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Department of
Agriculture

Forest
Service



FINAL ENVIRONMENTAL ASSESSMENT

Phil's Trailhead Project

Bend/Ft. Rock Ranger District, Deschutes National Forest

Deschutes County, Oregon

Legal Location: T18S, R11 E, Section 3; Willamette Meridian

April 2012

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Acronyms used in this Document:

ADA	Americans with Disabilities Act of 1990, as Amended
ABA	Architectural Barriers Act
BA	Biological Assessment
BCC	Birds of Conservation Concern
BE	Biological Evaluation
BEIG	Built Environmental Image Guide
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COTA	Central Oregon Trails Alliance
DEQ	Oregon Department of Environmental Quality
EA	Environmental Assessment
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
FS	Forest Service
FSH	Forest Service Handbook
FSM	Forest Service Manual
FSORAG	Forest Service Outdoor Recreation Accessibility Guidelines
FSR	Forest Service Road
GIS	Geographical Information Systems
IDT	Interdisciplinary Team
INFISH	Inland Native Fish Strategy
IRA	Inventoried Roadless Area
LOS	Late and Old Structure
LRMP	Deschutes National Forest Land and Resource Management Plan (1990)
MA	Management Area
MIS	Management Indicator Species
NE	No Effect
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NHPA	National Historic Preservation Act
NI	No Impact
ODFW	Oregon Department of Fish and Wildlife
ORAR	Outdoor Recreation Access Route
PDC	Project Design Criteria from the Programmatic Biological Assessment
PTH	Phil's Trailhead
RHCA	Riparian Habitat Conservation Area
ROS	Recreation Opportunity Spectrum
SOC	Species of Concern
SSRA	Smoke Sensitive Receptor Area
TES	Threatened, Endangered, Sensitive
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

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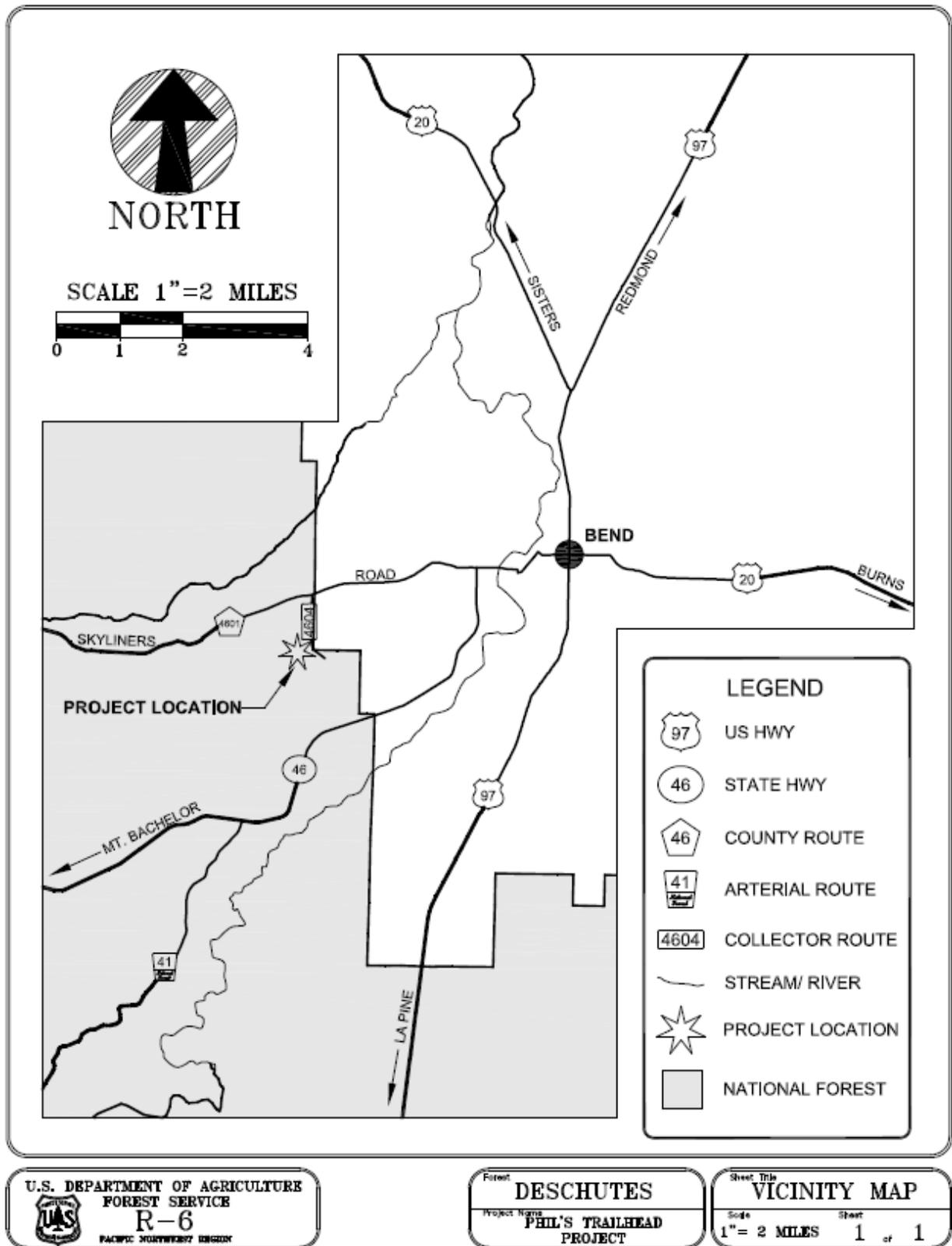
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Figure 1: Vicinity Map for the Phil's Trailhead Project Area, Deschutes National Forest, Bend, Oregon



CHAPTER 1: PURPOSE AND NEED FOR PROJECT

INTRODUCTION

This Environmental Assessment (EA) describes the Bend/Ft. Rock Ranger District's proposal to provide designated parking that is consistent with the present use that Phil's Trailhead is experiencing.

The approximate two acre Phil's Trailhead site is located adjacent to Forest Service Road (FSR) 4604 and the western Bend urban growth boundary, approximately 0.5 mile from FSR 4601 (Skyliner Road). The legal description is: Township 18 South, Range 11 East, Section 3. The project is located at an elevation of approximately 3,850 feet. The trailhead is within a dry ponderosa pine site where past tree harvest and fuels risk reduction activities have occurred. It is located approximately 0.1 mile from a pumice pit that has not been in operation since the early to mid 1990s.

No inventoried roadless areas (IRA) exist within the project area, the nearest being the Bend Watershed located approximately seven miles to the west. There are no threatened or endangered plant, animal, or fish species present within the planning area. There are no streams, lakes, wetlands, riparian habitat, or fish. There are no known historical or prehistoric cultural sites.

EXISTING CONDITION

Phil's Trailhead provides mountain bike riders with access to approximately 63 miles of single track trail. The area, including trails, is also used by people walking their dogs and runners. Increased use has steadily grown in recent years resulting in the need for the Forest Service to address public safety, resource protection, and recreation experience.

The area of Phil's Trailhead was likely logged by the Brooks-Scanlon Company during the 1930s-1940s. Since that time, thinning activities have taken place adjacent to the trailhead, providing a relatively open landscape. Mowing has occurred over the last few years to reduce shrub height and the risk of wildfire. Prescribed fire last occurred in the immediate area in the late 1970s.

The location of the trailhead parking area is in an area that was part of a logging road that was subsequently closed to motorized use. In the mid to late 1980s, a user-created parking area began to develop in this spot. In the late 1990s, the Forest Service installed a toilet facility and informational kiosk.

Much of the current condition at Phil's Trailhead can be attributed to the enthusiasm for and rapid growth of mountain bike riding. Even though use of the area began in the early to mid 1980s, the area experienced rapid growth in population and a simultaneous growth in the use of user created trails that emanated from Phil's Trailhead during the past 10-15 years. This trailhead is easily accessible from the community of Bend, by either riding bikes from town or driving to the trailhead to access the trail system.

Because the user-created parking area is not utilized in an efficient manner and because there is no designation to the parking, parking can be a challenge. As a result of the popularity of this trailhead, those that drive utilize not only the parking area (Figure 8, page 23), they also use FSR 4604 and FSR 4606, a remnant spur road, (Figure 12, page 29) that is adjacent to the east. At times, vehicles line both sides of FSR 4604, creating potential safety issues. Vehicle counts (Forest Service and Deschutes County) indicate that average daily use is frequently greater than 200 vehicles. On-site counts have shown peak use to be over 100 vehicles, particularly during holidays. It is not unusual to have counts of over 50 vehicles, including vehicles with trailers for bicycles.

DESIRED CONDITION

The desired condition for the Phil's Trailhead area is to provide for a standard trailhead facility more in alignment with existing higher than average use.

PURPOSE AND NEED FOR ACTION

The Forest Service has identified a need to improve facilities for the recreating public at Phil's Trailhead because:

- The primary parking area is undesignated which creates safety issues, traffic flow problems, and potential for resource damage. At times vehicles are parked in clusters of undesignated parking areas and along FSR4604.
- The restroom facility is insufficient to meet the needs of the large number of people who recreate there. Other facilities are lacking.
- The site does not meet standards of accessibility with respect to Americans with Disabilities Act (ADA) and does not meet engineering standards.

The purpose of this project is to clearly define and improve this recreation site facility.

PROPOSED ACTION

The Forest Service proposes to meet the purpose and need by making the following changes at Phil's Trailhead:

- Creating a parking area with up to 96 designated parking spaces for single vehicles, large vehicles, and universal access.
- Providing areas for riders to gather.
- Replacing the existing toilet facility with a new accessible double CXT restroom and access route.
- Installing a new kiosk with trail and interpretive information.
- Reconstructing FSR 4604 by reducing the width to standard re-surfacing with asphalt, and incorporating ditch profiles on both edges.

PUBLIC INVOLVEMENT / SCOPING PROCESS USED

The Phil's Trailhead project was announced in the January 2011 issue of the *Schedule of Projects for the Deschutes and Ochoco National Forests and Prineville District BLM*. The proposed action was presented in a letter dated March 10, 2011 to 19 Tribal representatives, and to 79 addresses of individuals, organizations, and other agencies. The scoping letter was also posted to the Forest Service web site.

