushed rock material, both of which would reduce the detachability of the surface soil when construction was completed. As a result, long-term affects to soil productivity adjacent to the areas committed to facilities are expected to be minimal and localized.

Anticipated disturbance to the soil resource associated with clearing operations for new trail segments would be inconsequential. Although the clearing of trees and shrubs within an 80” width corridor for the designated trails would temporary reduce existing vegetative cover, it would not require any excavation or direct disturbance of the surface soil. Trees and some shrubs within the corridor would be hand felled with chainsaws or hand tools with minimal disturbance to the soil resource. These non-mechanical treatments would produce only localized areas of exposed mineral soil unlikely to contribute to accelerated erosion from the trail tread. Some of the felled trees along trail segments would be retained on the ground to provide trail obstacles.

The extent and types of soil disturbance are not expected to cause any indirect, off-site impacts to soils in adjacent areas, such as loss or burial of productive surface soils. The exclusion of trail locations outside of steep slopes on buttes in the project area would minimize the impacts of the proposed trail system on the soil resource. In addition, the construction of staging areas or designation of trail routes would not disturb sensitive soils with a high erosion hazard or potentially wet soils that would require special mitigation. Although the construction of these facilities cannot occur in a manner that results in limited disturbance below specific LRMP thresholds for the footprint itself, the dedication of the soil resource to a use that removes the land from production and precludes other uses of the soil for as long as these facilities remain in use would occur without unacceptable disturbance to the productivity of adjacent lands.

Project design would include temporary erosion-control measures during the construction phase of the staging area facilities to minimize impacts to the soil resource. Although none of the proposed staging areas are hydrologically connected to surface waters, soils on site can be eroded during thunderstorm or wind events when exposed. Practices listed in the National Core Best Management Practices (BMPs) Technical Guide (USDA, 2012) under BMP Fac-2: Facility Construction and Storm water Control and BMP Road-9: Parking and Staging Areas would be implemented during construction to control erosion and manage storm water discharge. These practices include, but are not limited to, the use of methods such as:

- straw waddles to contain overland flows during construction
- grading of parking surfaces to disperse storm water
- designating areas for equipment staging, stockpiling of materials, and parking to minimize the area of disturbance
- use of suitable hardening measures to minimize damage to parking area surfaces that experience heavy use or are used during wet periods

Application of these BMPs have been used on numerous similar projects across the Forest and are tiered to the Region 6 General Water Quality BMPs (USDA, 1988) and the Soil and Water Conservation Practices Handbook (FSH 2509.22). These BMP erosion control measures have proven effective in protecting and maintaining soil and water resource values and are likely to prevent soil-related extraordinary circumstances associated with the proposed activities if implemented.

Soils – Cumulative Effects – Alternative 2 and 3

No soil-related issues or extraordinary circumstances have been identified because the construction of new staging areas and trail segments preclude other uses of the soil for as long as these recreation facilities remain in use. None of the proposed activities would occur on land types that contain sensitive soils with a high hazard for surface erosion or potentially wet soils with high water tables that would require site-specific mitigation. Project design includes Best Management Practices (BMPs) to control surface runoff and soil erosion during and following ground disturbing activities.

The locations of staging areas proposed under the Rim Butte project directly overlap areas of existing soil disturbance from previous harvest activities. However, the action Alternatives propose to commit these areas to recreational infrastructure and remove them from a productive capacity. As a result, the staging areas would not be considered a part of activity areas managed for vegetative growth to which LRMP standards and guidelines for maintaining soil productivity apply. Although the condition of the soil resource would be considered detrimental following grading, hardening and resurfacing, these actions could be reversed in the future since they would not remove the soil from the site and the crushed rock surface could be removed.

The analysis of direct and indirect effects on the soil resource resulting from the proposed designation of new motorized trail routes under both action Alternatives describes the localized nature of these impacts.

These actions would commit the soil resource to an extended condition of compaction or disturbance within activity areas managed for vegetative production and add to the total amount of detrimental disturbance in these areas. However, the amount of area taken out of production by the 80” wide trail routes is a small fraction of the acreage within these activity areas and would not amount to detrimental disturbance levels exceeding 20%. As a result, the ongoing management of plantations and thinning units in activity areas analyzed under previous documents is expected to continue to meet LRMP standards and guidelines, even where trail segments proposed under this document may be implemented.

The list of past present and reasonably foreseeable future actions (Table 5 and Table 6) was reviewed and the following activities, relevant to the soil resource were reviewed for potential cumulative effects when combined with the Rim Butte project proposal.

Future management activities are assumed to occur within the analysis area as planned in the schedule of projects for the Deschutes National Forest. There are no large out year planning projects within the Rim Butte project area. However, small tree thinning associated with the Mix and Red Butte Timber Sales is scheduled to occur within the project area during 2013 (see Table 6). Thinning would use hand treatments that would not have detrimental impacts on the soil resource. Units in which these activities occurred would meet LRMP standards that would not be exceeded by the addition of recreation trail proposed under this EA. The combined effect of these activities is not expected to exceed LRMP standards for maintaining soil productivity due to the localized extent of new disturbance resulting from the Rim Butte project.

The Invasive Plant Treatments EIS may implement various treatments to control invasive plants in site-specific areas within the Rim Butte analysis area. These future activities are not expected to cause any detrimental changes to soil properties. Hand removal of individual plants would result in small areas of soil displacement or the mixing of soil and organic matter at levels that would not meet criteria considered detrimental to soil productivity. It is also unlikely that herbicide treatments would cause any adverse direct or indirect effects to soil productivity that would be additive to the activities proposed under the Rim Butte project (Invasive Plants Treatment Environmental Impact Statement, 2012).

The Forest Travel Management Project (2011) identified a designated system of roads and trails for motorized travel and eliminated cross-country motorized travel. Although cross-country travel by OHVs within the Rim Butte project area has not been noted, the restriction of motorized travel to designated routes is likely to have a beneficial effect on the soil resource by helping to deter cross-country travel and limit cumulative increases to the extent of detrimental soil conditions in random locations off of authorized roads and trails. The addition of designated trail routes for Class II OHVs would be expected to provide for a demonstrated demand for this use and help reduce incentives to travel off trail in the area.

Other foreseeable future activities within the Rim Butte analysis area include continued recreation use. Existing recreation facilities and trails would continue to be maintained to prevent or minimize soil erosion problems and potential impacts to other resource values. Since there is no direct overlap (shared routes) of the proposed staging areas and trails with existing staging areas and trails, the addition of recreation facilities proposed in the Rim Butte project would increase the amount of the soil resource committed to a non-productive condition within the project area. However, the additional impacts from recreational motorized use and dispersed camping activities in the area would be generally localized along and immediately adjacent to the dedicated travel routes. As a result, disturbances from the proposed activities added to existing and future recreation use are not expected to exceed LRMP standards for maintaining the productivity of soils within activity areas managed for vegetative growth.

Standard road maintenance activities are expected to occur in the future where improvements are necessary to correct road drainage problems or smooth high traffic surfaces. These activities would disturb soils and vegetation in ditches within the road right of way that are already dedicated to non-productive capacities. As a result, these maintenance activities would not affect the overall extent of detrimental disturbance on productive lands adjacent to these areas.

Soils – Cumulative Effects Summary

There would be no cumulative increase of detrimental soil conditions to levels exceeding LRMP standards and guidelines associated with the combined effects of past and present disturbances and those anticipated under the action Alternatives within activity areas managed for long-term soil productivity. The removal of the soil resource from a productive capacity to implement recreational infrastructure within General Forest and the relationship of these areas with vegetative management activity areas covered in previous NEPA documents minimizes the spatially additive nature of soil disturbance resulting from these actions to existing disturbance within the project area. As a result, the cumulative effects of all past, present, proposed and reasonably foreseeable future activities on the soil resource would not be expected to reduce acceptable soil productivity on undeveloped portions of the planning area managed for the growth of desired vegetation.

3.10 Inventoried Roadless Ares and Potential Wilderness Areas

Mapping was done with Deschutes National Forest's Geographic Information System, using corporate data sources. Databases for the existing road system and past harvest were combined with examination of aerial photography to determine areas where areas that might meet the inventory criteria for potential wilderness:

1) More than 5,000 acres in size
2) Area contains less than 5,000 acres but can meet one or more of the following:
   2a) Area can be preserved due to physical terrain and natural conditions or is a self-contained ecosystem, such as an island, that can be managed as a separate unit of the National Wilderness Preservation System.
   2b) Area is contiguous to existing wilderness, Inventoried Roadless Areas, primitive area, etc. regardless of size.

The project area was reviewed for evidence of past harvest activity and road construction. Areas that showed no evidence of those activities were reviewed for potential wilderness criteria at FSH 1909.12 Chapter 71. One potential wilderness area (PWA) was identified adjacent to, but outside the project area. This PWA consists primarily of the South Paulina IRA, with the addition of contiguous lands along the southern boundary of the IRA that extend up to the northern boundary of the Rim Butte project area. This project area boundary is a road and therefore the PWA would not extend into the project area. The total acre of the PWA is 7,522. None of these acres fall within the Rim Butte Project boundary (Figure 18). There would be no effects to potential wilderness areas as a result of either of the proposed actions. None of the other polygons in and around the area meet the criteria for potential wilderness areas.

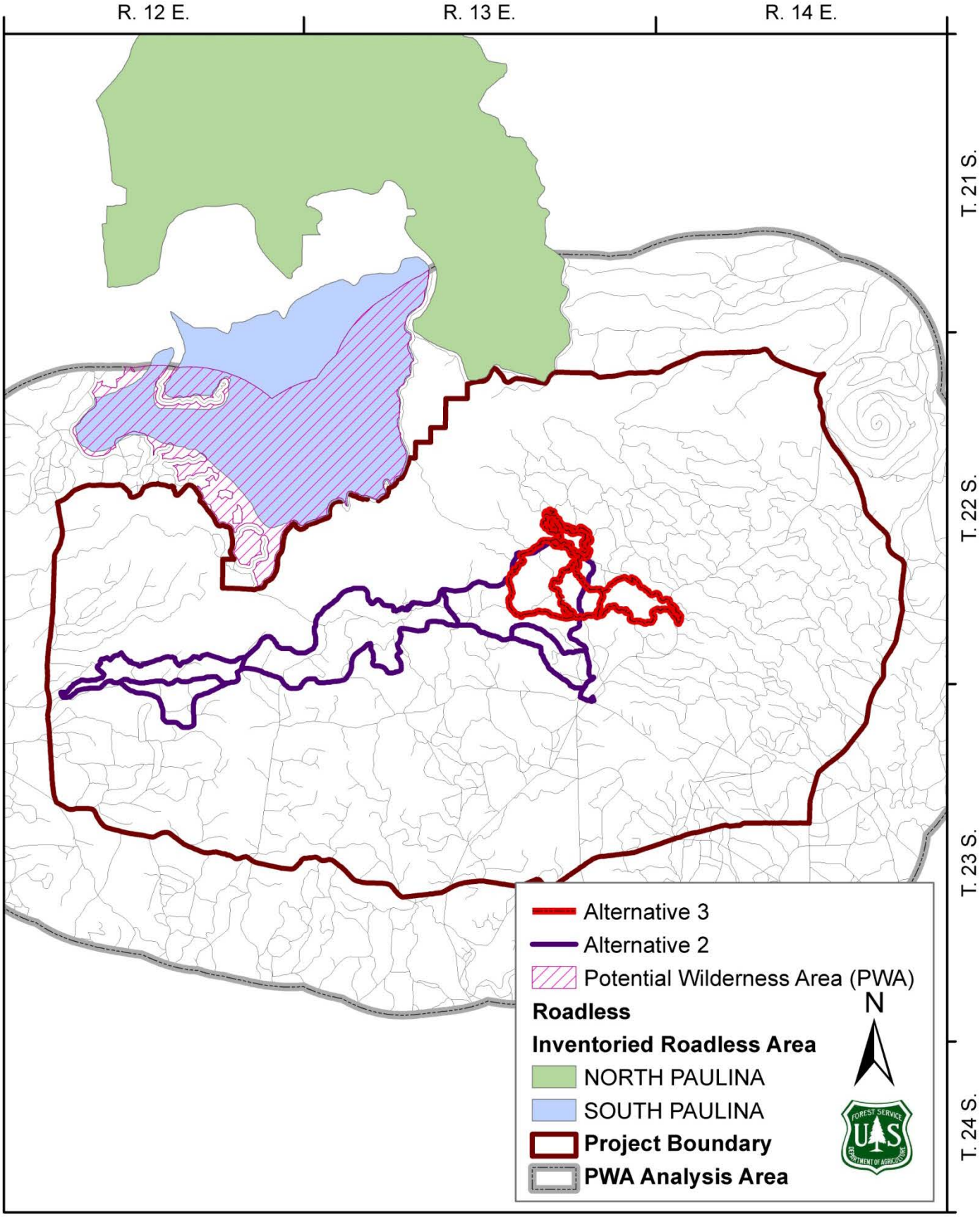


Figure 18 Inventoried Roadless Area and Potential Wilderness Area

3.11 Heritage Resources

3.11.1 Heritage Resources – Regulatory Framework

Management direction for historic properties is found in the Deschutes National Forest Resource Management Plan, in the Forest Service Manual section 2360, in Federal Regulations 36 CFR 64 and 36 CFR 800 (amended December 2000), and in various federal laws including the National Historic Preservation Act (NHPA) of 1966 (as amended), the National Environmental Policy Act, and the National Forest Management Act.

In general, the existing management direction asks the Forest to consider the effects on historic properties of projects that fall within the Forest's jurisdiction. Further direction indicates that the Forest will determine what historic properties are present on the forest, evaluate each property for eligibility to the National Register of Historic Places (National Register), and protect or mitigate effects to properties that are eligible.

Relevant Forest Plan Standards and Guides include:

CR-2, states that historic properties located during survey inventories will be evaluated for eligibility to the National Register.

CR-3, states that in concert with inventories and evaluations, the Forest will develop thematic National Register nominations and management plans for various classes of historic properties.

CR-4 indicates that project level inventories or the intent to conduct such shall be documented through environmental analysis for the project.

3.11.2 Heritage Resources – Existing Condition

Previously conducted Heritage resource inventory surveys have covered 11.5 linear miles of the proposed 16.25 linear miles for the jeep trails. An additional six acres of new inventory for the proposed staging areas, and 4.75 linear miles were completed in the 2012 field season. This brings the total amount of ground inventoried within the proposed project to 100%. Five cultural resource sites (previously known) were identified during the pre-field analysis within the project area. All of these sites are eligible to the NRHP; however, none would be affected by the proposed trail routes. Site types represented by these five sites include lithic scatters (debris left from tool manufacturing) and lithic scatters with flaked stone tools (completed tools such as projectile points and thumb scrapers).

During the 2012 survey, two additional new sites were found. One was an eligible lithic scatter with tools, and the other was an historic isolate that is not eligible.

3.11.3 Heritage Resources – Environmental Consequences

Heritage Resources -- Alternative 1 Direct and Indirect Effects

For the No Action Alternative, the existing condition of all known sites within the project area would not be affected by project activities, but natural weathering and disturbance from vehicles and wildfires would continue to negatively affect the properties of the eligible sites within the project boundary.

Heritage Resources – Alternatives 2 and 3 Direct and Indirect Effects

These Alternatives propose ground disturbance in the way of moving soils in preparation of making the trails and the two staging (parking) areas. Some trees may also be removed using ground disturbing actions. Environmental effects of the proposed undertaking on known historic properties are not anticipated due to the project design feature of buffering (hanging flagging around the site boundary) the eligible site and prohibiting project activities within the buffered area.

A project design feature has been identified for the construction of one of the proposed trails. One eligible site is involved in this route. The mitigation measure consists of avoiding the site with all trail construction activities, including staging vehicles within the road corridor where this site is located.

An implementation plan is incorporated into the Heritage resource compliance (SHPO) report. The implementation plan will be available to the project leader. Coordination between Recreation personnel and the District archaeologist is recommended during layout of the proposed trails to best adjust boundaries where site avoidance is required. The measures above would ensure protection and avoidance of this eligible site.