The scoping letter resulted in 12 responses from individuals, organizations, and agencies. All comments were considered and categorized as either a key issue, analysis issue, or a non-significant issue to not be considered further. This categorization is located in the project record. The key issues were used in developing alternatives (see following section, EA page 4). Issues not analysed in detail are summarized at the end of EA Chapter 2, page 19.

As a part of the scoping process, an open house for the Skyliner Road reconstruction project was held on June 14, 2011 hosted by the Federal Highway Administration. Twenty eight visitors were present. Phil's Trailhead Project was on display and four comments were received during this meeting. An on-site open house was held on June 22, 2011. Thirty one members of the public took the opportunity to discuss the project with Forest Service representatives with nine written comments received. The comments received as a result of these meetings were similar in scope to the written comments and are also a part of the project record.

Comments received during the scoping process expressed concerns for the potential for increased use, potential changes to the rustic character of the site, tree removal, ensuring that the analysis accounts for potential increases in trail use, safety, and use of public funds.

PLANNING ISSUES

Issues are points of discussion, debate, or dispute about environmental or social effects that may occur as a result of the proposed action. Issues provide focus and influence alternative development, including development of mitigation measures to address potential adverse effects. Issues are also used to compare the effects between the proposed action and the alternatives regarding a specific resource element. Issues are generally divided into Key Issues and Analysis Issues:

KEY ISSUES

The following issues were derived from scoping responses. These are addressed through the development of alternatives, mitigation and project design, or through effects analysis and disclosure.

1. Potential for increased use and change of character at the site

- Although the amount of proposed parking is primarily intended to accommodate current use levels, some members of the public are concerned that the proposed trailhead improvements may *increase* use of the area causing an increase in encounters with other users or wildlife or conflicts and degradation of the trail system.

Measurement: Current and proposed parking are used as a basis to compare the potential of typical and peak use.

- Some people are opposed to changing the character of the area and potentially losing its “rustic” nature by the installation of pavement and other amenities. Suggestions were made to minimize tree removal, make the most use of already-disturbed areas, and even to “leave it as is.”

Measurement: The “rustic” nature of the project is compared by the level of development and the potential effects on the recreation experience through the project footprint, trees removed, and surface type of the parking area.

2. Safety concern with paved access road

- Because people may be more apt to drive faster on a paved surface than they would on a natural or gravel surface, there is a concern that improving the access (FSR 4604) could create a danger to pedestrians and bikers from fast-moving vehicles.

Measurement: The issue of safety is compared by access road width, ditching, overflow parking, location of parking areas, and signage along FSR 4604.

3. Use of public funds

- Some commenters suggested that the proposed action is not a wise use of public funds and some expressed concern that the area might become a site where fees are charged.

Measurement: Estimated costs for the project activities are compared.

ANALYSIS ISSUES

Analysis issues are environmental components that are considered in the Chapter 3 analysis. 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 public with complete information about the effects of the project.

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

Wildlife: The following items are analyzed and compared by alternative:

- Threatened, Endangered, Candidate and Sensitive Species
- Management Indicator Species
- Late and Old Structure Forest Habitat
- Late and Old Structure Connectivity
- Snags, Coarse Woody Material, and Green Tree Snag Replacements

Soil Productivity: Soil productivity is addressed through the effects of project activities and soil compaction. Effects are minimized and, following activities, are within stated LRMP Standards and Guides.

Botany and Invasive Plants: Potential effects to Proposed, Endangered, Threatened, and Sensitive (PETS) plant species are considered. 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 are in an area with no known cultural resource sites. Mitigations are designed to avoid, protect, and analyze any newly discovered sites that may be found during project activity implementation.

Air Quality: Potential impacts from burning slash material are disclosed. Proposed tree removal and associated activities have been designed to be conducted to avoid adverse effects, including, if burning is conducted, of smoke.

Fish and Hydrology: Proposed activities will have no effect to any waterbodies or fisheries because of the distance from the project area to water. A biological evaluation is included in the EA to document the no effect conclusion.

PLANNING FRAMEWORK

Development of this EA follows implementing regulations of the National Forest Management Act (NFMA); Title 36, Code of Federal Regulations, Part 219 (36 CFR 219); Title 36, Code of Federal Regulations, Part 220 (36 CFR 220); Council of Environmental Quality, Title 40; CFR, Parts 1500-1508, National Environmental Policy Act (NEPA). This section describes applicable Forest Plan management direction as well as current laws, regulation, and executive order.

DESCHUTES NATIONAL FOREST LAND AND RESOURCE MANAGEMENT PLAN

The 1990 Deschutes National Forest Land and Resource Management Plan (LRMP), as amended, guides all natural resource management activities and provides standards and guidelines for the Deschutes National Forest. The Phil's Trailhead project area is located within the Deer Habitat Management Area (MA).

Deer Habitat (MA-7): The goal of the Deer Habitat management area is to manage vegetation in order to provide optimum habitat conditions on deer winter and transition ranges, while providing some domestic livestock forage, wood products, visual quality, and recreation opportunities. (Forest Plan, page 4-113)

Inland Native Fish Strategy (INFISH)

The riparian management guidelines of the Forest Plan were amended by the Inland Native Fish Strategy (INFISH, 1995). INFISH was intended to be interim direction to protect habitat and populations of resident native fish and to provide for options for management. The INFISH delineated RHCAs where riparian-dependent resources receive primary emphasis. These Riparian Habitat Conservation Areas (RHCAs) include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems.

OTHER LAW, REGULATION, POLICY

Analysis and documentation has been done according to direction contained in the National Forest Management Act, the National Environmental Policy Act, the Council on Environmental Quality regulations, National Environmental Policy Act (NEPA) regulations, The Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act of 2000, the National Historic Preservation Act, the Clean Air Act, and the Clean Water Act.

The following is a brief explanation of each of these laws:

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 damage 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 NEPA (36 CFR 220).

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).

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.”

Americans with Disabilities Act of 1990, as Amended: The Americans with Disabilities Act (ADA) gives civil rights protections to individuals with disabilities that are like those provided to individuals on the basis of race, sex, national origin, and religion. It guarantees equal opportunity for individuals with disabilities in employment, public accommodations, transportation, State and local government services, and telecommunications.

Revised regulations for Titles II and III of the Americans with Disabilities Act of 1990 (ADA) were published in the Federal Register on September 15, 2010, providing scoping and technical requirements for new construction and alterations resulting from the adoption of revised 2010 Standards in the final rules for Title II (28 CFR part 35) and Title III (28 CFR part 36).

PROJECT RECORD

This EA hereby incorporates by reference the Project Record (40 CFR 1502.21). The Project Record contains Specialist Reports and other technical documentation used to support the analysis and conclusions in this EA. Chapter 3 provides either the complete specialist report or a summary that contains adequate detail to support the decision rationale; appendices provide supporting documentation.

Incorporating these Specialist Reports and the Project Record help implement the Council on Environmental Quality (CEQ) Regulations provision that agencies should reduce NEPA paperwork (40 CFR 1500.4), that the document shall be “analytic rather than encyclopedic,” and that the document “shall be kept concise and no longer than absolutely necessary” (40 CFR 1502.0). The objective is to furnish adequate site-specific information to demonstrate a reasoned consideration of the environment impacts of each alternative and how these impacts can be mitigated, without repeating detailed analysis and background information available elsewhere. The Project Record is available for review at the Bend-Fort Rock District Office, 63095 Deschutes Market Road,, Bend, Oregon, Monday through Friday 7:45 a.m. to 4:30 p.m.

DECISION FRAMEWORK

The scope of the project and the decision to make are limited to the improvements of Phil’s Trailhead, connected actions, and necessary mitigation. EA, 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 Bend/Ft. Rock Ranger District of the Deschutes National Forest. Based on response from the 30-day comment period, and the disclosed analysis with mitigation, the Responsible Official will make a decision and document it in a Decision Notice (DN) and Finding of No Significant Impact (FONSI). 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 each factor of the project purpose and need is met and the manner in which each alternative responds to the analysis issues.

CHAPTER 2: ALTERNATIVES

INTRODUCTION

This chapter describes and compares the alternatives considered for the Phil’s Trailhead Project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative in order to provide a clear basis for choice by the decision maker. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental effects of implementing each alternative.

ALTERNATIVES CONSIDERED IN DETAIL

ALTERNATIVE 1 (NO ACTION)

This alternative is required by law and serves as a baseline for comparison of the effects of all of the alternatives. Under Alternative 1, there would be no change in the level of ongoing management within the project area. All custodial activities such as road maintenance, law enforcement, and response to emergencies would continue. The Purpose and Need of this proposed project would not be met because no project activities would be implemented to improve parking to be more in line with existing use or improve public safety.

ALTERNATIVE 2 (PROPOSED ACTION)

This alternative was provided for scoping. The proposed action includes trailhead improvement activities that cover approximately 3.1 acres. Actions are described in Table 1. Descriptions of the actions are included following the description of Alternatives 3 and 4.

Table 1: Summary of Alternative 2 (Proposed Action) Activities

Activity	Alternative 2
Estimated Footprint	135,000 ft ² - 3.1 acres
Single Vehicle Parking (12' x 22')	74
Overflow Parking	14
ADA Accessible Parking	4
Oversize Parking (12' x 60')	4
Total Parking Spaces	96
Drop Off	Yes
Parking Surface	Asphalt
Parking Definition	Striping
Informational Kiosk	Three-panel Triangle
Restroom Facility (ADA accessible)	CXT Double Vault
Gathering Area	12 Picnic Tables
Estimated Costs	\$450,810
Forest Service Road 4604 Reconstruction	Reconstruct 0.5 miles to 22 feet width, with v-ditch \$245,278

The south portion of the existing parking area would be subsoiled for Alternative 2. Subsoiling equipment or excavator teeth may be used to loosen compacted soils in other areas of compaction resulting from heavy equipment, if necessary, redistributing humus-enriched topsoil in areas of soil displacement damage, and pulling available slash and woody materials over the treated surface to establish effective ground cover protection. .

Figure 2: Present Phil's Trailhead Parking Area (Left Loop- West) and Overflow (Right - East - and along Forest Service Road 4604 to North and South



Figure 3: Phil's Trailhead - Alternative 2 Conceptual Design



Figure 4: Visual Display of Alternative 2 Proposed Project Location Overlay
Alternative 2 (Proposed Action)



1 inch = 125 feet
2011 Aerial Imagery

ALTERNATIVE 3 AND ALTERNATIVE 4

Alternative 3 and Alternative 4 were developed to respond to the key issues as discussed in Chapter 1.

The parking area configuration, total parking spaces, and the new area of impact would be less than Alternative 2.

- In response to issue #1, regarding an increase in use and change in the rustic appeal of the area:

Alternative 3 and Alternative 4 propose fewer parking spaces. The design incorporates ADA parking and drop off. This design designates and limits parking to the design footprint and reduces peak parking by approximately 30 percent.

Alternative 3 and Alternative 4 utilize the existing trailhead parking area and expand to the north. The design takes into consideration the aesthetics of the area, which includes planting trees and shrubs to screen a portion of the parking area and revegetate the overflow parking area to the east (FSR 4606). Both alternatives would remove approximately 20-30 trees, fewer than the 55-65 trees proposed for removal in Alternative 2. Alternative 4 would use an earth tone chip seal over asphalt or gravel to maintain a more rustic character to the project area and minimize evidence or use of synthetic materials.

- In response to issue #2, regarding a safety concern with a newly paved access road:

Alternative 3 and Alternative 4 would, like Alternative 2, reduce the width of the road and provide v-ditches to discourage parking along the road. Speed control measures will be incorporated, such as speed bumps or dips. Standard cautionary and advisory speed limit signage would be installed at the trailhead approach.

- In response to issue #3, regarding se of public funds:

Alternatives 3 and 4 both have reduced costs associated with project activities. Project activities would be funded by the Federal Highway Administration.

Table 2: Summary of Alternative 3 and Alternative 4 Activities

Activity	Alternative 3	Alternative 4
Estimated Footprint	62,400 ft ² – 1.4 acres	
Single Vehicle Parking (12' x 22')		73
ADA Accessible Parking		3
Overflow Parking		0
Oversize Parking (12' x 60')		0
Total Parking Spaces		76
Drop Off	Yes	
Parking Surface	Asphalt	1) Earth tone chip seal over asphalt 2) or gravel
Parking Definition	Wheel stops or natural barriers	
Informational Kiosk	2- panel	
Restroom Facility (ADA accessible)	CXT Double Vault	
Gathering Area	Large, flat rocks/Benches	
Decommission FSR 4606	Yes – obliteration and restoration	
Estimated Costs		\$332,217 (chip seal over asphalt)
<i>Does not include FSR 4604</i>	\$312,619	\$222,576 (gravel)
FSR 4604 Reconstruction	Reconstruct 0.5 miles to 22 feet width, with v-ditch; \$245,278	

Figure 5: Phil's Trailhead – Alternative 3 and Alternative 4 Conceptual Design

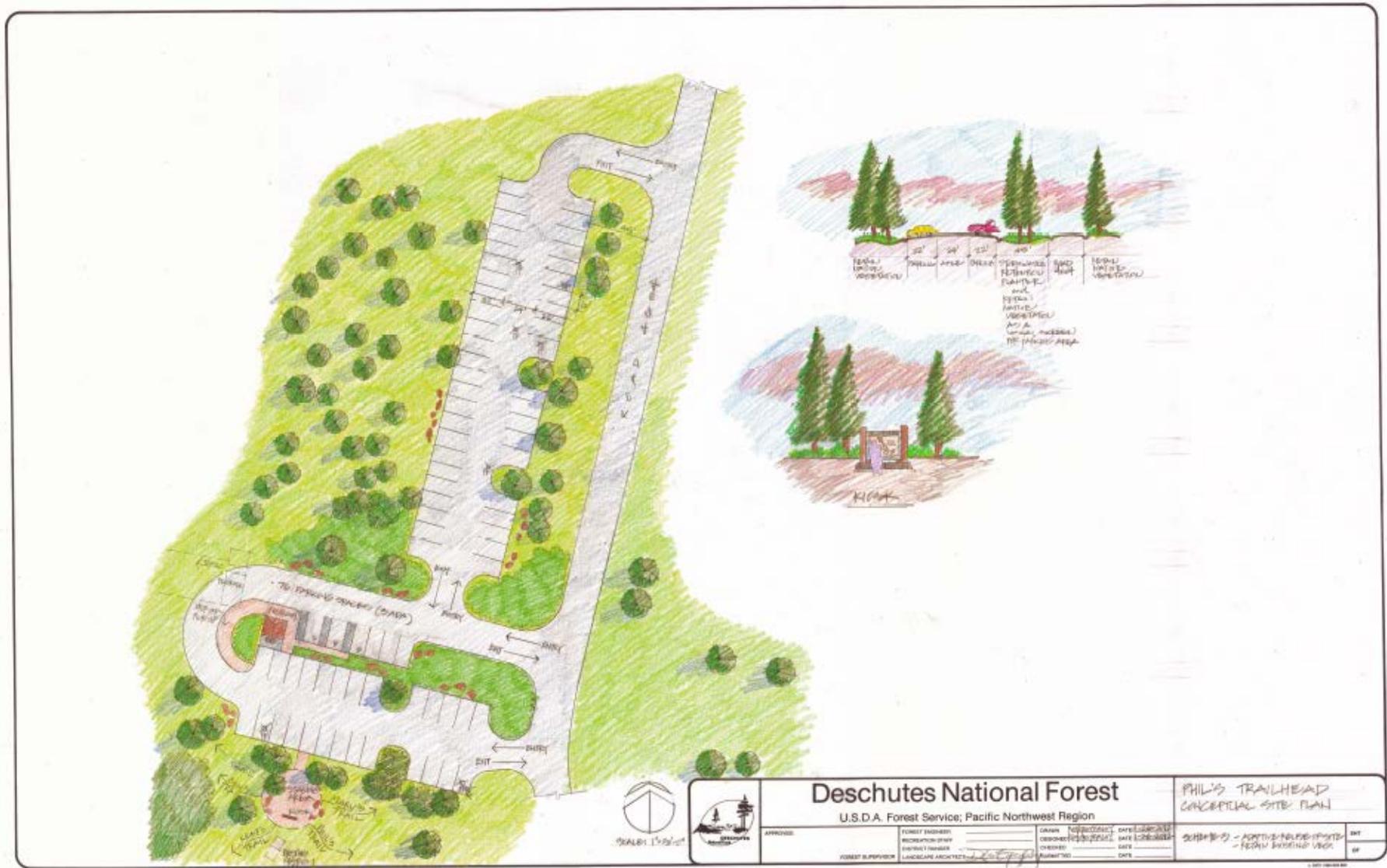


Figure 6: Visual Display of Alternatives 3 and 4 Proposed Project Location Overlay
Alternative 3 and Alternative 4



1 inch = 125 feet
2011 Aerial Imagery

ACTIVITIES COMMON TO ALTERNATIVES 2, 3 AND 4

ROAD RECONSTRUCTION

Approximately 0.5 miles of FSR 4604 would be reconstructed. Road reconstruction activities would include either new asphalt or removing, grinding and reapplying an asphalt surface. FSR 4604 is approximately four feet wider than standard. It will be reconstructed to the standard 22' width, where parking will be discouraged by the design of the road prism. Improvements of drainage features will be included. Federal and State of Oregon safety regulations require that danger trees along project area travel routes be felled prior to activities taking place. Any felled trees would then be removed.

SUBSOILING AND REVEGETATION

Subsoiling and revegetation could occur under all alternatives in areas that have compacted and denuded of vegetation. Under Alternative 2 this would also include the most southern portion of the existing parking area. Revegetation in any area of subsoiling would be through the use of native plants.

RESOURCE PROTECTION MEASURES COMMON TO ACTION ALTERNATIVES

Table 3: Resource Protection Measures

Measure Number	Protection Measure
Public Safety	
1.	Sign the area well ahead of the project implementation. Warning signs and public notices will be posted during project activities.
2.	Install cautionary signs and advisory speed limit signs on FSR 4604.
Recreation Resource	
1.	If possible, avoid Memorial Day weekend to maintain full access during peak use period.
2.	Design FSR 4604 re-construction activities to favor open road with traffic control signage.
3.	Ensure proper trailhead directional and approach signage are incorporated at Skyliner Road.
4.	Incorporate adequate safety and site identification signage at Phil's and along FSR 4604.
5.	Ensure an Outdoor Recreation Access Route is built into design of toilet, kiosk, transit drop-off and select gathering area design.
6.	Buffer between pump track and motorized travel where a trail from the kiosk links to the track. Include a gathering area in the buffer to increase user comfort for spectators of the pump track and serve as additional barrier to motorized intrusion.
7.	Align trail from town (Marvin's Garden) to cross FSR 4604 at the safest point south of all ingress/egress to Phil's Trailhead and tie into kiosk area hub.
Soil Resource	
<i>Minimize the extent of new soil disturbance from mechanical treatments</i>	
1.	Minimize the extent of new soil disturbance from equipment by implementing appropriate design elements for avoiding or reducing the disturbance footprint to only that which is needed.
2.	Prepare an erosion control plan prior to construction. Apply appropriate erosion control measures to all ground disturbing activities associated with the construction and development of new facilities.
3.	Refrain from construction operations when soils are wet or during periods of high runoff or snow melt.

Measure Number	Protection Measure
4.	Provide road and parking drainage so that runoff is dissipated on site and infiltrated into the soil. Road design should minimize interception and prevent the concentration of runoff.
5.	Utilize swales and vegetated filtering structures placed at key drainage pathways to dissipate runoff.
6.	Maintain road and parking surfaces and drainage structures so that they remain functional at dispersing runoff adequately.
7.	For non-paved road and parking areas, treat surfaces to minimize the generation of dust, particularly during the dry season.
8.	Limit or avoid snow removal to prevent damage to road and parking surfaces.
9.	Re-establish native vegetation on bare soil surfaces immediately after construction.
10.	Utilize mulch, top soil or another type of top cover that will help retain soil moisture and support the re-establishment of vegetation.