Heritage Resources – Cumulative Effects

Since there would be no effect on the historic properties, there would not be any cumulative effects to historic properties.

3.12 Other Disclosures

This section discloses the effects of the Alternatives on the human environment as specified by law, regulation, policy, or executive order.

3.12.1 Clean Water Act

The Clean Water Act of 1977 was enacted to facilitate the restoration and maintenance of the chemical, biological, and physical integrity of the waters of the United States. The Act was amended in 1987 to protect national waters from pollution from point and non-point sources. Project activities would not compromise the quality of any water sources as there is no surface water within the project area.

3.12.2 Consultation with US Fish and Wildlife Service

The project would have no effect to all listed species appropriate consultation with USFWS has been completed. The BE process analyzed potential effects to USFWS listed species has been completed.

3.12.3 Clean Air Act

The project area is located about 30 miles south southeast of Bend and about 10 miles east of LaPine. All activities must follow the federal Clean Air Act (CAA), as amended. There are no smoke generating activities associated with this project.

3.12.4 Energy Requirements

There would be no unusual energy requirements for implementing any of the Alternatives.

3.12.5 Wetlands and Floodplains

Executive orders 11988 and 11990 require protection of wetlands and floodplains. Wetlands in the project area are generally stream channel-associated seeps and springs. Isolated seeps and springs would be protected with appropriate buffers. There are no wetlands or floodplains within the project area.

3.12.6 Wild and Scenic Rivers, Prime Farmlands, Ranch Land, and Forest Land

Actions taken under any of the Alternatives would have no adverse impact on prime farmland, rangeland or forest land, inside of or outside the National Forest. There are no wild and scenic rivers in the project area.

3.12.7 Public Health and Safety

No long-term public safety problems are anticipated from implementation of the action Alternatives in this project. Establishment of the trail would be managed by Forest Service personnel and volunteers abiding by standard safety protocol. There are no anticipated effects to public safety as a result of the Rim Butte Trail.

3.12.7 Incomplete and Unavailable Information

The Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 CFR 1502.22) require that a federal agency identify relevant information that may be incomplete or unavailable.

Knowledge is, and always will be, incomplete regarding many aspects of terrestrial and aquatic species and their habitats, geology of specific areas, and the economy. The Alternatives were evaluated using the best available information. No missing information was deemed to be essential to a reasoned choice among Alternatives being considered.

3.12.8 State Historic Preservation Office Concurrence

In accordance with 36 CFR 800 and Section 106 of the National Historic Preservation Act (1966) all sites, despite eligibility status will be avoided pending a determination from the State Historic Preservation Office regarding eligibility to the National Register of Historic Places. All eligible and potentially eligible (undetermined) sites would be protected throughout the life of the project. Protection of these sites shall be accomplished through avoidance by ground-disturbing activities.

If avoidance of significant heritage sites is not possible, the impacts would be mitigated following consultation with the State Historic Preservation Office and in some cases, the Advisory Council on Historic Preservation. Should unexpected heritage resources be encountered during project implementation, these resources would also be evaluated and significant resources would be avoided or mitigated as described above.

No impacts to any known cultural resources would result from implementation of this project.

3.12.9Tribal Treaty Rights

Treaties provide that Native Americans would continue to have the right to erect suitable buildings for fish curing, privileges of hunting, gathering roots and berries, and pasturing stock on unclaimed lands.

Indian treaty rights and privileges were considered throughout this analysis and maintained through appropriate design and layout features, especially related to resources such as fish, wildlife, and riparian areas. All Alternatives are equal in their treatment of treaty rights and are expected to maintain treaty rights and opportunities into the future.

Potentially affected Tribes were contacted during the scoping process. Tribes did not identify any at risk treaty resources.

3.12.10 Civil Rights, Women, Minorities, and Environmental Justice

On February 11, 1994, President Clinton signed Executive Order 12898. This order directs each Federal agency to 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 President also signed a memorandum on the same day, emphasizing the need to consider these types of effects during NEPA analysis. On March 24, 1995, the Department of Agriculture completed an implementation strategy for the executive order. Where Forest Service proposals have the potential to disproportionately adversely affect minority or low-income populations, these effects must be considered and disclosed (and mitigated to the degree possible) through the NEPA analysis and documentation. No known direct, indirect, or adverse effects on women, minority groups, low-income populations or civil rights of individuals or groups would occur under this project. To the greatest extent possible all populations have been provided the opportunity to comment before decisions are rendered on proposals and activities affecting human health or the environment.

3.12.11 Research Natural Areas, Experimental Forests, Wilderness and Federal State and Local Laws

No research natural areas, experimental forests, or wilderness areas are within the project area. There are no known effects between the project and other projects implemented or planned on areas separated from the affected area of the project. The physical and biological effects are limited to this analysis area. No actions are proposed which are considered to be precedent setting.

There are no known effects on the human environment that are highly uncertain or involve unique or unknown risks. None of the actions threaten a violation of federal, state, or local law. Alternatives would comply with air and water quality regulations.

3.12.12 Climate Change

Depending on which Alternative is selected, trail construction would affect between 20 and 33 acres of forest by removing vegetation to create a Class II loop trail for motorized vehicles. Not all trees would be removed from the trail pathway as many would be left as natural obstacles. Also some trees would be left in the staging areas to provide shade and visual interest. This scope and degree of change would be minor relative to the amount of forested land in the project area. The trail foot print makes a tiny fraction of the 61,751 acre project area. A project of this magnitude would have such minimal contributions of greenhouse gasses that its impact on global climate change would be infinitesimally small. Therefore, at the global scale, the proposed action's direct and indirect contribution to greenhouse gasses and climate change would be negligible.

In addition, because the direct and indirect effects would be negligible, the proposed action's contribution to cumulative effects on greenhouse gasses and climate change would also be negligible.

The Intergovernmental Panel on Climate Change has summarized the contributions to climate change of global human activity sectors in its Fourth Assessment Report (IPCC 2007). The top three anthropogenic (human-caused) contributors to greenhouse gas emissions (from 1970-2004) are: fossil fuel combustion (56.6% of global total), deforestation (17.3%), and agriculture/waste/energy (14.3%). While vehicles using the trail system would contribute greenhouse gasses by combustion of fossil fuels, the magnitude of those contributions on a global scale are extremely small. Construction of the Jeep Trail Project does not fall within any of these main contributors of greenhouse gas emissions. Between 20 and 33 acres of trail and staging areas would function permanently as a trail system rather than as forested land. This project would not measurably change land use or forestry conditions in the Project Area.

3.12.13 Environmental Justice

Executive Order 12898 directs the agency to identify and address, "...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 intent of the order is to assure the fair treatment and meaningful involvement and consideration of all people. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from the execution of a federal actions. Outreach and public involvement for this project has been extensive and at various scales within various communities of interest.

In order to identify and address environmental justice concerns, the EO states that each agency shall analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects on minority populations, low-income populations, and native Americans as part of the NEPA process.

There would be no discernible impacts among the Alternative in the effects on Native Americans, women, other minorities, or the Civil Rights of any American citizen.

The proposed action does not appear to have a disproportionately high or adverse effect on minority or low-income populations. Scoping did not reveal any issues or concerns associated with the principles of Environmental Justice. No mitigation measures to offset or improve adverse effects to these populations have been identified. All interested and affected parties would continue to be involved with the public involvement and decision process.

Chapter 4 – Consultation and Coordination

4.1 Recipients of the EA

Those who commented during the scoping period received either an email or hardcopy mail notification of the Environmental Assessment's release for comment.

4.2 Interdisciplinary Team Members

Table 26 identifies members of the interdisciplinary team responsible for coordination, conducting and contributing the environmental analysis for this project.

Table 26 Interdisciplinary Team Members

Alicia Underhill- NEPA Planner/Interdisciplinary Team Leader

Position:	NEPA Planner
Education:	B.S. Environmental Science, Western Washington University (2005)
Experience:	11 years professional experience

Bill Munro – Wildlife Analysis

Position:	USDA, Forest Service, Deschutes National Forest, Bend/Fort. Rock Ranger District, Wildlife Biologist
Education:	BS, Forest Resources (Wildlife Science), University of Washington (2003)
Experience:	11 years professional experience

Peter Sussmann – Interdisciplinary Team Leader/Soils Analysis

Position:	Soils Scientist
Education:	BA, Agronomy and Soils, University of Illinois (1986
Experience	15 years professional experience

Tom Walker – Hydrology/Fisheries Analysis

Position:	Fisheries Biologist
Education:	BS, Fisheries Science, Oregon State University (1983)
Experience	24 years professional experience

Robin Gyorgyfalvy- Scenic Views Analysis

Position:	Landscape Architect
Education:	BA, Sculpture, Mt. Holyoke College (1973); BLA/MLA, Landscape Architecture, University of Oregon (1978)
Experience:	30 years professional experience

Charmane Powers- TES and Invasive Plant Analysis

Position:	District Botanist
Education:	Bachelor of Science from The Evergreen State College (1984)
Experience:	20 years botany, 5 years wildlife (birds)

Steve Bigby – Roads Analysis

Position: District Roads Manager
Education: Oregon Institute of Technology

Experience: 23 years professional experience

Matt Able – Recreation Analysis

Position: Combined OHV Operations Program Manager

Education: BS, Parks and Recreation Administration, Indiana University

Experience: 4 years professional experience

Kathleen Martin – Heritage Resources

Position: District Archaeologist

Education: BS Dual Degree: History and Anthropology, Portland State University (1994)

Experience: 25 years professional experience

Maureen Durrant – Geographical Information Services (GIS) Support

Position: District GIS Specialist

Education: BS, Environmental Science, University of Redlands (2002); Post-Baccalaureate Certificate, GIS, Central Oregon Community College, (2007)

Experience: 6 years professional experience

Christy McDevitt– Writer/Editor

Position: NEPA Planner

Education: BS, Forest Management, University of Washington (2004)

Experience: 9 years professional experience

Appendix A - References

Wildlife

Abele, S.C., V.A. Saab, and E.O. Garton. 2004. Lewis's Woodpecker (*Melanerpes lewis*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: http://www.fs.fed.us/r2/projects/scp/assessments/lewisswoodpecker.pdf

Altman, B. 2000. Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington. Oregon and Washington Partners in Flight. Corvallis, OR.

Aubry, K.B., K.S. McKelvey, J.P. Copeland. 2007. Distribution and Broadscale Habitat Relations of the Wolverine in the Contiguous United States. Journal of Wildlife Management. 71(7):2147-2158.

Chambers, C.L., M.J. Herder, K. Yasuda, D.G. Mikesic, S.M. Dewhurst, W.M. Masters and D. Vleck. 2011. Roosts and home ranges of spotted bats (Euderma maculatum) in northern Arizona. Canadian Journal of Zoology 89: 1256-1267.

Claar, J. J., N. Anderson, D. Boyd, M. Cherry, B. Conard, R. Hompesch, S. Miller, G. Olson, H. Ihsle Pac, J. Waller, T. Wittinger, H. Youmans. 1999. Carnivores. Pages 7.1– 7.63 *in* Joslin, G. and H. Youmans, coordinators. Effects of recreation on Rocky Mountain wildlife: A Review for Montana. Committee on Effects of Recreation on Wildlife. Montana Chapter of the Wildlife Society. 307 pp.

Cole, E.K., M.D. Pope and R.G. Anthony. 1997. Effects of Road Management on Movement and Survival of Roosevelt Elk. Journal of Wildlife Management. 61:1115-1126.

Dixon, R. 1995. Ecology of white-headed woodpeckers in the central Oregon Cascades. MS Thesis. University of Idaho, Moscow, ID. 148 pp.

Dobkin, D.S., R.G. Gettinger and M.G. Gerdes. 1995. Springtime movements, roost use and foraging activity of Townsend's big-eared bat (Plecotus townsendii) in central Oregon. Great Basin Naturalist 55(4):315-321.

Dobkin, D.S. 1992. Radiotelemetry Study of Townsend's big-eared bats (Plecotus townsendii) on the Fort Rock Ranger District, Deschutes National Forest, Central Oregon.

Forman, R.T. 2000. Estimate of the Area Affected Ecologically by the Road System in the United States. Conservation Biology 14(1):31-35.

Forman, R.T and D. Sperling. 2003. Road Ecology: Science and Solutions. Island Press. 481pp.

Gaines, W.L., P.H. Singleton, and R.C. Roger. 2003. Assessing the cumulative effects of linear recreation routes on wildlife habitats on the Okanogan and Wenatchee National Forests. Gen. Tech. Rep. PNW-GTR-586. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 79 pp.

Goggans, R., R.D. Dixon, and L.C. Seminara. 1989. Habitat use by three-toed and black-backed woodpeckers, Deschutes National Forest, Oregon. Oregon Department of Fish and Wildlife, Nongame Wildlife Program, Tech. Rep. #87-3-02. 43pp.

Hermanson, J.W. and T.J. O'Shea. 1983. *Antrozus pallidus*. Mammalian Species No. 213.

Keinath, D.A. Fringed Myotis (*Myotis thysanodes*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available: http://www.fs.fed.us/r2/projects/scp/assessments/fringedmyotis.pdf

Kozma, J. 2011. Composition of Forest Stands used by White-Headed Woodpeckers for Nesting in Washington. Western North American Naturalist 71(1):1-9.

Krausman, P.R., S.S. Rosenstock, J.W. Cain III. 2006. Developed waters for wildlife: Science, Perception, Values and Controversy. Wildlife Society Bulletin. 34(3):563-569.

Luce, R.J. and D. Keinath. (2007, October 31). Spotted Bat (*Euderma maculatum*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: http://www.fs.fed.us/r2/ projects/scp/assessments/spottedbat.pdf

Lyon, L.J. 1979. Habitat effectiveness for elk as influenced by roads and cover. Journal of Forestry 79:658-660.

Mellen-McLean, Kim, Bruce G. Marcot, Janet L. Ohmann, Karen Waddell, Susan A. Livingston, Elizabeth A. Willhite, Bruce B. Hostetler, Catherine Ogden, and Tina Dreisbach. 2012. DecAID, the decayed wood advisor for managing snags, partially dead trees, and down wood for biodiversity in forests of Washington and Oregon. Version 2.20. USDA Forest Service, Pacific Northwest Region and Pacific Northwest Research Station; USDI Fish and Wildlife Service, Oregon State Office; Portland, Oregon. http://www.fs.fed.us/r6/nr/wildlife/decaid/index.shtml

Pierson, E.D., M.C. Wackenhut, J.S. Altenbach, P.Bradley, P.Call, D. Genter, C.E. Harris, B.L. Keller, B. Lengus, L. Lewis, B. Luce, K.W. Navo, J.M. Perkins, S. Smith, and L. Welch. 1999. Species conservation assessment and strategy for Townsend's big-eared bat (*Corynorhinus townsendii townsendii and Corynorhinus townsendii pallescens*). Idaho Dept. Fish and Game, Boise, ID.

Rodhouse, T.J., M.F. McCaffrey, R.G. Wright. 2005. Distribution, Foraging Behavior, and Capture Results of the Spotted Bat (*Euderma maculatum*) in central Oregon. Western North American Naturalist 65(2): 215-222.

Rose, C.L, B.G. Marcot, T.K. Mellen, J.L. Ohmann, K.L. Waddell, D.L. Lindley, B. Schreiber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Manipulation *in* Johnson, D.H. and T.A. O'Neil. 2001. Wildlife- Habitat Relationships in Oregon and Washington. Oregon State University Press, Corvallis, OR.

Rowland, M.M., M.J. Wisdom, B.K. Johnson, J.G. Kie. 2000. Elk Distribution and Modeling in Relation to Roads. Journal of Wildlife Management 64(3):672-684.

Rowland M. M., M. J. Wisdom, B. K. Johnson, and M. A. Penninger. 2005. Effects of road on elk; Implications for management in forested ecosystems. Pages 42-52 in Wisdom, M. J., technical editor, The Starkey Project: a synthesis of long-term studies of elk and mule deer. Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resource Conference, Alliance Communications Group, Lawrence, Kansas, USA.