Wildlife Resource

1. Landbird focal bird species
April 15 – July 15: To avoid potential nest abandonment, nest destruction, and loss of broods for landbird focal bird species, within or immediately adjacent to the project area do not conduct tree felling and brush removal.
Late July through early April: Implementation of activities. If the specified restriction period must be compromised, project activity within the first month or within the last month should be considered.
2. Phil’s Trailhead would include interpretive information on maintaining deer winter habitat security, use of migration corridors, and mitigation of negative effects from recreational use (i.e., keeping dogs on leash, staying on trails, observing area closures) and what the impacts of recreational use has on mule deer and other wildlife that utilize the area.

Scenic Resource

1. Minimize tree removal and incorporate large vegetation into the final site design to the extent possible. Where stumps must remain, flush cut to remove from view and eliminate tripping or peddle hazards.
2. Treat slash generated from construction activities as soon as possible given chosen method (chip, burn or removal) or safe burning conditions.

Botany Resource

Weeds

1. The existing spotted knapweed site will be hand pulled the growing season immediately prior to project implementation. This will not prevent existing seed in the seedbank from being transported around the work site, but will at least eliminate further seed deposits during the season of implementation.
2. Clean all equipment before entering National Forest System lands. Remove mud, dirt, and plant parts from project equipment before operating it in the project area.
3. To prevent the introduction of invasive plants via fill material, including mulch or topsoil used in revegetation efforts, the district botanist or her designee will inspect the material for weeds; it will not be allowed for use if it is deemed to likely be a carrier of weed seed or other weed propagules.
4. To promote the ethic of good land use and stewardship, as well as raise awareness of the invasive plant issue, invasive plant educational literature will be posted at the parking lot kiosk.

Cultural Resource

1. In the event that previously unknown sites or artifacts are found during project implementation, operations in the area will cease and the site flagged and avoided until an archaeologist is consulted.

COMPARISON OF THE ALTERNATIVES ANALYZED IN DETAIL

Table 4: Phil's Trailhead Project Activity Comparison

Comparison of Alternatives for Design Features					
Project Feature	Description of Proposed Activity	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3 (Preferred Alternative)	Alternative 4
Footprint <i>Estimated</i>	Trailhead Area in Square Feet (excluding FSR 4604)	42,335 ft ² 1.0 acre	135,000 ft ² 3.1 acres	62,400 ft ² 1.4 acres	
Parking*	Basis Single ADA Accessible Single Vehicle Single Overflow Oversize <i>Total Spaces</i>	Existing 0 72 52 + Not Defined 124+	Peak 4 74 14 4 96	Core* 3 73 0 0 76	
Bike and Visitor Drop Off Area	Dedicated space for public transportation drop off	Not Defined	Yes	Yes	
Parking Surface	Definition at parking area	Gravel mix with native surface	Asphalt 78,500 ft ² 1.8 acres	Asphalt 49,000 ft ² 1.1 acres	1) Earth tone chip seal 2) or Aggregate 49,000 ft ² 1.1 acres
Wheel Stops or Parking definition	Defining parking spaces through either installation of wheel stops with or without space striping	None	Striping	<i>Primary:</i> Edge pf asphalt surface. <i>As needed:</i> Rock, natural barriers, split rail fence	Wheel stops, rock, natural barriers, or split rail fence
Kiosk	In Gathering Area	Single panel	3-panel triangle	2- panel – ADA access compliant	
Gathering Areas	Installation of Picnic Tables, Benches, or Large Rocks	A few large rocks	Picnic Tables	Rock and/or Benches	
Trees*** <i>Estimated</i>	Removal for Trailhead Development	No	55-65	20-30	
Restroom Facility	Installation of ADA** Accessible Restroom and access path	Existing – Not ADA compliant	New CTX Double Vault – ADA access compliant		
Signing	Install appropriate signing	None	None	Safety and Site Identification	
FSR 4606	Decommission and revegetation of overflow area	No	No	Yes	
Costs <i>Estimated</i>	Total costs of project activities	0	\$450,810	\$312,619	\$332,217 (Earth tone chip seal) \$222,576 (Aggregate)
Access Road FSR 4604****	Re-surface, reduce width, v-ditch (0.5 mile)	No	Yes – 22' wide \$245,278	Yes – 22' wide – \$245,278	

* 'Core' is high 25 vehicle count average (43) + peak (110) divided by 2.

** ADA = Americans with Disabilities Act

*** 'Trees' constitutes pine species with dbh of approximately 8" or greater.

**** Does not include v-ditch in width

Alternatives 3 and 4 eliminate overflow parking where it has traditionally occurred. Where the overflow has been on the FSR 4606 toward private land, this would be blocked, obliterated and revegetated.

SUMMARY OF ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action expressed concerns they had with the proposed action and in some cases provided suggestions for a different course of action. Some of these alternatives may have duplicated the alternatives considered in detail or were determined to be unable to meet the project's Purpose and Need.

Other alternatives were considered by the Forest Service, suggested either by the agency or public. Alternatives that were considered but dismissed from detailed consideration are summarized below.

1. An alternative was considered that would have located the parking area at the junction of FS Roads 4601 (Skyliner Road) and 4604. Even though this alternative would make the parking area easily accessible, the visual and resource impacts to the area would increase. The present location, utilizing the existing parking area, would present the fewest impacts.
2. An alternative was considered that would have placed the parking area to the immediate south of the present trailhead parking. This area is located in a portion of an old pumice mining area. It was felt that this location, even though close and presenting few resource impacts, would be a considerably less desirable location for a parking area; dust, lack of shade, location from actual trailhead.
3. An alternative was considered that would have reconstructed FSR 4604, leaving it with an aggregate (rock) surface. The dust that would be created from an aggregate surface would reduce the air quality for visitors and adjacent private land. Road maintenance would likely need to occur at a minimum of three to four times per season to provide a quality surface. The Forest Service would not be able to meet the maintenance needs to keep the road to standard.
4. An alternative was considered that would have provided a four layer red chip seal for the parking areas. This consideration was eliminated due to the short life span of this type of material. This type of surface generally needs to have a new chip seal surface approximately every seven years, adding costs that may not be available over time.
5. An alternative was considered that would have provided designated parking in other areas away from Phil's TH, such as along Skyliner Road. At this time, costs with designating other areas for parking would increase the costs of the project and future maintenance. This would also appear to potentially encourage various recreation use within the Deer Habitat Management Area that provides critical winter range for mule deer, particularly from December 1 through March 31 each year. For these reasons, this alternative was eliminated from further consideration for this project.
6. Alternatives 3 and 4 considered oversized vehicle parking. Adding parking for oversized vehicles would have increased the size of the impacted parking surface area and substantially added to the overall project costs.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

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). Cumulative effects are discussed where there is an effect to the environment which results from the incremental effect of the action when added to other past, present, or reasonably foreseeable future actions (40 CFR 1508.7).

Measures to mitigate or reduce adverse effects caused by the implementation of any of the actions proposed are addressed in Chapter 2, Resource Protection Measures. Effective mitigation avoids, minimizes, rectifies, reduces, or compensates for potential effects of actions. After mitigation is applied, any unavoidable adverse effect to each resource area is addressed in the section titled “Other disclosures” in this chapter of the EA. 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 Phil’s Trailhead project area boundary is the focus of this EA, but adjacent lands are considered in portions of this analysis process.

BASIS FOR EFFECTS ANALYSIS

SPECIALIST REPORTS

The interdisciplinary team (IDT) includes Forest specialists for each discipline (see Chapter 4, section 4.3 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 Phil’s Trailhead project. All reports are maintained in the project file, located at the Bend/Ft. 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 are 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).

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 IDT specialists. Conclusions 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 in the Literature Cited portion of this EA, page 71. Referenced material is a consideration of the best available science.

CUMULATIVE EFFECTS

The Environmental Consequences disclosures in this EA include discussion of cumulative effects. Where there is an overlapping zone of influence, or an additive effect, 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. This is because existing conditions reflect the aggregate impact of all prior human actions and

natural events that have affected the environment and might contribute to cumulative effects. Many of the known actions and natural events are displayed in Table 5 and 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. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, the focus on the impacts of past human actions risks 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 are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. 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 will add to, modify, or mitigate those effects. The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonable foreseeable future actions) on the affected environment. With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations, however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision making. (40 CFR 1508.7)

The following table lists the groups of actions that have contributed to the existing conditions within the project area. The effects analysis throughout this Chapter considers these past actions as contributing to the current condition.

PAST PRESENT & REASONABLY FORESEEABLE FUTURE PROJECTS

Table 5: Past Actions and Events that have Contributed to the Existing Condition

Activity	Timing	Description	Residual Effects
Vegetation Management / Fuels Reduction Projects			
Past Thinning and Other Harvest	1970-1990s	Commercial Thinning	Contributed to the current vegetative structure in the area
East Tumbull	2006	Shrub mowing	Mosaic mowing of bitterbrush to

Activity	Timing	Description	Residual Effects
			reduce fuels risk WUI
Road Closure	Late 1980s	Closed FSR 4606	Provided area for Phil's Trailhead

ONGOING AND REASONABLY-FORESEEABLE FUTURE ACTIONS

Table 6: Ongoing or Reasonably Foreseeable Future Actions that may contribute to Cumulative Effects

Project Name / Activity	Status/Timing	General Description of Activities
Miscellaneous / Special Uses		
Recreation		
Cross-Country trails and Use	Ongoing in winter	Within and around the project area.
Mountain Biking Trails and Use	Ongoing	Within and around the project area.
Cascade Lakes Welcome Station and parking lot	Implementation 2015	Construction of Cascadian style Welcome Station and associated paved parking lot along Highway 46.
Roads		
Skyliner Road reconstruction / realignment	Planning	FS Roads 4600 and 4604 - north and east sides of project area.
Vegetation Management		
West Bend	Planning	Phil's Trailhead is located within planning area along east boundary. Treatments include mowing and prescribed burning adjacent to trailhead and parking. Other treatments not immediately adjacent include commercial harvest and pile burning of harvest residues.

RECREATION

INTRODUCTION

This report specifically addresses the effects of the proposed Phil’s Trailhead (PTH) Project on the activities, setting, and experience which collectively comprise the recreation opportunities of the analysis area.

This analysis does not extend to the dispersed recreation opportunities provided by the adjacent Tumalo Trail System and is focused on the existing and proposed parking areas as well as the primary access Forest Service Road (FSR) 4604. Although scientifically gathered baseline and trend trail system use data is not available, it has been witnessed and is understood that visitors accessing the Tumalo Trail System do so by a combination of parking on-site at PTH, along other nearby forest roads and by non-motorized travel (typically by mountain bike) from areas outside of this analysis area. Peak use counts have reached 110 vehicles at one time and physical evidence suggests that approximately 124+ single vehicles could park in the PTH area one time. This project does not intend to accommodate this level of use by design. Considering this understanding and the desired condition of this project, (to provide a standard trailhead facility more in alignment with existing higher than average use), the district does not expect nor intend to increase recreational use of the Tumalo Trail System with this project.

The public uses PTH primarily for trailhead parking to access approximately 63 miles of the Tumalo Trail System. Tumalo Trail System can be defined as the network of designated non-motorized trails largely contained within the Tumalo Watershed. PTH parking areas and some adjacent trails were incrementally defined by users. The project area was modestly improved with the installation of a toilet and kiosk and designated as a trailhead by the Forest Service in approximately 1998. The open FSR 4604 and the remnant road segments (former FSR 4606) used for parallel parking (Figure 7) at PTH historically served as logging haul routes.

Figure 7: Parallel Parking along Remnant Road



Figure 8: Head-in Parking in Small Clusters



REGULATORY FRAMEWORK

The PTH project area is within the Deschutes National Forest Land and Resources Management Plan (LRMP): Management Area-7 Deer Habitat.

M7-1: The area will provide various dispersed recreation opportunities primarily for the activities of viewing wildlife, hunting, gathering of forest products, and roaded camping....Closures and restrictions can be imposed on OHV activity where it threatens or damages other resource values, such as plantations, wildlife use, and soils. Rustic facilities constructed of native materials may be provided for the convenience of the user as well as for safety and resource protection.

M7-2: Providing the recreation setting activity, and experience opportunities for the Recreation Opportunity Spectrum (ROS) category of Roded Natural will be an objective in Recreation Management.

Roded Natural refers to a setting in an area that is within 1/2 mile of a better than primitive road. Access is primarily via conventional motorized use on roads. Contact frequency with other users may be low to moderate on trails and moderate to high on roads. Environment is natural appearing as viewed from visually sensitive roads and trails.

Facilities constructed on federal lands are subject 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 (FSORAG) outlined in Appendix A-5, page 90.

Supporting Policy and Guidelines

FSORAG, in part, requires site designs to incorporate Outdoor Recreation Access Routes (ORAR) to constructed facilities when the development scale (Appendix A-4, page 89) is 3 or higher.

The ROS categories (Appendix A-1, page 73 and A-3, page 80) for the management area within which a site specific project is located, should provide overall guidance to manage the site compatible with the kinds of recreation opportunities being provided by the larger area of which the site is a part.

Management area landscape setting where PTH is located: The Roded Natural class “setting is characterized by predominantly natural appearing environments with moderate evidences of sites and sounds of man”. Such evidences usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users present.”

Applicable On-Site Development Guidance corresponding to the Roded Natural classification (Appendix A-3, page 80):

Fully Compatible: “Rustic and rudimentary facilities primarily for site protection. Use undimensioned native (found naturally in nature) materials. Avoid use of synthetic materials. Little or no site modifications for facilities. Limited and subtle site modification.

Normal: “Rustic facilities providing some comfort for the user as well as site protection. Contemporary rustic design usually based on use of native materials.. Synthetic materials should not be evident. Moderate site modification”

Inconsistent: Some facilities designed primarily for user comfort and convenience. Some synthetic but harmonious materials may be incorporated. Design may be more complex and refined. Moderate to heavy site modifications for facilities.

Unacceptable: Facilities mostly designed for user comfort and convenience. Synthetic materials are commonly used. Facility desing may be highly complex and refined but in harmony or complementary to site. Heavy site modifications for facilities.

Built Environment Image Guide (BEIG) outlines (Appendix A-6, page 90) how the built environment should reflect the context of its surroundings, including its physical setting, social context, and long-term economic effects. BEIG tiers to the use of the ROS to select the location, type, and scale of facilities and building materials.

Forest Service Manual (FSM) 2333.03 (Appendix A-2, page 77) establishes priorities for the development and management of recreation sites in the following order: 1) Ensure public health and safety; 2) Protect the natural environment of the site; 3) Manage and maintain sites and facilities to enhance users’ interaction with the natural resource; 4) Provide new developments that conform to the National Forest recreation role. FSM also defers to ROS for standards, describes site plan content

requirements and directs managers to carefully consider future operation and maintenance costs when designing new facilities.

EXISTING CONDITION

Activities

Phil's Trailhead is open and enjoyed by visitors on a year-round basis. Snow levels determine parking use and access during winter months, with generally low volume use. Consistent moderate to high use occurs during periods where the trail system is largely snowless from the months of April thru November.

This is a very popular area for mountain biking. One designated trail (Marvin's Garden) travels across FSR 4604 and thru PTH parking to connect to the remainder of the trail. A feature park/pump track was constructed over former FSR 4606 and extends immediately adjacent from motorized traffic flow between the head-in parking and parallel parking on former FSR 4606. Small children (Figure 17, page 29) are increasingly present on the pump track and are exposed to passing vehicles as there is not a safe separation or transition between motorized and non-motorized use in this area (Figure 13, page 29).

Other uses passing thru and accessed by PTH include hiking, trail running, dog walking, cross country skiing and snowshoeing.

Annual observations by the trails organization Central Oregon Trail Alliance (COTA) suggest that the mountain biking visitor use pattern tends to favor locals during spring and fall, and visitors to Central Oregon during the summer. Furthermore they believe that the numbers probably remain somewhat consistent over the course of all three seasons.

There is no formal decision or policy prohibiting permitted special use events out of PTH. However, with the development of Wanoga Sno Park as an event complex along with the popularity and high use of the Tumalo Trail System, the District has generally dissuaded new large events starting from Phil's or utilizing the most popular trails on weekends or holidays.

Parking is the primary and intended use of the area. Unless otherwise stated, context of the term 'use' of PTH means 'number of vehicles parked' at PTH. Parking at PTH is comprised primarily by passenger vehicles often equipped with a roof, rear or front bike rack. There is also limited use by visitors pulling trailers and in recreational vehicles.

Existing use was opportunistically tracked over a four month period in 2011 by the Bend-Fort Rock Ranger District recreation staff and Central Oregon Trail Alliance (COTA) volunteers between May 5 and August 28, 2011. Memorial Day weekend, 2010 and 2011, vehicle parking counts represent the peak use at one time for this analysis, where sampling showed 110 vehicles at one time for both years.

Table 7: Phil's Trailhead - Use Tracking Summary for 2011

2011 Phil's Trailhead Use Tracking Summary	
Number of days sampled (75%) out of 116 days (<i>some days include multiple samples</i>)	87
Number of core period* samples	92
Peak number of vehicles	110
Core period* range (<i>excluding the peak day of 110</i>)	6 to 62
High 25 average	43
Core period* average	26
Average RV's/vehicles w/trailers parked on the 26 days (22%) with 1 or more present	1.3
Average vehicles from 52 non-core period* samples taken from 5:30 a.m. to 8:00 a.m.	2
Average vehicles per day for 11 days traveling FSR 4604 from 6/1 thru 6/11 (Table 8)	247
Average vehicles per hour during core periods* during same time span 6/1 thru 6/11 (Table 8)	29

* **Core period** for the purposes of this analysis is a description of a period of time between the hours of 8:30 a.m. to 7:00 p.m.

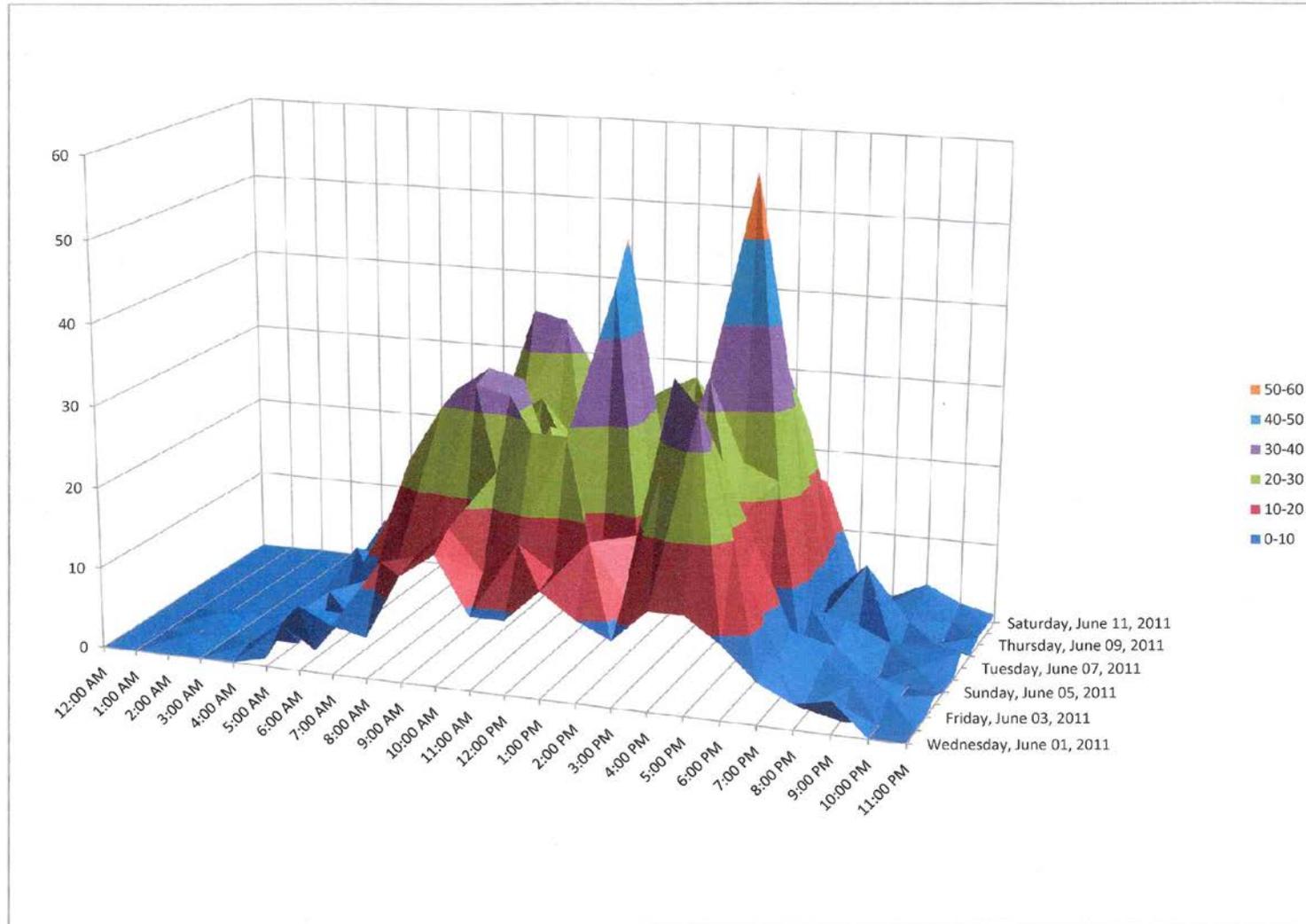
Deschutes County also provided limited road use counts in 2011 (Table 8) to provide a sample of use of FSR 4604 off of Skyliner Road. The 2011 data is represented in Table 7 as average number of vehicles per day (247) and detailed below. It's understood that the County road use counts portray all use of the FSR 4604 and that some of the vehicles counted may not have parked at PTH. It does help describe use of the area and provides a snapshot of total vehicle volume.