Stankowich, T. 2008. Ungulate flight responses to human disturbance: A review and meta-analysis. Biological Conservation 141:2159-2173.

Squires, J.R. and P. Kennedy. 2006. Northern goshawk ecology: an assessment of current knowledge and information needs for conservation and management. Studies in Avian Biology 31:8-62.

USDA Forest Service. 1990. Deschutes National Forest Land and Resource Management Plan. Portland, OR.

U.S. Fish and Wildlife Service. 2013. Endangered and Threatened Wildlife and Plants; Threatened Status for the Distinct Population Segment of the North American Wolverine Occurring in the Contiguous United States; Establishment of a Nonessential Experimental Population of the North American Wolverine in Colorado, Wyoming, and New Mexico; Proposed Rules. Federal Register. Volume 78 Number 23 Pages 7864-7890.

U.S. Fish and Wildlife Service. 2012. Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl; Final Rule. Federal Register Volume 77 Number 233 Pages 71876-72068.

U.S. Fish and Wildlife Service. 2008a. Birds of Conservation Concern. U.S. Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management. Arlington, VA. http://www.fws.gove/migratorybirds

U.S. Fish and Wildlife Service. 2008b. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Northern Spotted Owl. Federal Register Volume 73, Number 157 Pages 47326-47522.

U.S. Fish and Wildlife Service. 1987. Northern Rocky Mountain Wolf Recovery Plan. U.S. Fish and Wildlife Service, Denver, CO.

Wisdom, M.J., N.J. Norman, B.K. Johnson, E.O. Garton, J.W. Thomas. 2004. Spatial partitioning by mule deer and elk in relation to traffic. In Transactions of the 69th North American Wildlife and Natural Resources Conference: 509-530

Zielinski, W.J., K.M. Slauson, A.E. Bowles. 2008. Effects of Off-Highway Vehicle Use on the American Marten. Journal of Wildlife 72(7):1558-1571.

U.S. Forest Service. 2011. Record of Decision: Travel Management Project. Available: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5326998.pdf

Recreation

USFS. 2006. *Forest Service Outdoor Recreation Accessibility Guidelines.* Retrieved from http://www.fs.fed.us/recreation/programs/accessibility/

Scenic Resources

USDA Forest Service, 1996. Landscape Aesthetics, A Handbook for Scenery Management

USDA Forest Service, 1990. Deschutes National Forest Land and Resource Management Plan (Forest Plan)

Noxious Weeds

USDA Forest Service, July 5, 2001, *Guide to Noxious Weed Prevention Practices*

Bend/Fort. Rock Ranger District Geographic Information Systems (GIS) layers

Forest Service Region 6 Record of Decision, *Preventing and Managing Invasive Plants*, Oct. 2005

State of Oregon noxious weed list at website: http://oregon.gov/ODA/PLANT/WEEDS/statelist2.shtml

Proposed, Threatened, Endangered or Sensitive Plant Species

Larsen, 1976. Soil Resource Inventory, Deschutes National Forest.

GIS data, Bend/Fort. Rock Ranger District

Soils

Geist, Michael J., J.W. Hazard, and K.W. Seidel; 1989. Assessing Physical Conditions of Some Pacific Northwest Volcanic Ash Soils After Forest Harvest. 5 pages.

Page-Dumroese, D.S. 1993. Susceptibility of Volcanic Ash-Influenced Soil in Northern Idaho to Mechanical Compaction. USDA Forest Service Research Note INT-409, Ogden, Utah. 5 pages.

Powers, R.F., T.M Alves, T.H. Spear. 1999. Soil Compaction: Can it be Mitigated? Reporting a Work in Progress. Proceedings, Twentieth Annual Forest Vegetation Management Conference, Redding, CA.

Sussmann P. 2005. 18 Fire Herbicide Treatment Environmental Assessment, Soil Specialist Report, Deschutes National Forest, Pacific Northwest Region.

USDA Forest Service. 2012. Invasive Plants Treatment Environmental Impact Statement, Deschutes and Ochoco National Forests.

USDA Forest Service. 1998. FSM 2520, Forest Service Soil Quality Standards, Region 6,

R-6 Supplement No. 2500-98-1.

USDA Forest Service. 1995, 1996, 1997 and 1999. Soil Monitoring Reports. Deschutes National Forest, Pacific Northwest Region.

USDA Forest Service. 1990. Land and Resource Management Plan, Deschutes National Forest, Pacific Northwest Region.

USDA Forest Service. 1988. General Water Quality Best Management Practices, Pacific Northwest Region.

USDA Forest Service. 1976. Soil Resource Inventory, Deschutes National Forest, Pacific Northwest Region.

Climate Change

IPCC 2007. Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report: Climate Change 2007, Synthesis Report, section 2, Causes of Change, 2007. IPCC, Geneva, Switzerland. 3 pp. http://www.ipcc.ch/publications_and_data/ar4/syr/en/spms2.html

IPCC 2000. Intergovernmental Panel on Climate Change (IPCC), Special Report on Land Use, Land Use Change and Forestry, Summary for Policy Makers, 2000. IPCC, Geneva, Switzerland. 20 pp. http://www.ipcc.ch/ipccreports/sres/land_use/index.php?idp=0

Appendix B Travel Analysis

STEP 1: Setting up the Analysis

Objectives and Scope of the Analysis

Forest Service Travel Management Policy identifies travel analysis as a non-decision making process to assess the current transportation system within a designated boundary and identify issues, benefits, problems and risks related to the designation of roads, trails and areas for motor vehicle use (FSM 7712). Travel Analysis is intended to provide decision makers with the information necessary to set priorities for the National Forest motorized route systems and inform any decisions to designate motorized transportation routes per 36 CFR 212.51 - Subpart B. The Rim Butte Travel Analysis area has been identified as a boundary for this analysis (Figure 19).

Travel analysis is a six-step process that assesses the responsiveness of the existing National Forest road and motorized trail system to the needs and desires of the managing agency and the public (FSH 7709.55 - Travel Planning Handbook Chapter 20). The process produces a non-decisional report that documents the information and analyses used to identify priorities and opportunities for the transportation system that are in balance with available funding and have minimal negative ecological effects on the land.

Geographic Scale of Analysis

The travel analysis completed in this document is limited in scope to the Rim Butte Travel Analysis area (Figure 19), which bounds an area being considered for the designation of a Class II (4-wheel Jeep) OHV trail system under the Rim Butte Trails Environmental Assessment (EA). The analysis area covers approximately 65,030 acres and is bounded by FS Road 22 on the south; FS Road 2121 on the west; FS Roads 2225, 21 and the Newberry National Volcanic Monument boundary on the north; and FS Road 18 on the east.

Information on the transportation system within the area is available at larger scales in the Deschutes-Ochoco Forest-wide Roads Analysis (USFS 2003) and the Record of Decision for the Deschutes and Ochoco Travel Management Project (2011). A forest wide Minimum Roads Analysis to determine the amount of roads necessary to provide administrative and public access while being affordably and appropriately maintained per 36 CFR 212.51 Subpart A is to be completed by September 30th, 2015.

Interdisciplinary Team Members

District Ranger Kevin Larkin and his staff provided oversight for this Travel Analysis. The interdisciplinary team members that completed the process and prepared this document are:

Charmane Powers, Botanist
Peter Sussmann, Soils/Hydrology/ID Team Leader
Maureen Durrant, GIS Coordinator
Kathleen Martin, Archaeologist
Steve Bigby, Road Manager
Shelley Borchert, Wildlife Biologist
Amy Tinderholt, Recreation Program Manager
Alicia Underhill, Writer/Editor

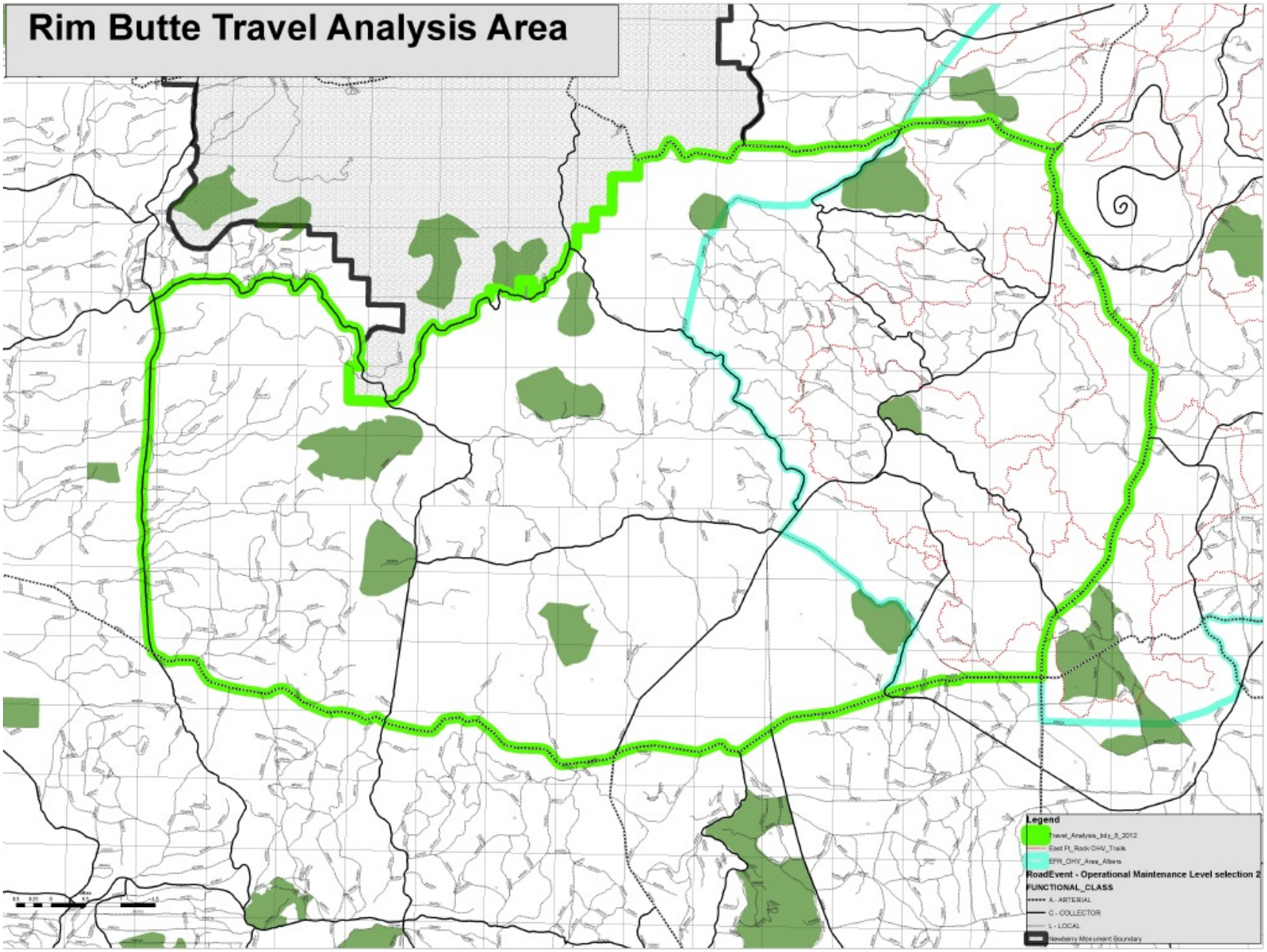


Figure 19 Rim Butte Travel Analysis Boundary

STEP 2: Describing the Situation

This section describes the current condition of the transportation system, including information about the extent and use of roads in the analysis area. A map of the project area and existing transportation system is shown in Figure 19, which is located on the Fort Rock District of the Deschutes National Forest in Oregon.

Current Land Management and Travel Management Direction

Current direction for road management is found in the 1990 Land and Resource Management Plan (LRMP) for the Deschutes National Forest. The LRMP states that the goal of the Forest's transportation system is "To plan, design, operate, and maintain a safe and economical transportation system providing efficient access for the movement of people and materials involved in the use and protection of National Forest Lands."

The Record of Decision for the Travel Management Project (2011) designated open motorized travel routes and areas within the analysis area. Travel routes displayed on the Deschutes Motorized Vehicle Use Map (MVUM) are considered the existing condition for this analysis (Figure 19). These maps reflect previous decisions made on the road system within the area under the Central Environmental Assessment (1999). A Minimum Roads Analysis for the entire Deschutes National Forest has been identified for completion by September 30th, 2015. That analysis would incorporate an economic assessment of a viable transportation system that could be maintained with projected budgets.

The Record of Decision for the Travel Management Project also eliminated motorized cross-country travel across the entire Deschutes and Ochoco National Forests. The Deschutes National Forest proposes to analyze the designation of motorized trail routes for Class II motorized vehicles displaced from cross-country travel following the implementation of the Travel Management Plan under the Rim Butte Environmental Assessment.

Road and Motorized Trail System

Road and Motorized Trail System—History and Maintenance

The majority of system roads within the analysis area evolved from railroad era logging during the 1930s and 40s. Roads have primarily been constructed and maintained for access in support of timber harvest operations, although primary collectors and arterials provide access to firewood cutting areas and routes for recreational travel. Two roads provide access to cinder or rock sources in the southeastern portion of the area. Arterial roads 18 and 22 are the only surfaces that receive regular maintenance under current budgets. Collector roads in the area have generally seen a decreasing trend in maintenance over the past decade, while maintenance of local roads rarely occurs unless timber sales are being implemented. Motorized trails within the analysis area were developed as part of the East Fort Rock OHV system in the 1990s and are regularly maintained.

Road and Motorized Trail System—Distribution and Maintenance Levels of Motorized Travel Routes

Open motorized travel routes within the analysis area are defined by the Deschutes Motor Vehicle Use Maps (MVUMs). These include 48 miles of motorized trails within the East Fort Rock OHV area and 246 miles of open system roads (Figure 19). Arterial roads FS 22, FS 18 and FS 21 bound the analysis area on three sides and collector road FS 2121 bounds it on the fourth. Collector roads FS 2235, 2230 and 2127

provide north to south connections through the analysis area. All of the collector roads are classified as Maintenance Level 2 roads. Approximately 163 miles of Level 2 local roads provide administrative and public access between the primary arterial and collector roads.

Open roads are relatively evenly distributed between the western, south-central and eastern portions of the analysis area. The north-central portion borders the Newberry Volcanic National monument and has the lowest number and density of open roads. The majority of open roads, including collectors, have a Level 2 operational maintenance and receive irregular maintenance work. Motorized Class 1 (Quads) and Class III (Motorcycles) OHV trails designated as part of the East Fort Rock OHV system are located within the eastern third of the analysis area. Maintenance of these trails occurs on an annual basis under current budgets.

The analysis area includes 124 miles of Maintenance Level 1 roads that are stored as administrative closures under the Central Environmental Assessment (1999). These roads are maintained in the Forest Service INFRA database but are open for administrative use only and are not reflected on the MVUM maps as roads open to the public. The majority of these roads are concentrated in the western, south-central and south-eastern portions of the analysis area. Although these roads are closed to public use, the footprints of these roads remain on the ground and few of them have been physically blocked or signed to prevent motorized travel. Legal use of these roads is limited to administrative traffic for forest management, although there is indication of public traffic on some of these roads.

Road and Motorized Trail System—Surface Types and Existing Maintenance Levels

Approximately 78% of the road miles within the analysis area have native surfaces, while another 12% have improved native surfaces. Forest Road 22 is the only asphalt surfaced road and represents 4% of the road miles in the analysis area. Approximately 6% are classified as crushed aggregate or gravel.

Existing road Maintenance Levels include 124 miles (34 %) of operational Maintenance Level 1 (self-maintaining, closed to vehicular traffic); 163 miles (60%) of Level 2; 8.6 miles (2%) classified as Level 3 and 13.8 miles (4%) classified as Level 4.

Existing Motorized Uses

Forest Service roads within the analysis area generally provide administrative access to managed forest lands. Travel routes also provide public access to firewood cutting areas, general landscape features and the East Fort Rock OHV area. Primary arterials FS 18, 21 and 22 provide access to the area from the communities of LaPine and Bend, which are located approximately 12 and 40 miles away, respectively. Road 18 provides the primary access to the area from the north and Road 21 provides access to the Newberry National Monument from the east. Collector roads 2121, 2235, 2230 and 2127 connect the primary arterials and provide access to the Newberry National Volcanic Monument and the East Fort Rock OHV trail system. Open local roads in the area provide public access to local landscape features and general forest across the analysis area.

Roads within the analysis area are managed primarily for administrative use, product removal and recreational access for the foreseeable future. Public motorized use of open system roads generally consists of driving street legal motor vehicles to access designated firewood cutting areas, wander through general forest, hunt, or access OHV trails and dispersed camping sites. Arterial roads FS 21, 22 and 18 are also used as through routes to destinations outside of the analysis area. Collectors are used to access trailheads (South Lava OHV staging area, South Ice Cave picnic area) or firewood cutting areas (Ice and Rim) and also provide through routes that access the Newberry Volcanic National Monument. Local roads provide access to general landscape features like buttes throughout the area for hunting and dispersed recreation. There are no green dot roads in the analysis area. Overall use of local roads is

relatively low in this area, while use levels for arterials and collectors is considered low to moderate. Continued interest on the part of forest visitors to gain access to the area is likely to continue.

Administrative use of open and closed system roads in the area primarily entails access for forest management (plantations and thinning) and recreational management (East Fort Rock OHV staging areas and trails). Future administrative use of these roads would be expected to increase slightly if an outyear Vegetation Management project is planned and implemented over the next few years.

Public motorized use in the analysis area also includes Class I and Class III OHVs on existing East Fort Rock OHV system trails. This includes a total of 48 miles of trail routes on portions of trail numbers 7, 30, 32, 35, 36, 37, 38, 39, 40, 49, and 90. Although quantified use figures are not available for the portions of these trails within the analysis area, their use is relatively low compared with other trails in the system due to the higher elevations that create a shorter use season and the greater distance from primary staging areas located further north. The South Lava staging area has a parking capacity for 12 to 25 vehicles, depending on the size or configuration of trailers, and could generate between 36 and 50 riders onto the trails within the analysis area per day. However, observations of use at the staging area indicate that weekday use is negligible and weekends generate between 1 and 6 groups, or between 3 and 18 riders. Weekend patrols for all of 2009 contacted a total of 18 groups.

There are currently no Class II OHV system trails within the Rim Butte travel analysis area. Current use by non-street legal Class II vehicles is limited to Level 2 roads outside of the East Fort Rock OHV area boundary. All system roads within the boundary of the East Fort Rock OHV area are closed to non-street legal vehicles under the decision that implemented the East Fort Rock OHV system. Existing use of Level 2 roads outside the East Fort Rock OHV boundary by non-street legal Class II vehicles appears to be minimal, primarily due to the non-technical nature of these surfaces. Use of these system roads by Class 1 and Class III OHVs is also not readily apparent, primarily due to the presence of motorized trails designated in the East Fort Rock OHV area.

Existing Non-Motorized Uses

Existing non-motorized uses within the analysis area is relatively limited. The South Ice Cave picnic area is the only designated destination for non-motorized use within the analysis area. There are no designated hiking trails within the analysis area, although there are opportunities for non-motorized travel away from roads for general landscape exploration of buttes and lava flow features. Some of these buttes are designated as Old Growth Management Areas under the Forest Plan and have desirable stand structures for hiking and exploring. Road densities are lowest in the northern portion of the analysis area, which offers the largest area for non-motorized activities away from the influence of roads. Hunting activities contribute to this non-motorized use on a seasonal basis, although overall non-motorized use within the analysis area is considered to be very low.

Road Management Objectives (Administrative & Public Needs)

Management objectives for roads within the analysis area are in place to meet immediate and projected public and resource management needs safely, affordably, and with minimal ecological impacts. Forest Plan land allocations within the analysis area shape the administrative need and use of roads in the area (Table 27). Short term needs include access to administer firewood cutting activities in the Rim and Ice firewood areas and manage OHV use on motorized trail routes within the East Fort Rock OHV trail area. The existing system of roads, including administrative closures (Level 1 roads), appears to meet the current and projected needs of these activities.

Table 27 LRMP Management Areas within the Rim Butte Travel Analysis Area

LRMP Management Area	Acres
General Forest	50,949
Scenic Views	7,602
Old Growth	3,152
Other Ownership	42

Specific public needs for roads within the Rim Butte analysis area include access for general firewood cutting and the South Lava OHV trailhead. Administrative closures within the analysis area do not appear to limit these activities. Seasonal average daily traffic values for most open Level 2 roads are quite low, likely below one vehicle per day, while those for the primary arterials and collectors are somewhat higher. Most of the local and collector roads being analyzed are operationally maintained as Level 2 (high-clearance) but are passable by passenger vehicles. Existing open roads have generally been designed and constructed with narrow road widths and a lack of turnouts that could potentially limit public use during periods of log haul. However, the existing open road system appears to be sufficient to accommodate administrative and public access needs within the analysis area.

Local, Regional, and National Social and Economic Benefits Derived From Existing Roads

The road system in the analysis area provides access that benefits a range of social and economic values. Roads within the area provide the primary access routes to the southern end of the East Fort Rock OHV area and the southern portion of the Newberry National Volcanic Monument, both of which generate direct economic input to the local community of LaPine through the purchases of vehicle fuel, food, and other supplies at local establishments. These roads also provide access for those seeking other recreation opportunities in the area that would purchase fuel and supplies from local communities, including hunters, snowmobilers and general forest explorers.

The Forest Service road system also provides administrative access for stand management and timber harvest activities. Revenue for the federal government is generated from the sale of timber, posts and poles, and firewood. Access for timber sales and other silvicultural contracts provides local employment opportunities that support surrounding communities.

Motorized Recreation Opportunities

Motorized recreation opportunities for Class II OHVs have been identified by COHVOPs planners within the Rim Butte area. This analysis of the existing transportation system is a result of the potential designation of additional motorized trail routes for Class II OHVs. The area is adjacent to and partially within the existing East Fort Rock OHV system where managed OHV use is occurring without excessive resource damage. The area includes lava flow rock outcrops that can provide technical trail sections identified as a need by Class II users during the Travel Management collaborative process. In addition, the combination of lava flow rock outcrops adjacent to existing system roads provides an opportunity to locate the majority of trails within existing motorized disturbance corridors and minimally affect effective travel route densities within the area. A relative lack of resource issues and conflicts suggest that consideration of additional motorized recreation opportunities under an environmental document is appropriate within the analysis area.

Environmental Issues

Environmental issues within the analysis area are primarily associated with potential effects to habitats of biological species such as goshawk, bats and big game. Physical environmental issues are less apparent since there are no surface streams or water features within any of the delineated subwatersheds that bisect the area. Although numerous buttes are present within the analysis area, there are no existing system roads or trails leading to their summits. Road 2235777 to the top of Tom Butte in the southeastern portion of the area was decommissioned under the Central EA in 1998. The steeper side slopes of these buttes are well vegetated or more comprised of cinders that are not a source of extensive erosion. Slopes throughout the majority of the analysis area are less than 10% and are currently well vegetated and stable.

Social Issues

Residents from local communities such as LaPine primarily earn a living from natural resource extraction (logging, post and pole harvest, firewood cutting), the Bend/LaPine School system, natural resource management, and/or the service industry (restaurants, stores, gas stations). There is a strong connection for many residents with local National Forest land, both as a source of jobs and as a source of recreational opportunities. Many of these residents consider the use of adjacent National Forest lands as theirs by right as citizens, and utilize the forest in the Rim Butte area for firewood cutting, OHV recreation and hunting. Proposals to limit access to National Forest lands are generally considered unfavorably by the general public from these communities. Conflicts between motorized and non-motorized uses have not been apparent within the analysis area, most likely due to the relative lack of designated non-motorized destination opportunities such as trails.

Cultural Values of the Area

Historical cultural use within the analysis area appears to be associated with the surface lava flows and buttes. There was likely regular use of the land within the project area by the Northern Paiute and perhaps Klamath tribes. Traditional use of the area as hunting grounds is probable, especially due to the proximity of known occupancy in the Paulina and East Lake area. Use of the many buttes as destination vision quest sites is likely but not documented.

Available Resources to Maintain and Operate the Forest Transportation System

Consider the effects of motor vehicle use on the portion of the forest transportation system under analysis, using the general and specific criteria for designating NFS roads, NFS trails, and areas on NFS lands for motor vehicle use (36 CFR 251.55; FSM 7715.5).

Road Densities within the Analysis Area

Open road density within the Rim Butte analysis area was calculated using the open road system as defined by the Motor Vehicle Use Maps (MVUM). The distribution of open roads in the area is somewhat uneven, with fewer roads in the northern half of the analysis area. Table 28 displays open road density for the entire Rim Butte travel analysis area, as well as densities for the portions of 12th field watersheds that overlap the analysis area. A total of 246 miles of open road are present within the analysis area. The road density of 2.55 miles/square mile calculated for the Rim Butte analysis area is slightly above the 2.5 miles/square mile guideline in the Forest Plan for General Forest areas outside of deer winter range but relatively low compared to other areas of the Forest.

Approximately 124 miles of roads in the analysis area were administratively closed or decommissioned under the Central EA (1998) and are not on the NVUM maps. Few of these miles have been physically closed or obliterated. An overall "footprint" road density of 3.83 miles per square mile results if these roads are included in the calculations. A total of 48 miles of OHV trails are present within the analysis area and contribute to an open motorized travel route density (open roads and trails) of 3.13 square miles per square mile within the Rim Butte analysis area (Figure 20).

Table 28 Open Road Densities of 12th Field Subwatershed portions within the Rim Butte Analysis area

Defined Analysis Area	Total Square Miles	Square Miles within Analysis Area	Miles of Open Road	Open Road Density	Miles of closed roads (Level 1)	System Road Density (including Level 1 roads)
Rim Butte Analysis Area	96.48	96.48	246	2.55	124	3.83
Subwatershed (12th field)						
The Dome	55.84	29.39	69.58	2.37	55.7	4.27
China Hat	30.23	18.59	54.1	2.91	23.2	4.16
Ooskan Butte	38.75	16.14	30.35	1.88	36.9	4.17
Surveyors Lava Flow	50.76	12.72	35.61	2.80	0	2.80
Green Butte	39.04	6.8	16.48	2.42	5.3	3.21
Paulina Peak South	34.65	4.54	14.97	3.30	0	3.30
Ipsoot Butte	17.51	4.53	20.08	4.43	0	4.43
Pine Lake	45.64	2.18	3.51	1.61	7.6	5.05

Road densities were calculated for the entire 12th field subwatershed areas that bisect the Rim Butte analysis area (Table 29). Road densities within the individual subwatersheds range between 1.61 and 4.43 miles/square mile, with an average of 2.72 miles/square mile.

Table 29 Open Road Densities of entire 12th Field Subwatersheds

Defined Analysis Area	Total Square Miles	Miles of Open Road	Open Road Density	Miles of closed roads (Level 1)	System Road Density (including Level 1 roads)
Rim Butte Analysis Area	96.48	246	2.55	124	3.83
Subwatershed (12th field)					
The Dome	55.84	178.26	3.19	76.69	4.57
China Hat	30.23	79.51	2.63	41.05	3.99
Ooskan Butte	38.75	109	2.81	43.07	3.92

Surveyors Lava Flow	50.76	72.73	1.43	18.83	1.80
Green Butte	39.04	155.64	3.99	36.06	4.91
Paulina Peak South	34.65	94.52	2.73	8.67	2.98
Ipsoot Butte	17.51	55.41	3.16	11.8	3.84
Pine Lake	45.64	57.98	1.27	9.7	1.48

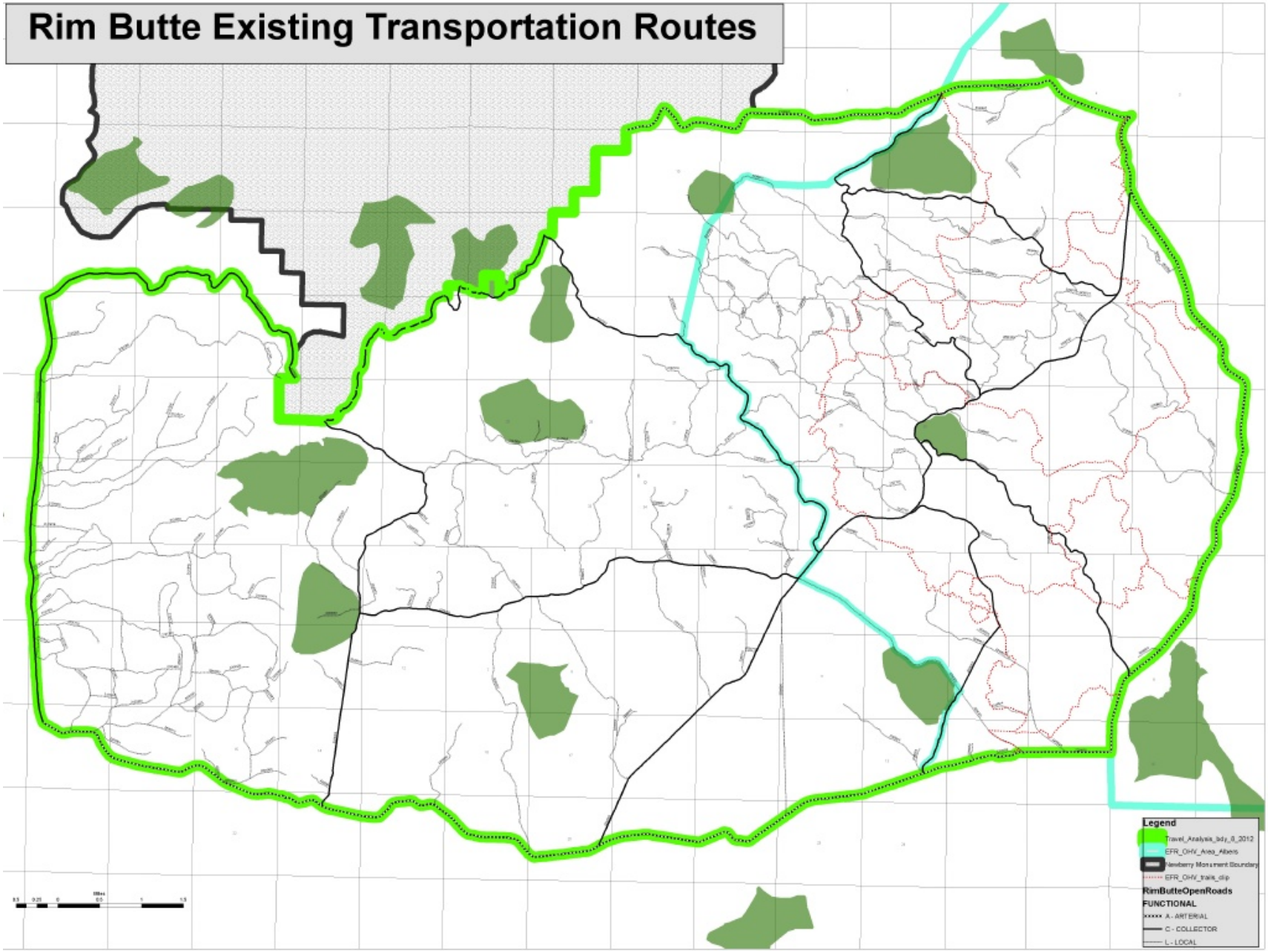


Figure 20 Open road and travel routes within the Rim Butte Travel Analysis Area.