Table 8: June 1 – June 11, 2011 Road Use Data for Forest Service Road 4604

Phils TH Traffic Count

	<i>Wednesday, June 01, 2011</i>	<i>Thursday, June 02, 2011</i>	<i>Friday, June 03, 2011</i>	<i>Saturday, June 04, 2011</i>	<i>Sunday, June 05, 2011</i>	<i>Monday, June 06, 2011</i>	<i>Tuesday, June 07, 2011</i>	<i>Wednesday, June 08, 2011</i>	<i>Thursday, June 09, 2011</i>	<i>Friday, June 10, 2011</i>	<i>Saturday, June 11, 2011</i>	Average Use
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	1	0	1	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	1	0	0	0	0	0	0	0	0	1	0
5:00 AM	1	4	0	1	1	0	7	2	8	5	3	3
6:00 AM	8	1	7	5	3	4	3	4	6	5	5	5
7:00 AM	6	6	5	8	15	6	9	8	7	11	10	8
8:00 AM	5	13	11	23	20	10	12	14	11	5	22	13
9:00 AM	13	14	13	30	31	7	24	11	21	23	35	20
10:00 AM	16	18	14	33	34	11	19	12	26	17	34	21
11:00 AM	9	13	24	32	33	11	25	22	21	15	27	21
12:00 PM	9	17	29	20	21	11	19	22	10	7	23	17
1:00 PM	13	14	29	22	29	11	22	4	14	18	26	18
2:00 PM	10	18	12	46	51	7	13	16	19	14	28	21
3:00 PM	8	12	18	23	18	18	20	16	25	21	22	18
4:00 PM	12	27	37	27	12	34	34	22	30	17	15	24
5:00 PM	12	35	31	8	18	24	58	34	36	19	16	26
6:00 PM	9	20	14	17	5	22	33	21	25	13	16	18
7:00 PM	5	7	5	7	3	7	4	6	2	2	4	5
8:00 PM	3	1	3	4	4	6	0	10	1	2	2	3
9:00 PM	4	0	3	3	0	0	2	0	2	2	4	2
10:00 PM	0	0	2	0	0	1	2	1	0	1	2	1
11:00 PM	0	0	0	1	0	0	2	0	1	1	1	1
Total	143	222	257	311	298	190	308	225	265	198	296	247

Figure 9: June 1 – June 11, 2011 Road Use Data for Forest Service Road 4604



Setting and Experience

Existing FS Recreation Site Development Scale could be categorized as a level 3 (Appendix A-4, page 89). The existing parking surface is native material comprised primarily of compacted pumice mixed with gravel. Dusty conditions exist whenever a vehicle travels the area when rains have not abated the dust.

Amenities present on site are limited and include a toilet, trail signage and a single panel information board (Figure 11, page 28). The toilet (Figure 10, page 28) is a wood single-vault toilet (Figure 10) that does not meet FSORAG. Imported aggregate materials comprise the perimeter of the toilet. There is also a single-panel wood information board (Figure 11) primarily maintained by COTA. Along with ground litter pick-up, the toilet is serviced by the Bend-Fort Rock Ranger District. In 2011, DogPac installed and maintains a dog waste facility near the existing restroom.

Figure 10: Single Vault Toilet



Figure 11: Single Panel Information Board



The approximate overall size of the existing PTH parking is 1.5 acres and includes parallel parking along former FSR 4606. The existing primary parking areas (outside of the parking occurring along FSR 4604) accommodates approximately 72 vehicles and is further described by the following breakdown: Head-in area parking (Figure 8) accommodates approximately 21 single vehicles. Parallel parking on former FSR 4606 (Figure 14, page 29) east of FSR 4604 accommodates approximately 28, where similar parking west of FSR 4604 (Figure 8, page 23) accommodates approximately 18 single vehicles. Both sides of FSR 4604 typically serve as overflow parking, in some cases primary parking gravitating to shade, with parallel parking evidence appearing to accommodate approximately 52 single vehicles.

FSR 4604 was surfaced with asphalt to accommodate the pumice hauling traffic and is over four feet wider than standard for the road class. The asphalt is fractured and deteriorated. Given that the existing parking methods include parallel parking along both expanded sides of FSR 4604 (Figure 12, page 29), there is potential that hundreds of vehicles could park at one time at and approaching PTH. Data in Table 7 suggest existing use to be much less than the potential offered by the existing expanded road width. Parallel parking along the east abandoned road segment (Figure 14, page 29) requires that visitors cross FSR 4604 by their preferred mode of travel to access the trails and trailhead facilities. There is no signage warning thru traffic of pedestrian cross-travel. This exposes the biker or pedestrian to FSR 4604 traffic.

Additional visitor safety concern regarding parking along FSR 4604 is compounded by a curve near the gate at PTH that somewhat decreases visibility of a biker or pedestrian from approaching traffic. Lack of site identification and 'watch out' signage in the area contribute to mixed-use safety issues.

Figure 12: Forest Service Road 4604 at Phil's Trailhead



Figure 13: Mixed Use Interface and Safety Concern



Unwanted conditions from reported or undesirable actions in the area include debris dump sites, after-hours party spot litter (Figure 16), potential mixed user conflicts from reported drag racing on FSR 4604, and an expanding footprint (Figure 12) where parking occurs along both sides of FSR 4604.

Figure 14: Expanding Footprint – Forest Service Road 4606



Figure 15: Expanding Footprint – Forest Service Road 4604



Figure 16: Dumping and Campfire Scars



Figure 17: Child Navigating Vehicles in Parking Area



Figure 18: Wood Wheel Stops



Figure 19: Red Surfaced Chip Seal



ENVIRONMENTAL CONSEQUENCES

Table 9: Summary of Recreation Effects – Comparison of Alternatives

Comparison of Alternatives for Recreation Effects				
Concern	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3 (Reduced Development)	Alternative 4 (Reduced with no or earthtone asphalt)
Activities				
Access	FSR 4604 continues to provide parallel parking by maintaining existing width and conditions. Undefined parking patterns remain, including overflow along former FSR 4606.	FSR 4604 narrowed to discourage parking. Overflow on former FSR 4606 defined. Parking is developed and defined for higher than average volume. Peak use is not provided for. Transit drop-off accommodated.	FSR 4604 narrowed to discourage parking. No overflow parking. Parking is developed and defined for higher than average volume. Peak use is not provided for. Transit drop-off accommodated.	FSR 4604 narrowed to discourage parking. No overflow parking. Parking is developed and defined for higher than average volume. Peak use is not provided for. Transit drop-off accommodated.
Setting				
Naturalness	Existing rustic, dusty character would continue. Large vegetation remains. Developments are limited.	Organized, developed setting with large paved area broken by strips of vegetation. Trees removed for parking area.	Organized setting with less amenities and size than the proposed action. Re-vegetation of former FSR 4606 offsets tree removal for parking area development.	Organized setting with less amenities and size than the proposed action. Aggregate and earthtone emulsion surface serve to provide range of durable surface with rustic appeal. Re-vegetation of former FSR 4606 offsets tree removal for parking area development.
Visitor Impacts <i>Air quality/dust; defined hardened parking to re-direct expanding parking footprints</i>	Natural barriers would continue to serve as a parking boundary. Footprint may grow. Dust not mitigated.	Expanding footprints would be contained where natural and/or constructed features would direct motorized use onto designated surfaces. Dust from motorized travel eliminated.	Expanding footprints would be contained where natural and/or constructed features would direct motorized use onto designated surfaces. Former FSR 4606 overflow is closed, obliterated and re-vegetated. Dust from motorized travel eliminated.	Expanding footprints would be contained where natural and/or constructed features would direct motorized use onto designated surfaces. Former FSR 4606 overflow is closed, obliterated and re-vegetated. Dust from motorized travel eliminated for asphalt option. Dust reduced for