STEP 3: Identifying the Issues

The Deschutes National Forest released a scoping letter to the Forest mailing list in May of 2012 for the proposed designation of new motorized travel routes and the possible closure of system roads in the Rim Butte area. The purpose of this step is to identify the key questions and issues affecting the proposed management of motorized travel routes. Issues can arise concerning the benefits of roads and the risk they may pose to the physical, biological or social environment.

A key issue regarding the technical nature of the proposed motorized OHV travel routes was generated from public comments received during the scoping process. Although many comments were received in support of the proposed designation of motorized travel routes, concern about the system routes not providing the desired technical experience was strongly voiced. No public comments were received that directly related to system roads or road closures.

Another key issue was generated internally regarding the cultural and biological values of buttes in the analysis area. Some of these buttes are designated as Old Growth Management Areas by the Forest Plan and provide refugia habitat for wildlife. All of the buttes provide dispersed non-motorized recreational and cultural opportunities.

A key question was generated from external concern regarding the possible presence of caves in the Rim Butte area. Contacts with local grotto members resulted in ground surveys to determine the presence and value of caves within the analysis area. The results of these surveys would be discussed by the IDT and the decision maker to determine whether this question results in a key issue that would drive an Alternative to the Rim Butte proposed action.

Specific comments were also received during scoping regarding the procedures associated with designating motorized travel routes under the Travel Management Plan, as defined in FSH 7709.55 - Travel Planning Handbook Chapter 20. The procedures being followed in the Rim Butte Travel Analysis are guided by Forest Service Handbook (FSH) and Forest Service Manual (FSM) directives related to the designation of motorized transportation routes per 36 CFR 212.51 - Subpart B. These procedures include completing a Travel Analysis of the transportation System. The most important road-related issues in the analysis area can be divided into two categories.

Social and Economic – motorized routes are needed and/or desired for:

- Vegetation management and other administrative access
- Fire suppression
- Recreational driving/access and OHV trails
- Firewood cutting
- Hunting and general forest access

Environmental – motorized routes can cause problems such as:

- Habitat fragmentation and disturbance of big game
- Potential impacts to soil quality and hydrologic function
- Spread of noxious weeds
- Direct and Indirect impacts to caves and associated habitats

STEP 4: Assessing Benefits, Problems, and Risks

Key Analysis Questions

Key analysis questions are used to assess the benefits, problems, and risks of designating motorized transportation routes within an analysis area. The Interdisciplinary Team (IDT) adopted analysis questions from Forest Service policy direction found in Roads Analysis: Informing Decisions About Managing the National Forest Transportation System (FS-643). The IDT addressed questions that were relevant to the planning area and the scale of the project and modified or combined others in order to help identify additional internal issues. Answers to these questions are intended to inform the decision maker during project planning and help focus a project level analysis.

Key Analysis Question—Ecosystem Functions and Process

To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites?

Roads are major corridors for dispersal of noxious weeds and other invasive non-native plant species. All roads in the project area are susceptible to infestation by noxious weeds through dispersal vectors such as motorized vehicles, equipment, and human use of roads. Users traveling from and through weed-infested areas have the potential to transport seeds and propagules to uninfested areas along roads and trails within the analysis area. Although there are relatively few noxious weed infestations documented along the primary arterial route access to the analysis area (Forest Road 22), there are invasive populations near the community of LaPine that could source noxious weeds onto vehicles driving to the area.

White-nose syndrome (WNS) is an emerging threat to bat populations that can cause substantial mortality in established winter roosts. The disease can be spread via humans that frequent WNS positive areas and then use the same clothing or equipment in currently unaffected areas. Typical users of the Rim Butte analysis area are not likely to frequent WNS positive areas or be particularly focused on cave exploration. As a result, the overall potential for exposure or spread within the area is considered to be low.

What are the adverse effects of noise caused by developing, using, and maintaining roads and motorized trails?

Noise from the motorized use of travel routes can disturb wildlife and the experience of non-motorized recreationalists depending on the level and duration of the source. Low level noise generated from car and truck motors can have adverse effects on wildlife if the duration is longer as a result of slow speeds on local roads. However, the current average daily traffic on local roads in the analysis area is relatively low and not likely to have major impacts on wildlife. Speeds traveled by these vehicles on arterials and collectors within the analysis area are much greater and less likely to generate durations that cause major changes to stress levels of various species. The low level noise generated from car and truck motors is less likely to have major impacts on the experience of non-motorized recreationalists than other sources due to the relative “white noise” of that source compared to others.

Motorized routes designated for Class 1 and 3 OHVs within the East Fort Rock OHV system currently have variable amounts of daily use. Noise generated from the two and four stroke engines of Class 1 and 3 vehicles is generally of a higher decibel that is more likely to disturb wildlife species. However, the duration of this noise is variable depending on the technical difficulty of the trail route. As a result, the disturbance to wildlife species from these activities is also variable in intensity and extent. Although this type of noise can also negatively impact non-motorized activities, there are no residential communities and relatively low dispersed recreational use in the area. The proposed development of motorized trail routes designated for Class II vehicles would generate lower decibel, longer duration noise disturbance

from a lower speed rock crawling activity. Noise generated from these vehicles would be expected to have lesser impacts on non-motorized activities and variable impacts on different wildlife species.

Other generators of noise from use of the motorized travel routes include short-term increases in traffic from future forest management activities within the JOT planning area. This could result in longer duration noise levels where harvest or fuels reduction activities like mowing and piling occur.

Key Analysis Question—Surface Erosion and Groundwater

How and where does the road system affect overland flow and infiltration in the area?

There are no streams, wetlands or lakes in the planning area and there is relatively little overland flow during rain events due to the gentle topography and high infiltration rates of the soils. However, the distribution and overall infiltration of storm precipitation is slightly modified by the road system within the analysis area. Isolated roadbeds constructed perpendicular to natural water flow patterns or directly down slopes can intercept and increase the intensity of overland flows. Road ditches extend the influence of the road system and can increase the concentration of flows and slow the infiltration of storm runoff in a few areas.

How and where does the road system generate surface erosion?

Surface erosion from roads is dependent upon the erodibility of the road surface, the infiltration rates of the surrounding soil, the slope of the road, and the amount of precipitation generated in a storm. Soils in the Rim Butte area have high infiltration rates and a high water storage capacity that combine with gentle slopes to minimize overland flows during most storm events. Thunderstorm events during the summer months can generate intense, short duration pulses of precipitation that can be concentrated by the road and drainage network and cause surface erosion. In general, these affects are localized when they occur and there are no stream networks within the analysis area to which eroded sediment can be delivered.

How and where does the road system affect mass wasting?

The factors that influence mass wasting are hill slope, bedrock geology, soil structure, vegetation, road construction and drainage, and precipitation. Due to the gentle topography, geology and high infiltration rates of these soils, mass wasting does not occur in the analysis area.

Key Analysis Question—Economics

How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?

The road system directly affects agency revenues by providing existing access to locations where revenue-producing activities occur. Commercial post-and-pole sales, commercial firewood sales, personal use firewood cutting, and timber sales all rely on the existing road system that is the subject of this analysis.

Direct agency costs generally derive from maintenance work and administrative activity:

Maintenance: Although few of the roads being analyzed receive recurrent maintenance, the need for maintenance accrues as time passes. The cost incurred by the agency for this deferred maintenance is most commonly presented when scheduled timber sale activity requires that the road be brought to a minimum standard suitable for log haul. This cost is represented in the timber sale appraisal as an overhead cost that reduces timber sale revenue.

Administrative Activity: Road decommissions implemented for the enhancement of other resource values result in adding time – and, consequently, cost – to activities such as timber sale layout and planning area reconnaissance because of increased complexity in gaining access to areas behind closures. Costs can also be generated by the opening and re-closing of closed roads for administrative or contract access. The low standard of the road system could also result in a revenue reduction as a result of the increased haul times for timber sale operators over what they might experience operating on higher standard roads. However, this is most likely a minor cost and one that is rather difficult to quantify.

Key Analysis Question—Commodity Production and Timber Management

How does road spacing and location affect logging system feasibility?

Traditional logging practices in the area dictate ground-based yarding systems to remove logs to landings. As a result, the existing road system is oriented to facilitate downhill yarding. Roads are generally located at lower positions on slopes and are spaced relatively close together in areas that have seen extensive harvest activity. The existing extent and density of roads within the area appears to be sufficient to provide access for future tractor-based harvest activities, although the northern portion of the analysis area has lower road densities and temporary roads would likely be needed to access material at landings generated from feasible ground-based yarding distances.

How does the road system affect managing the suitable timber base and other lands?

Convenient access to the timber base reduces the monetary cost and time for management activities that would otherwise be required in the absence of roads. Routes have been established throughout the managed portion of the analysis area as a result of past timber harvest and provide continued access to the timber base. The current road system is unlikely to require any permanent road construction to implement harvest activities resulting from recent and future environmental analysis efforts.

How does the road system affect access to timber stands needing silvicultural treatment?

As noted above, a well-developed transportation system has been established in the analysis area through past harvest practices. This system, when viewed without regard to whether the roads are open or administratively closed, provides basic access to most stands that may need future silvicultural treatment. There are a number of stands in the northern portion of the analysis area where temporary roads would likely be necessary to implement potential vegetative treatments. Existing administrative closures without roadblocks in the area generally facilitate effective access during future planning and implementation activities. Fully decommissioned roads have the potential to add to the cost of implementing certain silvicultural practices as a result of higher bid prices for “walk-in” units.

Key Analysis Question—Special Forest Products

How does the road system affect access for collecting special forest products?

Road access is a key element in the collection of special forest products. The most commonly sought-after products within the analysis area are firewood, fence posts and poles. The presence or absence of road access to the immediate vicinity of firewood and post and pole areas dictates the rate and efficiency at which these materials are collected. The existing road system, even absent administratively closed roads, provides sufficient access to most areas where firewood and post and poles can be collected. As a practical matter, administrative road closures implemented for general resource protection purposes do not necessarily preclude access to firewood or post/pole harvest areas. Most roads have not been blocked and those with a physical barricade at the road entrance and obliteration of the road surface for a visible

distance can be opened with locally available equipment if the road is deemed necessary for access or forest management in the future.

Key Analysis Question—General Public Transportation

How does the road system connect to public roads?

The road system in the analysis area is entirely within National Forest boundaries.

How does the road system address the safety of road users?

The spectrum of Forest Service roads within the analysis area ranges from low standard native surface roads to higher-speed arterials. Consideration for safety of the road user spans a similar spectrum. Arterial FS Roads 21, 22 and 18 are managed to meet the requirements of the Highway Safety Act and provide a high level of user safety, while the collector roads provide a moderate consideration for user safety. Although these collectors can sometimes be comfortably driven faster than designed speeds, safety concerns for use at these speeds have not been addressed. Site distances may be too short for safe passing and road surfaces are not maintained in a manner to facilitate safe higher-speed driving.

Local Level 2 roads are assigned a low operational Maintenance Level and receive only the amount of maintenance necessary to prevent impacts on adjacent resources. These roads were designed and built employing design standards that would make them generally safe to use at low speeds of 20 mph or less. Local roads are considered sufficiently safe when driven at an appropriate low speed by drivers familiar with backwoods driving. However, there are no standards for roadside obstructions, road widths around corners and minimum stopping sight distances on these roads.

Key Analysis Question—Protection

How does the road system affect fuels management? How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires? How does the road system affect risk to firefighters and to public safety? How does the road system contribute to airborne dust emissions resulting in reduced visibility and human health concerns?

Fuels management activities can be affected by decommissioned roads or physically blocked administratively closures that change the ease of access to units slated for prescribed fuels treatments. The existing system footprint of open and administratively closed roads provides widespread access for administrative vehicles within the analysis area. It is unlikely that the existing system would increase the time and effort to get resources to a fuels treatment unit or limit the types of equipment that can immediately access a prescribed burn. The existing road system is extensive enough to limit the cost per acre and allow for planned accomplishments to occur throughout the analysis area.

Road closures can affect resource access to control a wildfire by preventing an initial attack engine from getting close enough to a fire start to allow crews to prevent it from growing larger and out of control. However, the majority of administrative closures within the analysis area have no physical road blocks and those that do could be readily removed by heavy equipment or breached by cutting a few trees. The existing system of roads within the analysis area provides opportunities for use as primary control lines, which generally facilitates the containment of a wildfire by reducing the fatigue of firefighters when used for holding lines and increases safety by providing escape routes.

Arterial and collector roads within the analysis area are maintained well enough to provide safe egress routes for firefighters and the public in the event of wildfire. Local roads in the area, including those that are administratively closed, have intact road beds that can be driven by firefighters and members of the public needing egress from a wildfire.

The existing road surfaces of collector and local roads within the analysis area are a primary source of dust emissions when driven by emergency vehicles heading to fires during the summer season. The degree to which these emissions can affect the visibility of drivers is variable, but can be mitigated with slow driving and the watering of roads during suppression efforts. Health concerns associated with dust emissions from roads are somewhat minimal due to their temporary nature and would be dwarfed by the added amount of PM2.5 and PM10[1] emissions created by smoke produced by a wildfire.

Key Analysis Question—Special Uses

How does the road system affect managing special-use permit sites?

There are fifteen geothermal leases within the analysis area, all of which are leased by NorthWest Geothermal. The existing open road system currently accesses a portion of all the sections that are currently leased, although there are a few sections in which interior system roads are not present. There are no utility corridors, cell phone or relay towers within the analysis area.

Key Analysis Question—Terrestrial Wildlife

What are the direct and indirect effects of the road system on mule deer?

The existing footprint of open and closed roads in the analysis area directly fragments forested stands that provide hiding and thermal cover for big game. Administrative closures have reduced the effective extent of this fragmentation to some degree, although public use of closed roads likely continues due to the lack of physical closures and general misinterpretation of the MVUM maps. The amount of disturbance on big game from motor vehicle noise or human presence likely varies according to the size and distribution of the existing interior blocks of habitat. Many of these blocks are associated with buttes in the area that do not have roads and provide niche habitat that appear to be heavily used by mule deer.

Larger blocks of interior habitat are present in the northern and southeastern portions of the analysis area as a result of lower road densities or administratively closed roads, respectively. Open road density across the analysis area is currently 2.63 miles per square mile of land (Table 28). This density slightly exceeds the 2.5 miles per square mile guideline in the Deschutes National Forest Land and Resource Management Plan (LMRP, 1990) for general forest areas outside of deer winter range. Open road densities for the various 12th field watersheds that bisect the analysis area range from 1.61 to 4.43 miles per square mile, with an overall average 2.71 miles/square mile.

One of the most obvious direct effects of open roads on big game is the loss of animals to motor vehicle collisions. Within the area, the greatest impact would occur to animals crossing FS Roads 22 or 18 either during spring and fall migrations or to those animals that attempt to cross daily to reach water sources, prime forage areas, or cover habitats. There is no winter range within the analysis area and no green dot seasonal road closures that reduce the effective road densities during hunting seasons. The existing road system footprint provides greater and easier access to animals during hunting seasons and/or to those taken illegally outside of designated hunts. This is likely to increase the displacement and disturbance of mule deer during these seasons.

Is the road system having an effect on threatened, endangered, sensitive, management indicator species, or other wildlife species of concern?

[1] PM= Particulate Matter emissions limit visibility, absorb harmful gases, and aggravate respiratory conditions in susceptible individuals. Over 90% of the mass of particulate matter produced by fire is inhalable and repairable. Respirable suspended particulate matter is the portion of the total particulate matter that, because of its small size, has an especially long residence time in the atmosphere and penetrates deeply into the lungs. (NFES 1279, PMS 420-2, February 1985)

Open roads have the capability to negatively impact wildlife species as a result of human caused disturbance. Elevated noise levels from vehicular traffic and human access into sensitive wildlife habitats, such as breeding or wintering areas, has potential to negatively impact wildlife species.

Northern Goshawk: Potential habitat for northern goshawk is present within the boundaries of the Rim Butte analysis, although there are no documented nest sites. There are two northern goshawk post fledging areas (PFAs) outside of the southeastern boundary of the travel analysis area. Both of these are approximately four miles from any proposed trail. Most raptor species are very sensitive to human intrusion during the nesting season but it is not known if road/human use within the analysis area is currently having a negative impact on goshawks. When used goshawk nest sites are active from March through September each year.