Comparison of Alternatives for Recreation Effects				
Concern	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3 (Reduced Development)	Alternative 4 (Reduced with no or earthtone asphalt)
				aggregate option.
Visitor Management <i>Traffic control, directional signage, information/interpretati on kiosk</i>	Management limited to kiosk and trail signs. No site ID signs.	Management includes 3 panel kiosk, trail signs, traffic control, site ID signage.	Management includes single 2-panel kiosk, trail signs, traffic control, site ID signage.	Management includes single, 2- panel kiosk, trail signs, traffic control, site ID signage.
Facilities and Accessibility <i>parking surface, restroom, kiosk, gathering amenities (picnic / bench / boulders)</i>	Native surface, non-accessible restroom, no gathering areas and no accessible facilities.	Black asphalt is considered synthetic material. Double-vault accessible restroom. Access routes to large, accessible kiosk and select gathering area(s). Picnic table gathering areas. Accessible, oversized vehicle and drop-off parking.	Black asphalt is considered synthetic material. Double-vault accessible restroom. Access routes to large, accessible kiosk and select gathering area(s). Rock or bench gathering areas. Accessible, and drop-off parking.	Earthtone surfaced asphalt and aggregate can be considered rustic, native material. Double-vault accessible restroom. Access routes to small, accessible kiosk and select gathering area(s). Rock or bench gathering areas. Accessible and drop-off parking.
Experience				
Social Encounters <i>FSR 4604 and at Phil's Trailhead</i>	No change expected. Continued mixed use encounters.	No change expected during average use day. Peak day encounters reduced Encounters with picnic gathering introduced.	No change expected during average use day. Peak day encounters reduced Encounters with visitors using gathering areas possible.	No change expected during average use day. Peak day encounters reduced Encounters with visitors using gathering areas possible.
Public Health and Safety <i>Trailhead area mixed cross traffic, speeds on FSR 4604</i>	Visitors would continue to be subject to the effects of unmanaged parking. Vehicle – pedestrian / biker conflict potential remains at FSR 4604 and pump track.	Users would continue to be exposed to FSR 4604 thru traffic. Bikers entering or exiting the pump track would have separation from motorized use. Speeds on FSR 4604 may increase without traffic control measures.	Users would no longer be exposed to FSR 4604 thru traffic. Bikers entering or exiting the pump track would have separation from motorized use. Speeds on FSR 4604 may increase without traffic control measures.	Users would no longer be exposed to FSR 4604 thru traffic. Bikers entering or exiting the pump track would have separation from motorized use. Speeds on FSR 4604 may increase without traffic control measures.
Investments and Management Consideration				
Initial Project Cost	Nominal due to costs of standard 'Congestion' signing along FSR 4604.	Highest due to size, tree removal.	Medium due to paving, but without earthtone emulsion surface costs.	Higher than black if earthtone surfacing. Lowest if aggregate.
Long Term Maintenance Investments	Continued maintenance of existing grounds, restroom and kiosk. No tables to maintain or replace. <u>Surface maintenance</u> Native gravel – higher frequency, lowest cost	Maintenance of durable restroom, kiosk and grounds. <u>Surface maintenance</u> Asphalt – low frequency, highest cost due to larger area.	Maintenance of durable restroom, kiosk and grounds. No tables to maintain or replace. <u>Surface maintenance</u> Asphalt – low frequency, higher cost	Maintenance of durable restroom, kiosk and grounds. No tables to maintain or replace. <u>Surface maintenance</u> Aggregate- high frequency, low cost. Earthtone asphalt – low frequency at higher cost
Development Scale (see Appendix C)	3 Moderately Modified <i>Medium, native, rock seats</i>	4 Heavily Modified <i>Large, paved, tables</i>	3 Moderately Modified <i>Medium, paved, rock seats/benches</i>	3 Moderately Modified <i>Medium, earthtone or aggregate, rock seats/benches</i>

Comparison of Alternatives for Recreation Effects				
Concern	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3 (Reduced Development)	Alternative 4 (Reduced with no or earthtone asphalt)
<u>ROS (See Appendix B)</u>				
Naturalness	Norm	Inconsistent	Norm	Norm
Visitor Management	Compatible	Norm	Norm	Norm
Access	Norm	Norm	Norm	Norm
Visitor Impacts	Compatible	Inconsistent	Norm	Compatible or Norm
Social Encounters	Norm	Norm	Norm	Norm
Facilities	Norm	Inconsistent	Inconsistent	Norm

Alternative 1 (No Action)

Direct and Indirect Effects

- **Activities**

Access and Parking: Unmanaged parking would continue where natural barriers are not present (Figure 15 and Figure 16). Parking scenarios would continue with FSR 4604 providing a less safe parking option immediately adjacent to and stemming from PTH. Overflow parking would be maintained on east end of former FSR 4606.

- **Setting**

Naturalness: The existing rustic, dusty character would remain. No trees would be removed and no re-vegetation would take place.

Visitor Impacts: Expanding footprints may continue along FSR 4604 and former FSR 4606.

Visitor Management: Large vegetation and natural barriers would continue to serve as a site boundary. Signage would be limited to the existing wooden single panel kiosk and trail signs. Safety signs would be installed on FSR 4604.

Facilities (Accessibility): Outdated toilet facilities would continue to limit entry to those requiring universal design. Universal design refers to broad-spectrum ideas meant to produce buildings, products and environments that are inherently accessible to both people without disabilities and people with disabilities.

- **Experience**

Social Encounters: Trailhead encounters would not be expected to change. PTH pedestrians and bikers would be mixed with FSR 4604 cross traffic and unmanaged motorized parking traffic.

Public Health and Safety: Some PTH users would continue to be exposed to FSR 4604 thru traffic. Bikers entering or exiting the pump track would continue to be subject to motorized travelers.

Alternative 2 (Proposed Action) – Peak Use Development

Direct and Indirect Effects

- **Activities**

Access and Parking: Parking would remain the primary activity. Combined with FSR 4604 road reconstruction, the project area parking capacity would shift from open-ended to defined by design. As this design accommodates and is designed around peak use, most of the year parking spaces would be largely under-utilized based on the use patterns today. Peak use and high volume parking would be accommodated within a designated parking facility. Although surfacing FSR 4604 would repair and improve the access, it may contribute to an increase in traffic speeds unless traffic control measures are incorporated. Incorporating a transit drop-off area provides trail access to those who would not wish to drive or bike to PTH to access the Tumalo Trail System.

- **Setting**

Naturalness: Development of PTH to a development scale 4 (Appendix A-4, page 89) as shown on the Proposed Action could attract visitors who seek a safer, organized, dust-free setting with increased amenities. It is also possible that existing users appreciative of the existing condition would be left dissatisfied with this extent of development and some may chose to utilize other locations to access the Tumalo Trail System. More large trees would be removed than other alternatives which would contribute to a change of character when coupled with installation of a large black asphalt parking lot.

Visitor Impacts: Expanding footprints would be contained along FSR 4604 by re-constructing the road prism and discouraging parking. Natural and/or constructed features would direct motorized use onto designated surfaces.

Visitor Management: Education and information would be improved with the installation of a 3 panel kiosk. Much of the existing impacted areas where parking occurs would need to undergo restoration and re-vegetation.

- **Facilities and Accessibility:** Universal accessibility would be provided for in restroom location and design. Access routes would be incorporated into the approach to the restroom, from public transit parking, to the information kiosk and select gathering area(s). While increasing site durability and user comfort (reducing dust, defining safe parking), exposure to black asphalt on hot summer days may decrease comfort for some users. Black asphalt surfacing is considered use of synthetic material.

- **Experience**

Social Encounters: The number of trailhead encounters would not be expected to change. PTH bikers and pedestrians using the overflow area would continue to be mixed with FSR 4604 cross traffic. Organized arrangement of parking coupled with anticipated use of feeder trails from parking would contribute to early separation of motorized and non-motorized traffic encounters. Additional trailhead encounters may occur when visitors choose to extend their stay by utilizing picnic facilities. Concerns raised regarding attracting another user group by installing picnic tables seems unlikely given the density of picnic sites already available on the forest which are located at unique landscapes and water features.

Public Health and Safety: Safety concerns would be addressed by site and sign planning; however, incorporating an overflow parking area on the opposite side of FSR 4604 still leaves mixed use conflicts. Biking or hiking visitors will continue to be subject to crossing FSR 4604 near a corner to access most trails. In addition, traditional parallel parking would likely continue in conjunction with the planned 'head-in' parking in the overflow area. This could create an increase in vehicle conflicts or safety issues.

Alternative 2 is the least compatible with the intent and prescriptions of the Roded Natural ROS classification. The scale and method of site hardening coupled with the larger number of trees identified for removal indicate that this design is inconsistent with the Naturalness, Visitor Impacts and Facilities Elements of the ROS (Appendix A-1, page 73).

Effects Common to Alternative 3 (Reduced Development) and Alternative 4 (Reduced Rustic Development)

Direct and Indirect Effects

- **Activities**

Access and Parking: Parking would remain the primary activity. Combined with FSR 4604 road reconstruction, the project area parking capacity would shift from open-ended to defined by design. As this design accommodates core use, existing peak use would not be provided for and users would be displaced to other parking on or off forest. Although surfacing FSR 4604 would repair and improve the access, it may contribute to an increase in traffic speeds unless traffic control measures

are incorporated. Incorporating a transit drop-off area provides trail access to those who would not wish to drive or bike to PTH to access the Tumalo Trail System.

- **Setting**

Visitor Impacts: Expanding footprints would be contained along FSR 4604 by re-constructing the road prism and discouraging parking. Natural and/or constructed features would direct motorized use onto designated surfaces.

- **Experience**

Social Encounters: The number of trailhead encounters would not be expected to change. PTH pedestrians and bikers using the overflow area would continue to be mixed with FSR 4604 cross traffic. Organized arrangement of parking coupled with anticipated use of feeder trails from parking would contribute to early separation of motorized and non-motorized traffic encounters. Trailhead encounters may slightly increase when visitors choose to extend their stay by utilizing gathering areas. Peak use day encounters would decrease approximately 35% from existing peak use.

Public Health and Safety: Safety concerns previously described for bikers and pedestrians would be addressed by site and sign planning. Eliminating the overflow parking area on the east side of FSR 4604 and the first set of pump track features would reduce mixed use conflicts.