Key Analysis Question—Recreation

Unroaded Recreation

Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities?

Although there are no Inventoried Roadless Areas (IRAs) within the analysis area, unroaded recreation opportunities are currently available on numerous buttes and along the northern portions of the analysis area where road densities are relatively low. Current use of these areas is very low and demand for these opportunities is not expected to exceed the supply. Management of the transportation system has reduced overall road densities within the analysis area without overly restricting road access for public use.

Is developing new roads into unroaded areas, decommissioning of existing roads or changing maintenance of existing roads causing substantial changes in the quantity, quality, and type of unroaded recreation opportunities?

There has been no development of new roads into unroaded areas in recent years. Management under future projects may require temporary roads to access stands in need of silvicultural prescriptions but are not expected to add to the permanent road system within currently unroaded areas. The decommissioning and administrative closure of roads under the Central EA has reduced road densities within the analysis area but has only slightly increased the size and distribution of unroaded blocks where unroaded recreation opportunities could take place.

What are the adverse effects of noise and other disturbances caused by developing, using and maintaining roads on the quantity, quality, and type of unroaded recreation opportunities?

Noise from vehicle engines can have a negative impact on recreationalists participating in an unroaded recreational opportunity. Additional transportation routes can increase the number of encounters a recreationalist might have with noise generated from motor vehicles, although the types of transportation routes directly influence the speed of the vehicles, and thus the volume and duration of these disturbances. The analysis area is heavily forested and relatively gentle in topography, both of which contribute to limiting the distance and duration that noise disturbances are likely to travel.

Who participates in unroaded recreation in the areas affected by constructing, maintaining, and decommissioning roads?

Unroaded recreationalists are relatively few in number within the analysis area and are most likely to be hikers on the buttes, explorers of lava flows or seasonal hunters.

What are these participants' attachments to the area, how strong are their feelings and are Alternative opportunities and locations available?

Lava flow explorers have expressed moderately strong concerns regarding potential and existing caves in the area. Hunters or hikers have not been encountered by members of the IDT within the analysis area. Unroaded recreational hiking opportunities are available to the north of the analysis area within the boundaries of the Newberry National Volcanic Monument, although hunting is not allowed within the Monument.

Road-related Recreation

Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities?

OHV groups expressed concerns during the Travel Management Planning process regarding the supply of motorized transportation routes (i.e. trails) for OHVs across the Forest following the elimination of legal cross-country travel to motorized vehicles. These concerns have resulted in increased demands for technical Class II trails which require rocky terrain that is present within the analysis area.

Is developing new roads into unroaded areas, decommissioning of existing roads or changing maintenance of existing roads causing substantial changes in the quantity, quality, and type of roaded recreation opportunities?

Management decisions associated with the road system have reduced open road densities within the analysis area without causing substantial changes to road related recreational opportunities. Motorized trail routes associated with the East Fort Rock OHV system have not been affected by these actions. Road closures and changes to Maintenance Levels of existing roads provide an opportunity for additional motorized transportation routes to be located on or adjacent to these road surfaces.

Who participates in roaded recreation in the areas affected by constructing, maintaining, and decommissioning roads? What are these participants' attachments to the area, how strong are their feelings and are Alternative opportunities and locations available?

Current participation in roaded recreation opportunities within the analysis area occurs from local users driving street legal motor vehicles on roads and both local and visiting users driving non-street legal vehicles on designated OHV trails. Local users are generally passionate about maintaining the open road system for access to the general forest and designated trails as a recreational experience.

Key Analysis Question—Passive Use Value

What, if any, groups of people (ethnic groups, subcultures, and so on) hold cultural, symbolic, spiritual, sacred, traditional, or religious values for areas planned for new motorized routes or route closures?

Based on analysis of archaeological materials from nearby, there is the suggestion that groups may have used buttes and rock outcrops in the area on an occasional or even regular basis. These would most likely have been the Paiute peoples of the northern Great Basin to the east.

Will constructing, closing, or decommissioning motorized routes substantially affect passive-use value?

There are no existing or proposed routes across the slopes or to the top of any of the buttes in the analysis area. In general, it is presumed that a loss or change of access would affect such values since they would have to find another way to access a particular area or spend more time doing so. The proposed

motorized trail routes have been surveyed for the presence of archeological values and are designed to avoid known sites.

Key Analysis Question—Social Issues

How does the road system affect access to archaeological and historical sites?

Most archaeological sites on National Forest land are easily accessed by roads. Only a few are in remote settings. Many of those accessible to the general public have been adversely affected over the years by a variety of factors including vandalism, the stealing of artifacts, and artifact displacement by recreational activities including off-highway vehicles.

How does the road system affect cultural and traditional uses such as plant gathering, and access to traditional and cultural sites?

Although interested Tribal groups have been consulted, there is little information available with which to address this question. Traditional use of the buttes as vision quest sites is speculated but not confirmed. Regardless, there are no motorized routes to the top of any of the buttes in the area. It is unlikely that the road system affects plant gathering in the area as cultural plant species (sage, pines, spring and summer forbs) are so ubiquitous in this part of the forest that the closing of some roads would not affect their gathering. Cultural sites are present within the analysis area and are adjacent to or not far from existing roads.

How are roads that constitute historic sites affected by road management?

Historic roads are affected in various ways by road management, depending on whether they have been incorporated into current day travel routes and what level of management is in effect on these roads. Where the modern route is within the same corridor as the historic route, there is little original physical integrity remaining of the earlier road or trail. Many times the only knowledge of a historic route lies not in physical evidence on the ground, but in the historic record. In many cases, segments of historic roads and trails can still be seen across the landscape where they have not been obliterated by past logging, road building, and other land management activities that occurred before these linear sites were protected.

What are the traditional uses of animal and plant species in the area of analysis?

Presently, there is inadequate information available to determine current use. It is presumed, based on the archaeological and historic record, that prehistoric traditional uses included the hunting of large and small game animals that followed the same trails adjacent to the lava flows as humans did, utilizing water trapped in snow and ice within the rocky crevices. Current prehistoric archaeological evidence within the Newberry Crater and surrounding areas suggests that early inhabitants were hunting and processing game animals on a regular basis.

Key Analysis Question—Civil Rights and Environmental Justice

Is the road system used or valued differently by minority, low-income, or disabled populations than by the general population? Would potential changes to the road system or its management have disproportionate negative impacts on minority, low-income, or disabled populations?

A primary purpose of road management is to provide for the health and safety in road use for all members of the public. The road system within the analysis area does not appear to be valued differently by various segments of the general population and is used indiscriminately by the general public. Any closure, decommissioning, or construction of routes would affect all populations in an equal way and would not appear to impact the civil rights of an underrepresented population.

Benefits and Problems of the Current Road System

Many of the benefits and problems of the road system are identified and discussed under the "Key Analysis Questions". The general themes can be divided into benefits (access and uses) and problems (where roads interact negatively with ecosystems).

Recreational Driving

General increases in public recreation across the Forest indicate a greater demand for access to public lands. The Rim Butte area includes a staging area associated with the East Fort Rock OHV area and is adjacent to the Newberry National Volcanic Monument, both of which provide multiple opportunities for recreation. Although there are few destination recreation areas within the Rim Butte area, recreational driving is a popular past time on NFS Lands and likely occurs within the analysis area.

Administrative Access

The current road system provides administrative access for forest and fuels management. The existing roads also facilitate fire suppression efforts within the analysis area. Vegetation management activities such as timber sales and plantation thinning are ongoing throughout the planning area and are expected to continue.

The administrative closure of roads for resource protection has not affected the cost to access areas for administrative purposes or where contracts are being administered due to the maintenance of the road surfaces and the lack of physical road blocks.

Fire Suppression and Emergency Egress

The existing open road system provides sufficient public access and egress to and from the area, while the footprint of administrative closures continues to provide sufficient access to the area for initial attack firefighting. Although the open road system can increase the presence of ignition sources in the forest, it also provides the ability to reach wildfires with engines and greatly improves the ability to put them out quickly.

Invasive Weeds

Motorized vehicles and/or their cargo are the single most important vector for the introduction and spread of invasive weeds and other non-native plant species. Although the analysis area is relatively void of known weed sites, there are noxious weed sites around the communities of LaPine and Bend where many of the vehicle trips to the area originate. As a result, the arterial FS Road 22 has been identified as a primary vector pathway for the movement of noxious weeds into the analysis area.

STEP 5: Describing Opportunities and Setting Priorities

This section describes options for modifying the road system that would achieve desirable or acceptable conditions.

Forest-Wide Roads Analysis

The Deschutes and Ochoco National Forests completed a Forest-wide Roads Analysis in January 2003. At such a large scale, it was limited to the two and four-digit arterial and collector roads. This assessment

reviewed and affirmed operational Maintenance Levels for these roads. No assessments or updates were made for local roads in that process.

Other Assessments

The Central and Long Prairie Environmental Assessments include portions of the Rim Butte analysis area. Specific and general recommendations for roads and access can be found in these reports. Site-specific recommendations from the Central EA include:

124 miles of road identified for administrative closure or decommissioning. These changes are reflected in the current open road system as reflected by the Motor Vehicle Use Map (NVUM) for the Forest. Few of these closures have been implemented on the ground with road blocks or carsonite sign changes.

Recommendations for the Rim Butte Analysis Area

Overall Priorities

- Maintain access for administrative use and fire suppression
- Reduce the road system's ability to spread noxious weeds
- Assess the operational maintenance of collector roads
- Implement road closures and decommissions from the Central EA (1999)
- Assess the viability of additional designated motorized travel routes for OHVs

Specific Recommendations

Open/Closed Roads –

Allow the Forest–wide Sustainable Roads Analysis (SRA) to provide an economic analysis of an open road system that could be maintained within projected budgets. SRA is to be completed by September 30th, 2015.

Assess the current Maintenance Level of roads in the project area that could enhance interior habitat in context with any proposed additions to motorized travel routes.

Implement road closure and decommission decisions signed under the Central EA (1999) with either road blocks or carsonite sign changes

Road Maintenance Funding for road maintenance has declined steadily over the past decade. Road maintenance budgets have forced the deferral of brushing, grading and re-surfacing of Maintenance Level 2 collector roads in the analysis area.

Maintenance on collector roads 2121, 2235, 2230 and 2127 in the coming years is necessary to provide safe travel to passenger vehicles.

Arterial road FS 22 has needs for surface repair.

The annual grading of FS 18 barely maintains the road surface for the amount of traffic.

Designation of Motorized Trail Routes –

The addition of Class II motorized trail routes in the area was deemed appropriate for consideration and analysis for the following reasons.

- Low existing open road densities
- Lack of deer winter range
- Sufficient rock to provide technical trails
- Lack of surface water and streams
- Separation from other motorized uses
- Lack of formal non-motorized use in the area.

Noxious Weed Treatment/Prevention Recommendations –

There are currently no known weed sites within the project area; however:

Recommend prevention measures to educate the public about recognizing local noxious weeds and understanding issues associated with their spread.

Encourage the public to:

- avoid parking their vehicles on weed sites
- clean their vehicles of mud and debris that can harbor weed parts or seeds before entering the Forest.

NEPA Analysis Needs

This travel analysis is being completed concurrently with the Rim Butte Jeep Trails Environmental Assessment (EA). Opportunities identified can be incorporated into the EA process where they are connected to the purpose and need identified for that project. Opportunities not analyzed in the EA, other than maintenance and administrative decisions, would require a site-specific NEPA analysis in the future to implement them.

Travel Analysis References

USDA Forest Service (USFS). 1990. Deschutes National Forest Land and Resource Management Plan. Deschutes National Forest. Bend, Oregon.

USDA Forest Service (USFS). 1999. Roads Analysis: Informing Decisions About Managing the National Forest Transportation System (FS-643)

USDA Forest Service (USFS). 2003. Road Analysis Report, Forest-Wide Assessment, Ochoco and Deschutes National Forests, and Crooked River National Grassland. Bend, Oregon.

Appendix C – Response to Comments

A 30-day comment period for the Rim Butte OHV Jeep Trails Project was provided for interested and affected publics. Letters requesting comments were sent to the Rim Butte OHV Jeep Trails Project mailing list of interested parties on May 28th, 2013. They included federal, state, and local agencies, Confederated Tribes of the Warm Springs, Burns Paiute Tribe, The Klamath Tribes, various environmental organizations, and interested individuals. The Forest received 22 comment letters. These comments were reviewed by the interdisciplinary team and responsible official.

All comments have been addressed in this appendix while substantive comments raised have been analyzed and considered as part of the decision notice. Specific written comments are within the scope of the proposed action, are specific to the proposed action, have a direct relationship to the proposed action and include supporting reasons for the Responsible Official to consider (36 CFR 218). This appendix contains the Forest Service's responses. The table below lists individuals and organizations who submitted comments.

30-Day comment period letters Rim Butte OHV Jeep Trails Project

Author(s)	Individual or Organization		Author(s)	Individual or Organization
Doug Abelin	Capitol Trail Vehicle Association		Arlene Brooks	Individual
Glen Ardt	Oregon Department of Fish and Wildlife		Slim Stout	Individual
Earl Nettnin	Pacific Northwest 4-Wheel Drive Association		Jake Michelsen	Individual
Randy Drake	Pacific Northwest 4-Wheel Drive Association		Larry and Joanne Ulrich	Individuals
Forest Dexter	Pacific Northwest 4-Wheel Drive Association		Scott Walley	Individual
Doug Heiken	Oregon Wild		Jon and Patti Pyland	Individuals
J. Wilmort	Deschutes County 4 Wheelers		Stephen Bruce	Individual
Meriel Darzen	Oregon Chapter Sierra Club Eastside Forest Committee		Ethan Lodwig	Individual
Sarah Peters	Wildlands CPR		Mona Drake	Individual
Jeremy Ofstad	Pirates Off-road		Casey Backer	Individual

Supportive

Comments in support of the Rim Butte OHV Jeep Trail Project enthusiastically endorse the project's designation of a new motorized Class II trail system on the Deschutes National Forest citing a variety of perceived benefits stemming from implementation of the Project. Comments supporting the Project characterize it as a pro-active contribution to the management of multiple-use lands by increasing available opportunities for technical, Class II motorized recreation. Supportive commenters consider Class II motorized recreational opportunities to be important for the inclusion of a large number of individuals, regardless of age or physical ability, who are seeking recreational experiences on the Deschutes National Forest. Additional perceived benefits of the Project raised in supportive comments include reductions in congestion and associated impacts in already established Class II OHV areas, and benefits to the local economy from recreating public seeking to utilize the Rim Butte Trail.

Air Quality

Comments: Concerns related to the Rim Butte Project's impact on air quality were raised by one comment citing a 2007 USGS Report as saying: *Also problematic are OHV emissions, particularly from 2-stroke engines. Currently, many OHVs in use, including off-highway motorbikes and ATVs, run on 2-stroke engines, which do not burn fuel completely and produce significant amounts of airborne contaminants, including nitrogen oxides, carbon monoxide, ozone, aldehydes, and extremely persistent polycyclic aromatic hydrocarbons (PAH), including the suspected human carcinogen, methyl tert-butyl ether (MTBE). Some airborne contaminants settle onto plants or into soils and function as fertilizers, thus causing changes in plant community composition and altering growth rates. The accumulation of emissions contaminants is evident in the tissues of plants and animals exposed to them.*

Response: Trails proposed as part of the Rim Butte Project would be constructed mostly within 200 meters of existing roads. While these trails would be designed for Class II users (80" wide vehicles) that use 4-stroke engines, all classes of users would be welcome. Since trails would be near existing roads, emissions may be somewhat higher due to additional recreation users but these areas are already experiencing dust from vehicle travel on nearby roads. The project area is located about 30 miles south southeast of Bend and about 10 miles east of LaPine. All activities must follow the federal Clean Air Act (CAA), as amended (EA section, 3.12.13 *Clean Air Act*).

Alternate Preference

Comments: Several comments were received expressing specific preferences for one of the three Alternatives evaluated in the project proposal. Commenters expressing a preference for Alternatives 2 or 3 while either expressing a preference for longer trail mileage (as provided for by Alternative 2) or more technical trail terrain (as provided for by Alternative 3) do not take issue with the project proposal's overall intent to construct a new Class II OHV trail. The single comment demonstrating a preference for the no action Alternative 1 takes issue with the Rim Butte Project for its larger contribution to the perpetuation of OHV use on public lands through the construction of new OHV trails and facilities.

Response: With regard to the preference expressed for the No Action Alternative 1, the Rim Butte area was identified as a good fit for a technical motorized trail system after internal resource concerns in the area were reviewed by an Interdisciplinary Team of resource specialists. The EA addresses specific minimization criteria identified in the Travel Management Rule in order to protect resources through proper design and

implementation of site specific trail systems. Chapter 3 of this EA displays the analysis of effects to the resource areas on the Forest. Preferences for Alternatives 2 and 3 have been noted. Alternative 2 and Alternative 3 are compared in the EA, Chapter 2. Table 3 (EA section, 2.3) shows a summary comparison between Alternatives 2 and 3.

Assessment of Need for OHV Trails

Comments: Commenters questioned the number of people that would use the new Rim Butte Trail System given the high expense of equipment necessary for technical driving, asserting that without hard survey data on projected use for the Rim Butte Trail System, the impacts to soils and wildlife from the proposed project does not balance with the purpose and need as stated in the EA. Further, commenters asserted that expenditures to benefit such a small segment of recreating public are unwarranted. Commenters also stated that the travel analysis process should be science-based, used to compile existing travel management direction and relevant data, rank routes according to risk and benefit, and assess the need for change pursuant to FSH 7709.55, 20.2, and that the Rim Butte travel analysis failed to meet these criteria. Other commenters stated that public need should not be gauged by the number of comments received on a project.

Response: OHV use is one of the many multiple uses of National Forest System lands. Technical rock crawling is a niche segment of motorized users; however, popularity for this form of motorized recreation has grown in recent years (EA section, 1.2 *Background).* The number of trail users is generally expected to be very low with spurts of activity when groups come out to recreate together. With the limited number of areas designated for this type of motorized recreation, rock crawling enthusiasts are willing to travel from out of state to run trails. The project area was chosen to have a low impact on resources while providing the user groups an opportunity to participate in their preferred form of recreation. The Rim Butte area receives extremely low recreational use from other types of forest users, limiting the potential for user conflicts. The EA addresses specific minimization criteria identified under the Travel Management Rule in order to protect resources through the proper location, design and implementation of site specific trail systems. Chapter 3 of this EA displays the analysis of effects expected as a result of implementation.

The scope of the Rim Butte travel analysis was limited by the District Ranger to include only the addition of motorized trails under FSH 7709.55, 21.1.3 to coincide with the actions included in the EA scoping letter (Larkin, 2012). The travel analysis completed for the Rim Butte project was conducted to inform travel decisions related only to the designation of roads, trails and areas for motor vehicle use per 36 CFR 212.51 under the Travel Management Rule (FSH 7709.55, 20.2 subpart B) (EA Appendix B, *Travel Analysis*). The Rim Butte project does not include the identification of a minimum road system per 36 CFR 212.5(b)(1) as an action (FSH 7709.55, 20.2 Subpart A). The identification of a minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands under Subpart A of the Travel Management Rule will be completed for the Deschutes National Forest under a Washington Office mandate by the end of fiscal year 2015 (Holtrop, USFS, 2010). As a result, a ranking of existing routes according to risk and benefit was not included in this travel analysis. Key issues and analysis questions were identified and answered within the analysis using relevant data and existing direction for travel management to assess the existing condition of the transportation system and make recommendations for change (EA Appendix B, *Travel Analysis*).

Public need for this trail has been established as a result of coordination during design and implementation of the Travel Management Decision for the Deschutes and Ochoco National Forests and the Crooked River Grassland (EA section, 1.2 *Background*). The need for a project is not driven by the number of respondents. Responses are used to identify issues and shape Alternatives.

Consideration of ATV/OHV versus Road Impacts

Comments: The concern that road density is not an adequate proxy for motorized trail density and, therefore, impact information based on roads should not be used in estimates of impacts associated with ATV/OHV trails was raised by a comment suggesting that decision-making related to the Rim Butte Project needs to consider the impacts ATV/OHV trails separately from those of roads.

Response: A calculation and analysis of the open road density within the Rim Butte project area was completed in order to assess the effects of the transportation system on the Forest's wildlife objectives regarding fragmentation of habitat and disturbance to wildlife species, primarily big game. The EA and wildlife analysis describe the open road densities to display the effects of motorized traffic on fragmentation and disturbance as per direction from the Forest Plan (EA Appendix B, *Road Densities within the Analysis Area*) and Table 15, *Road Densities in the Rim Butte Analysis Area*). Although the Forest Plan does not include motorized trails as part of the transportation system to be analyzed for open road densities, the latest science shows that motorized OHV traffic on trails can disturb big game and other species, albeit generally on a lesser scale than motorized traffic on open roads. As a result the EA also reports the overall motorized travel route density (roads plus motorized trails) to place the potential disturbance of big game species from all motorized traffic and changes to the motorized travel routes in context (EA section, 3.6.6, *Transportation System – Existing Road and Trail Density*).

OHV Routes on Buttes

Comments: One commenter requested consideration of the creation of routes up one or two buttes adjacent to the proposed trail so that scenic viewpoints are accessible to all OHV recreationalists regardless of age or physical ability.

Response: Non-motorized access would continue to be allowed on buttes in the area. None of the Alternatives include motorized access up the buttes due to resource protection measure concerns. The EA contains an analysis of the effects to buttes in the area (EA section 3.8.4, *Scenic Resources –Environmental Consequences).*

Campsite Design

Comments: Commenters raised questions about designated camping areas' ability to accommodate individual and groups of RV campers, along with a request to consider locating a campsite closer to a well-maintained road so that RVs were not subjected to dusting from off-road travel to the campsites. Other commenters expressed concerns that the proposed number of staging areas and expense of installing vault toilets was not justified given the small size of the proposed trail system.

Response: The staging areas have been designed to accommodate large vehicles with trailers as well as large groups (EA section, 2.2.2 *Alternative 2 (Proposed Action);* and EA section, 2.2.3 *Alternative 3*). Both open camping areas and more secluded camping spots would be provided to accommodate different users. The staging area locations were chosen based on proximity and access to the trails, favorable topography, and reduced resource impacts. Vault toilets are proposed at both staging areas in response to the design of overnight campsites at each. The project analysis is for up to two vault toilets; however, initial implementation would utilize portable toilets until use stabilizes and visitor levels are more predictable. This would help agency personnel assess true need for toilets. The tie to the South Lava Trailhead was removed from

the proposals due to the need for larger staging area designs necessary to accommodate larger RV and trailer vehicles used by the 4-wheeler community. Utilizing the South Lava staging area would create a longer commute to and from the trails open to Class II users. Also, separating the staging of the different OHV user groups would help minimize potential user conflicts (EA section, 3.2.4 *Recreation—Cumulative Effects).*

Climate Change

Comments: One commenter stated that the Project EA fails to *discuss the impacts of this project on climate change, and in particular the cumulative impacts of both the increase in greenhouse gases released from increased use of fossil fuel engines on the forest, and the decrease in albedo resulting from high levels of dust*.

Response: Climate change is addressed in section 3.12.12 of the EA. No measurable changes to climate are expected as a result of project implementation.

Need for Cross-country Areas

Comments: One commenter requested a designated cross-country area as part of the Rim Butte Trail in addition to incorporation of *interesting* features into greater than 8% of the Rim Butte Trail.

Response: Roughly 30% of Alternative 2 is technical and roughly 80% of Alternative 3 is technical (section, 2.3, *Comparison of Alternatives*). Cross-country travel areas are outside the scope of the proposed Class II trail systems.

NEPA Sufficiency (cumulative effects)

Comments: One commenter requested that the cumulative negative effect of all past decisions that have adequately considered dual-use designations be considered in the decision-making for the Rim Butte project and that the project include an adequate mitigation plan to compensate for inadequate consideration of the cumulative negative effect of past decisions.

Response: The Council on Environmental Quality (CEQ) regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions (EA section, 3.1.2 *Regulation and Direction*).

Economics/Maintenance

Comments: Commenters stated that OHV and gas tax money should be dedicated to funding for OHV trail maintenance, and provide advice on cost-effective options for accomplishing trail maintenance tasks such as those related to the construction and maintenance of water bars/dips/mounds. One comment asked for greater explanation of how cost was considered in evaluating each proposed Alternative.

Response: The Oregon ATV Grant Program provides funding statewide for off-highway vehicle (OHV) recreation. State grant funds come from ATV user permit sales and a percentage of gasoline tax money. Grants are awarded through a competitive application process. Forest Service personnel are pursuing these and other grant and in-kind funding opportunities for OHV related projects, including Rim Butte.

Once planning is completed, the Rim Butte Project as well as operations and maintenance of the trail system would likely receive most funding from State ATV Grants with substantial contributions from volunteer user groups (EA section, 3.2.3 *Recreation—Existing Condition).* There would be minimal additional investments from USFS budgets. Peripheral costs of implementing either Alternative 2 or Alternative 3 can be compared on the basis of trail miles constructed and maintained. Alternative 3 would create approximately half the number of trail miles as Alternative 2 and would be expected to cost half as much to implement and maintain over time. Technical trails would require less time and money to develop and maintain than less technical trails like the existing East Fort Rock OHV system. The rocky, dry terrain would keep maintenance costs low (since no grooming on trails would occur), and support from Class II user groups would cover most of the maintenance needs. Each Alternative would construct two staging areas of nearly equal sizes with similar costs (EA section, 2.2.2 *Alternative 2 (Proposed Action)* and 2.2.3 *Alternative 3*) Most of the development cost is associated with staging area construction while trail construction and maintenance would be coordinated by the Forest Service with volunteers and would consist mostly of locating the exact route for the trail and driving the route to establish the trail tread.

Desire for Increased OHV Access

Comments: Commenters requested increases in OHV access on Forest Service lands, expressing the perception that multiple-use lands are disproportionately and unfairly allocated towards non-motorized recreational opportunities. Specifically, commenters advocating for increased OHV access identified the management of Roadless Areas as largely non-motorized and a lower number of trail miles open to motorized recreation compared to trail miles (in addition to cross-country opportunities) open to non-motorized use as unreasonable administration of multiple-use lands. Commenters considered division of multiple-use lands into motorized and non-motorized areas a form of segregation illegal under the Civil Rights Act of 1964. A 50/50 motorized/non-motorized division was suggested by commenters as the ultimate goal for designating lands open to motorized/non-motorized use. Comments identified the Rim Butte Project as a proposed Travel Plan that does not address existing imbalances and would increase the disproportionate designation of multiple-use lands for non-motorized opportunities. Finally, comments in favor of increasing OHV access stipulated that the Forest Service must adequately consider both the growing popularity of motorized recreation and the aging public's need for motorized recreational opportunities so that they may enjoy access to and recreation on public lands.

Response: National Forests are popular with many Americans for many uses. It is not possible to accommodate all user demands on all National Forests while also protecting water quality, wildlife habitat, and other natural resources that people come to enjoy. Forest Service managers must balance user interests against the other criteria" (Federal Register /Vol. 70, No. 216 pg. 68271). The Rim Butte Project makes no changes to the designations of Forest Service lands. All lands would continue to be managed for multiple uses. The Project is not a comprehensive travel management plan; rather, it is a site-specific trail proposal that does not include any closure of existing roads or trails. The proposed trails are designed for Class II off road vehicles, however all classes of users would have access to the routes including non-motorized users. The Travel analysis completed for the project area assessed the extent and status of existing travel routes (Appendix B, *Travel Analysis*). The EA analyzed for

an increase in the miles of motorized trails available for use as a result of this project (EA section 3.6.6, *Transportation System – Environmental Consequences).*

Fire Danger

Comments: One comment suggested fire danger is increased by the use of vehicles without spark arrestors on public lands because riders are not required to abide by forest closure rules for fire precaution.

Response: All forest users, including motorized users, are required to abide by closures and public use restrictions. All Class II vehicles are required by state law (OAR 735-116-000) to have an operating muffler which prevents sparks and carry a fire extinguisher. During fire season, Class II vehicles are required to carry a shovel and a fire extinguisher or a gallon of water.

Invasive Species and Edge Creation

Comments: One commenter stated that the EA fails to analyze the potential impacts of the proposed Alternative with regard to invasive species and edge community creation.

Response: The risk is readily acknowledged in the EA analysis. Section 3.5.3, *Weed Risk Assessment*, provides a discussion of the risk the trails present in creating niches for invasive plant species.

Minimization Criteria

Comments: One comment stated that the Forest Service has failed to fully comply with the intent of the ORV Executive Orders and the Travel Management Rule when evaluating whether this project minimizes impacts from trail designations.

Response: The minimization criteria contained in CFR 212.55(b) and FSM 7715.5 are listed in section 1.6.1, *Travel Management Rule and Forest Service Manual Direction*. The location and design of the Rim Butte trail system minimizes damage to the soil, water, and vegetative resources by reducing the amount of trail tread cleared for use and by locating the system within an area with no surface streams or lakes (section 3.7, *Fisheries*). Alternative 3 further minimizes the disruption of wildlife and conflicts between motorized users and non-motorized users by locating trails away from buttes that provide refugia and near to existing roads (EA section, 3.3.3 *Wildlife Analysis Methods*). Conflicts among different classes of motorized users are minimized by moving the staging areas away from existing Class I and III trailheads.

Noise affects Bats

Comments: Commenters stated that an increase in noise from OHV recreation will negatively impact 98.8% of forest users and affect and displace wildlife, specifically, bats. Commenters stated that the EA's conclusion that noise associated with OHV recreation will not contribute towards listing or loss of viability of these species is unsupported by scientific data or analysis.

Response: Noise is analyzed in Step 4 of the Transportation Analysis. Potential impacts to bats were evaluated using the road effect area which addresses potential impacts from noise and increased traffic (EA section 3.3.5, *Pacific Northwest Regional Sensitive Species*). Because users would be traveling slower over difficult rocky terrain, noise levels should be lower than with Class I or Class III trails (EA section, 3.2.4 *Recreation Cumulative Effects*). Furthermore, potential impacts to bats are expected to be very infrequent as there are no known caves that provide bat habitat that would be affected by the project.

Non-Compliance/Enforcement

Comments: Comments on non-compliance/enforcement of OHV system regulations acknowledged that a developed OHV system has lower impacts than unregulated OHV use, but expressed the concern that the impacts of OHV use will inevitably extend beyond the intended trail system as OHV users seek out new challenges once those inside the trail system have been met. Specifically, commenters perceive the proposed Rim Butte trail system's proximity to buttes as increasing the likelihood that Class II users will venture off the trail system to non-designated areas, and that the Forest Service lacks the resources to adequately enforce trail system regulations.

Response: Most users would stay on designated routes and follow the rules. With proper trail layout and design, along with obvious trail markers and signage, recent trail construction in Central Oregon has been extremely successful at limiting impacts to the desired trail tread. Major objectives for the trail layout and design would be to place trails in locations that Class II users want to operate on, discourage off trail use, and avoid resources or areas that may tempt users to wander off established trails. Alternative 3 was developed to reduce the proximity of trail treads to buttes in the area in order to reduce the possibility of users wandering toward and up the slopes of these features. The trail system would be developed in partnership with local trail user groups who would be essential to the monitoring and policing of users of the system. Frequent monitoring of the trail system helps identify user created routes or problem areas before major impacts occur and allow these locations to be successfully closed and rehabilitated. Excess travel off of the designated routes would result in limitations and potential closure of trails in this system (section 3.2.3, *Recreation—Existing Condition—Law Enforcement*).

OHV Access

Comments: Commenters stated that the Deschutes National Forest does have enough motorized trails to meet the growing demand for motorized recreation. Insufficient motorized trail availability is considered by commenters to (1) to produce an unsatisfactory OHV recreational experience and (2) to encourage motorized recreationalists to explore closed routes in an attempt to have a satisfactory recreational experience. Commenters also stated that the allocation of non-motorized vs. motorized trails is not reflective of public need and demand for motorized recreational opportunities for users of all skill levels. Commenters suggested the extensive acres of wilderness needed to be matched by equal amounts of

access for motorized users. Finally, commenters raised the concern that the number of motorized single-track trails has declined, and that all single-track trails on public lands designated for multiple-use should be opened to motorized use per the Civil Rights Act of 1964 requirement that all public places be desegregated.

Response: The Rim Butte Project is not a Travel Management Plan; it is a site specific trail proposal. There are no directives to manage recreation between motorized and non-motorized recreational uses equally. This project does not seek to limit motorized trails and does not add additional wilderness, or change or limit motorized access (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness).* Rather, the Rim Butte Project proposes to increase opportunities for motorized recreation, specifically to meet an identified need for more technical trails for Class II users (EA section, 3.2.4 *Recreation – Direct and Indirect Effects).*

There are no existing non-motorized single track trails inside the project area (EA section 3.2.3, *Recreation –Existing Condition*). The proposed motorized routes are designed primarily for technical Class II users and would be suitable in difficulty for expert motorcycle riders and trial type bikes, although they are not single track in width (EA section, 3.2.4*Recreation—Direct and Indirect Effects*). The trails constructed as part of the Rim Butte EA would be open to all Classes of motorized vehicles. The US Forest Service does not discriminate on the basis of race, color, or national origin, which are protected under the Civil Rights Act of 1964 (EA page 2, *non-discrimination policy).*

Potential Wilderness Areas

Comments: Commenters stated that the Forest Service failed to analyze ecological values (such as production of fish and other aquatic and terrestrial species, and providing sources of high quality water) of unroaded areas.

Response: Alternative 3 was developed in part to reduce the proximity of trail locations in Alternative 2 to buttes and other unroaded areas within the analysis area (EA section, 1.10.1 *Key Issue 1—Wildlife, Soil and Social Resource Values*) . The trail locations in this Alternative parallel existing roads as much as possible in order to reduce the fragmentation and disturbance effects of these new routes on terrestrial species utilizing Inventoried Roadless Areas of any size (EA section 3.6.6, *Transportation System – Environmental Consequences*). There are no surface streams within the analysis area (EA section, 3.7 *Fisheries*).

References

The following table contains references received in public comments on the Rim Butte Project.

Comments:	**Response:**
3. DeVelice, R.L., and J.R. Martin. 2001. Assessing the extent to which roadless areas complement the conservation of biological diversity. Ecological Applications 11(4):1008-1018.	This reference provides support to the importance of Inventoried Roadless Areas as part of biodiversity conservation. No Inventoried Roadless Areas or potential wilderness areas would be affected with implementation of the Rim Butte project (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness Areas*).

4. C.Loucks, N. Brown, A. Loucks, and K. Cesareo. 2003. USDA Forest Service roadless areas: potential biodiversity conservation reserves. Conservation Ecology 7 (2) www.ecologyandsociety.org/vol7/iss2/art5/index.html.	This reference provides support to the importance of Inventoried Roadless Areas as part of biodiversity conservation. No Inventoried Roadless Areas or potential wilderness areas would be affected with implementation of the Rim Butte project (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness Areas*).
5. Crist, M.R., B. Wilmer, and G.H. Aplet. In Review. Assessing the value of roadless areas in a conservation reserve strategy: An analysis of biodiversity and landscape connectivity in the Northern Rockies, USA. Applied Ecology.	This reference provides support to the importance of Inventoried Roadless Areas as part of biodiversity conservation. No Inventoried Roadless Areas or potential wilderness areas would be affected with implementation of the Rim Butte project (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness Areas*).
6. Rhodes, J.J., D.A. McCullough, and F.A. Espinosa. 1994. A Coarse Screening Process for Potential Application in ESA Consultations. Technical Report 94-4. Prepared for National Marine Fisheries Service.	This reference deals with effects of land management activities on salmon spawning and rearing habitat in ESA consultations and is not relevant to the Rim Butte project. No surface water exists in the project area (EA section, 3.7 *Fisheries*).
7. M. Philip Nott, David F. Desante, Peter Pyle, And Nicole Michel. 2005 Managing Landbird Populations In Forests Of The Pacific Northwest: Formulating Population Management Guidelines From Landscape Scale Ecological Analyses Of Maps Data From Avian Communities On Seven National Forests In The Pacific Northwest. A Report To The Pacific Northwest Region, USDA Forest Service. January 31, 2005. http://web.archive.org/web/20060926120816/http://www.birdpop.org/downloaddocuments/usfsr6/nwffullreport.pdf.. For many species, the conservation of large tracts of coniferous forest in excess of 900 hectares [2224 acres] is essential. Not only is the total amount of forest important but many species are edge-sensitive such that are breed more successfully in tracts of forest large enough to allow them to avoid the increased risk of predation or nest parasitism suffered close to the edge. (p 147)	This reference provides support to the importance of Inventoried Roadless Areas as part of biodiversity conservation. No Inventoried Roadless Areas or potential wilderness areas would be affected with implementation of the Rim Butte Project (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness Areas*).
In a letter to President Clinton urging the protection of roadless areas, 136 scientists noted: There is a growing consensus among academic and agency scientists that existing roadless areas–irrespective of size–contribute substantially to maintaining biodiversity and ecological integrity on the national forests. The Eastside Forests Scientific Societies	This reference provides support to the importance of Inventoried Roadless Areas as part of biodiversity conservation. No Inventoried Roadless Areas or potential wilderness areas would be affected with implementation of the Rim Butte Project (EA section, 3.10

Panel, including representatives from the American Fisheries Society, American Ornithologists' Union, Ecological Society of America, Society for Conservation Biology, and The Wildlife Society, recommended a prohibition on the construction of new roads and logging within existing (1) roadless regions larger than 1,000 acres, and (2) roadless regions smaller than 1,000 acres that are biologically significant…. Other scientists have also recommended protection of all roadless areas greater than 1,000 acres, at least until landscapes degraded by past management have recovered…. As you have acknowledged, a national policy prohibiting road building and other forms of development in roadless areas represents a major step towards balancing sustainable forest management with conserving environmental values on federal lands. In our view, a scientifically based policy for roadless areas on public lands should, at a minimum, protect from development all roadless areas larger than 1,000 acres and those smaller areas that have special ecological significance because of their contributions to regional landscapes. Letter to President Clinton from 136 scientists (Dec. 10, 1997). https://docs.google.com/open?id=0B4L_-RD-MJwrRzhFcm5QcFR0MHM	*Inventoried Roadless Areas and Potential Wilderness Areas*).
1. Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A.Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States.	Reference provides support to the importance of late successional forests (EA section 3.3.8, *Old-growth Management Areas*). The Rim Butte project will not affect late successional forests, fish or watersheds (EA section, 3.7 *Fisheries*).
2. Strittholt, J.R., and D.A. DellaSala. 2001. Importance of roadless areas in biodiversity conservation in forested ecosystems: a case study – Klamath-Siskiyou ecoregion, U.S.A. Conservation Biology 15(6):1742-1754.	This reference provides support to the importance of Inventoried Roadless Areas as part of biodiversity conservation. No inventoried roadless areas or potential wilderness areas would be affected with implementation of the Rim Butte project (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness Areas*).
38. In a recent article (http://www.helenair.com/articles/2008/08/01/national/80na_080801_drill.prt) about a lawsuit regarding drilling in New Mexico on the Otera Mesa, the BLM manager stated "While up to 90 percent of BLM lands are open to drilling under the plan, Childress said only 800 to 900 acres of Otero Mesa's 1.2 million would be permanently disturbed by roads,	Comment does not include site specific references to the Rim Butte project. This reference deals with drilling in New Mexico. Effects analysis in NEPA directs us to cumulative effects within the cumulative effects analysis area (EA section, 3.1.2 *Regulation and Direction*).

footpads and other drilling related activities.	

Resource Impacts

Comments: Commenters stated that OHV activities in the Project area will have significant, unmitigated effects on soil, water, and wildlife (specifically, big game, bats, raptors, and snag habitat), and could irreversibly damage geologic features (such as lava flows and cinder cones) in the area.

Response: Effects to elk, mule deer and raptors are described in section 3.3.6 *Management Indicator Species.* Effects to bats are described in 3.3.4 *Endangered, Threatened and Proposed Species or Critical Habitat*. Effects to soil are described in section 3.9, *Soils*. There are no effects to streams or fisheries (see section 3.7, *Fisheries*). Alternative 3 was developed to reduce the proximity of trails to buttes and primary lava flows with high resource values within the analysis area (section 1.10.1, *Key Issues*). None of the trails in either action Alternative would climb any of the buttes in the area or cross the contiguous lava fields located in the northwest portion of the project area. Technical trails in Alternative 3 would be located on outcrops of older lava flows that are partially resistant to the travel of motorized OHVs, but would be directly impacted on the designated tread.

Road Closure

Comments: Commenters recommended that the Forest Service physically close roads already restricted to administrative access only to increase the patch size of wildlife habitat without a road or trail running through it. Other commenters stated that the Forest Service must exercise discretion when making decisions about road closures based on indicators such a sediment production.

Response: The Rim Butte Project does not propose to close any roads as part of project design. Patch size is evaluated as part of the wildlife assessment in Chapter 3. Section 3.3.6, *Management Indicator Species—Elk* discusses level 1 roads and the existing condition in the area.

Safety

Comments: One comment stated that condensing motorized recreation opportunities into a small allocation of motorized areas and routes is detrimental to public safety as more accidents will occur on congested motorized routes.

Response: This project is not a comprehensive analysis of motorized recreation across the Forest. The Rim Butte project proposes an additional site specific motorized trail, thereby increasing the area available for motorized users. Motorized users are currently operating on similar trails and smaller trail systems with limited congestion and few safety concerns. This project proposal seeks to add additional trail miles to help spread users out and provide another destination for motorized use (EA section 3.12.7, *Public Health and Safety*).

Site Specific Analysis

Comments: One commenter stated that national OHV criteria and standards are not entirely applicable to conditions in the project area and in Oregon, and, accordingly, the project analysis needs to allow for decision-making based on site specific conditions so that local conditions and customs related to motorized access and recreation are accounted for in the decision.

Response: Site specific conditions in the Rim Butte area have been analyzed extensively in Chapter 3 or the EA. Section 3.1.2, *Regulation and Direction*) describes how the analysis effects are bound in space and time throughout Chapter 3.

Skid Roads for OHV Trails

Comments: One comment expressed an interest in using new skid trails for new OHV routes.

Response: The interest in using new skid trails to provide OHV routes is noted. Many of the trail miles included in Alternative 2 would follow post-logging skid trails. However, old skid trails in the Rim Butte area tend to be flat and do not contain the amount of hard rock needed to provide a technical rock crawling experience identified as desirable by OHV user groups (EA section, 3.2.4 *Recreation – Direct and Indirect Effects*).

Soils

Comments: One comment expressed concerns that dust generated from OHV use will settle on vegetation, inhibiting its growth and removing it from food supply for wildlife and creating a reduced albedo effect which will contribute to climate change through increased solar heating and faster loss of snowpack. The comment also stated that OHV use will destroy fragile soil systems and inevitably result in erosion due to degraded soil.

Response: Fugitive dust generated from motorized trails varies by vehicle class, speed and soil type (Goosens, 2009). Dust generated from vehicles traveling on trails designed primarily for Class II use is likely to be limited in nature due to the slow speeds of these vehicles on technical and rocky trail segments. The technical nature of the trail designs are also likely to limit the speeds of any Class I and III vehicles traveling on these trails, classes that can generate significant dust when traveling on more open and less technical trails such as those in the existing East Fort Rock OHV system. There is little existing evidence that dust generated by OHVs on existing trails in the East Fort Rock system are causing a widespread loss of food supply or increased loss of snow pack. Effects on snowpack recession are unlikely to be pronounced due to the localized nature of the dust being generated and the presence of higher soil moistures capable of reducing dust generation from the trails during the spring months when a snowpack may be in close enough proximity to be affected. As a result, the generation and re-deposition of dust from vehicle traffic on the proposed trails is expected to be localized and have limited effects on food supply and snowpack melting. EA section 3.9.4, *Soils—Environmental Consequences* describes erosion potential from construction and trail use.

Trail Building Coordination

Comments: Commenters planning to utilize the Rim Butte Trail expressed the desire to assist in trail construction so that they may contribute their expertise to trail construction efforts. Commenters stated that inclusion in trail building efforts, particularly in trail bed placement among

natural obstacles, is essential to preventing unauthorized use in the area because the resulting trail will be appealing enough for users to voluntarily remain on the designated trail.

Response: The District plans to include local OHV user groups as part of trail location efforts.

Travel Management

Comments: Comments were received on a variety of topics related to travel management including assertions that the Forest Service must consider options for non-motorized trails that do not decrease the number of motorized trails, should maintain an equal number of motorized and non-motorized routes in both quality and quantity, must consider the cumulative effects of motorized closures in developing travel Alternatives, should implement route designations for all existing roads to ensure that there is no net loss of motorized opportunities as a result of the Rim Butte Project, and should take socio-economic analysis including impacts on the public owning OHVs and landowners who purchased property with the intent of being to accesses and recreate on motorized routes.

Response: The Rim Butte project is a site-specific proposal to designate a new motorized trail system that meets the identified need for technical Class II OHV recreation, and to plan new designated trails to alleviate the reduction in motorized off-road travel opportunities that resulted from the elimination of cross-country travel following the implementation of the Deschutes Ochoco Travel Management Project. Implementation of the Travel Management Project on the Deschutes Ochoco National Forests in 2012 resulted in the designation of motorized travel routes on all existing roads and trails concurrently open to this use. The Rim Butte Project proposes only to formalize the closure of roads already designated as closed to public motorized travel. The Rim Butte Project proposes technical OHV trails designed for Class II users, but which are open to Class I, III, and IV users seeking more difficult routes. There are no directives for the Forest Service to manage motorized and non-motorized trails equally. The Rim Butte Project area is not adjacent to any private land, where landowners may have purchased property with the intent of accessing Forest Service lands via cross-country routes. There are a growing number of public who own and use OHVs. The Rim Butte project provides more miles of trail for the OHV user group. As a result, significant economic impacts to the OHV user groups are not expected as a result of this project (EA section, 3.10 *Inventoried Roadless Areas and Potential Wilderness Areas*).

Wildlife Habitat

Comments: Commenters recommended that the Forest Service assess and track how patch size without a road or trail changes over time to determine whether patches are getting larger as roads are closed or whether new motorized roads and trails increase habitat fragmentation. Commenters stated that the project footprint should be minimized and conservation measures taken to prevent detrimental impacts to wildlife associated with OHV use including, reduced habitat connectivity and excessive noise. Commenters also stated that the EA fails to adequately analyze potential impacts to MIS and other sensitive species present in the project area, specifically, the Northern Goshawk.

Response: In this analysis, road effect area is a surrogate for patch size—increases in the road effect area for the analysis area indicates an increase in patch size. The road effect area was used as a buffer around the creation of new motorized routes to address potential impacts from noise and increased motorized use associated with new motorized routes(EA section, 3.3.3 *Wildlife Analysis Methods*). A Forest Service biologist

would be available during implementation to provide input on conservation measures that can be taken related to wildlife. No Goshawk nests have been identified within a quarter mile of the proposed routes. The wildlife protection measure was included in the event that ongoing surveys discover a nest. Displacement of foraging birds was noted for non-nesting birds that may infrequently be in the area. Potential goshawk habitat within the road effect area represents less than 1% of the predicted habitat on the Deschutes National Forest (EA section, 3.3.6 *Management Indicator Species (MIS)*).