Alternative 3 (Reduced Development)

Direct and Indirect Effects

- **Setting**

Naturalness: Development of PTH to a development scale 3 (Appendix A-4, page 89) as shown on the Proposed Action could attract visitors who seek a safer, organized, dust-free setting with increased amenities. It is also possible that existing users appreciative of the existing condition would be left dissatisfied with this extent of development and some may chose to utilize other locations to access the Tumalo Trail System. Retention of key large trees and utilization of existing impacted areas would be woven into designs creating less of a character change than the proposed action. Since the overflow parking east of FSR 4604 will be closed to motorized use, vegetation damage will be eliminated and the area would be available to be restored and rev-vegetated. Replacing this impacted area with vegetation would increase the naturalness of the area and offset vegetation removal necessary for trailhead development.

Visitor Management: Education and information would be improved with the installation of a 2 panel kiosk. The east portion of former FSR 4606 would be closed to use with natural barriers.

Facilities and Accessibility: Universal accessibility would be provided for in restroom location and design. Access routes would be incorporated into the approach to the restroom, including from public transit parking, to the information kiosk and select gathering area(s). While increasing site durability and user comfort (reducing dust, defining safe parking), exposure to black asphalt on hot summer days would increase heat and likely decrease comfort for some users. Black asphalt surfacing is considered use of synthetic material.

Alternative 3 is the more compatible with the intent and prescriptions of the Roded Natural ROS classification. The scale and method of site hardening indicate that this design is inconsistent with the Facilities element of the ROS (Appendix A-1). Inconsistency with ROS does not preclude this alternative from being selected.

Alternative 4 (Reduced Development / Rustic Style)

Direct and Indirect Effects

- **Setting**

Naturalness: Development of PTH to a development scale 3 (Appendix A-4, page 89) as shown on the Proposed Action could attract visitors who seek a safer, organized, dust-free (for red asphalt

modification) setting with increased amenities. It is also possible that existing users appreciative of the existing condition would be left dissatisfied with this development and some may chose to utilize other locations to access the Tumalo Trail System. Utilizing aggregate surface instead of paved would retain more of the rustic character closer to the existing condition. Retention of key large trees and utilization of existing impacted areas would be woven into designs creating less of a character change than the proposed action. Since the overflow parking east of FSR 4604 will be closed to motorized use, vegetation damage will be eliminated and the area would be available to be restored and rev-vegetated. Replacing this impacted area with vegetation would increase the naturalness of the area and offset vegetation removal necessary for trailhead development.

Visitor Management: Education and information would be improved with the installation of a 2 panel kiosk. The east portion of former FSR 4606 would be closed to use with natural barriers. Wheel stops may need to be incorporated into the aggregate surface design to define parking spaces. However, wheel stops anchored in aggregate can be a long term maintenance challenge.

Facilities and Accessibility: Universal accessibility would be provided for in restroom location and design. Access routes would be incorporated into the approach to the restroom, from public transit parking, to the information kiosk and select gathering area(s). While increasing site durability and user comfort (reducing dust, providing safe parking) , exposure to earthtone asphalt on hot summer days may increase heat and decrease comfort for some users. If an aggregate surface is used, dust would be present, when conditions are dry, but less likely to be problematic than pure compacted native pumice. Earthtone asphalt masks evidence of synthetic material use and aggregate could be considered rustic, native material.

Alternative 4 is most compatible with the intent and prescriptions of the Roded Natural ROS classification. Design elements could be considered 'norm' with all ROS considerations (Appendix A-1, page 73).

Cumulative Effects

Past recreation development is considered the existing condition. Trail use will continue as in the past, and the improvements at PTH are not expected to change the level of use. None of the three action alternatives would add effects to any ongoing or reasonably foreseeable future actions that would result in cumulative effects to the recreation resource with respect to the Phil's project area.

SCENIC RESOURCE

INTRODUCTION

The developed recreation site proposed for this location will follow parking design guidelines for the City of Bend and the USDA Scenery System Management in order to ensure site design that enhances the site, improves conditions, and is compatible with the surrounding landscape character. This includes retaining as much existing vegetation (especially large trees) as possible, planting with native plant species, capturing as much run-off from paved surfaces on-site, minimizing visual impacts to the surrounding forest by using vegetation screens and planting buffer zones, and restoring as much of the damaged site as possible by incorporating existing use areas into the new site design.

EXISTING CONDITION

The existing site is in a forested setting comprised of, generally, widely spaced ponderosa pine, native shrubs such as bitterbrush and manzanita, and native fescues. The increasing numbers of cars parking along the side of the road and at the trailhead area has led to larger areas of vegetation being damaged. There are no designated parking areas so visitors using the trails park where space is available along the roads and mostly open dirt areas. The lack of proper drainage, grading, or site protection is causing further erosion, dust, puddling, and damage to existing vegetation. The roots of large ponderosa pine are also being heavily impacted by visitors seeking shade and parking their vehicles too close to the base of these trees.

Many vehicles park along the road or wherever open flat space is available. Impacts to resources such as vegetation and drainage (refer to Figure 20 and Figure 21, page 37) on the site have expanded into a much larger area due to the popularity of the mountain bike trails to locals and to the visiting public. Large groups from outside the area enjoy coming to Phil's due to the many national mountain biking events, publications, and websites promoting Bend.

Figure 20: Damage is occurring to the roots of large ponderosa pine as a result of parked vehicles



Figure 21: Damage is occurring to the existing vegetation as a result of vehicles parking immediately adjacent to Forest Service Road 4604 and the spur road to private land



ENVIRONMENTAL CONSEQUENCES

Alternative 1 (No Action)

Direct and Indirect Effects: Parking would continue along the road or where open flat space is available. Large vehicles and vehicles with trailers would continue to utilize the area. Parking surfaces would be gravel. The existing kiosk, toilet, and large rocks used for picnic areas would remain.

Scenic views throughout the area would continue to be impacted if the current use of the area remains or increases. Site erosion and damage to vegetation will continue and this degradation of resources will negatively impact the scenic views of a once natural appearing forest setting.

Alternative 2 (Proposed Action)

Direct and Indirect Effects: Scenic views throughout the area will be enhanced by providing a 70 foot wide vegetation buffer consisting of native vegetation, large existing trees, and planting new ponderosa pine and medium to large height shrubs to screen parked vehicles from FSR 4604. Additional stormwater retention planters within the parking area will prevent erosion and provide a green area for picnic sites and bike trail access from parking areas to the staging area. This alternative would have more impacts to scenic views than the other alternatives due to the size of the developed area, although landscaping with native materials and generous sized stormwater retention planters will help create a facility that blends with the surrounding landscape. Approximately 55-65 trees would be removed in this alternative.

Alternative 3 and Alternative 4

Alternative 4 is the same design as Alternative 3, but with an aggregate surface instead of a paved surface. All other amenities and site features would be the same as Alternative Three.

Direct and Indirect Effects: Scenic views through the area would be enhanced by providing a 45 foot wide vegetation buffer and storm retention planter consisting of native vegetation, large existing trees, and planting new ponderosa pine and medium to large height shrubs to screen parked vehicles from FSR 4604. This alternative reuses and restores existing areas currently used for parking. It retains large trees and as much existing vegetation as possible in the southern parking area and provides a safer circulation route for vehicles, bikers, and pedestrians. Approximately 20-30 trees would be removed in this alternative.

Cumulative Effects

There would be no cumulative effects to scenic views in the proposed projects because this planning area is not within a Scenic Views Management Area. Any impacts to scenic views are described in the Direct and Indirect Effects section.

AIR QUALITY

The Clean Air Act requires EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment. The EPA Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards for six principal pollutants, which are called "criteria" pollutants. These include Carbon Monoxide, Lead, Nitrogen Dioxide, Particulate Matter (solid material contained in smoke), Ozone, and Sulfur Dioxide.

National Ambient Air Quality Standards (NAAQS)

National Ambient Air Quality Standards include standards for total suspended particulates. Particulate matter (PM) is measured by two diameter classes: 10 microns in diameter or less (PM10), and 2.5 microns in diameter or less (PM2.5). Both classes contribute to regional haze and reduced visibility. Data from air monitoring stations has shown that fire has not been a predominant long-term source of visibility impairment in any Class I area, although emissions from fire are an important short-term contributor to visibility aerosols (Sandberg 2002).

In general, particulate matter from the smoke of hazardous fuels treatments is the major pollutant of concern to health. Particulate is a general term for a mixture of solid particles and liquid droplets found in the air. Particulate from smoke tends to be very small (less than 1 micron in diameter) and, as a result, is more of a health concern than the coarser particles that typically make up road dust. Particulate matter from wood smoke has a size range near the wave length of visible light (0.4 to 0.7 micron). This makes the particles excellent at scattering light and, therefore, excellent at reducing visibility.

A Smoke Sensitive Receptor Area (SSRA) is an area that receives the highest level of protection under the smoke management plan because of its past history of smoke intrusions, incidents, density of population, or other legal status related to visibility. The nearest SSRA to the project area is Bend, the city limits adjacent to the project area.

Class I visibility areas are areas that have very clean air and are subject to the tightest restrictions on how much additional pollution can be added to their airshed. In Class I visibility areas, the primary concern is protection of visibility. These areas are protected under the Oregon State Implementation Plan, which governs regional haze. The closest Class I area to the project area is the Three Sister Wilderness with the nearest point being about 4 miles to the west/northwest

Emissions impacts to Class I airsheds and SSRAs are successfully avoided by implementing pile burning treatments during time periods of favorable winds and mixing heights as well as coordinating burning with Oregon Smoke Management. Prescribed fires contribute negligible amounts of air pollution in smaller controlled events that exceed air quality standards over smaller controlled areas.

Alternative 1 (No Action)

Direct and Indirect Effects: No additional dust would be created than what is presently occurring through use of the parking areas. No pile burning would occur. There would be no effect.

Alternative 2 (Proposed Action), Alternative 3, and Alternative 4

Direct and Indirect Effects: Dust would increase during project implementation, particularly when soils are very dry. Following completion of project activities, parking would occur only in areas that are paved under Alternatives 2 and 3 and Alternative 4 with the earth tone chip seal with a nearly complete reduction in airborne dust that was originally associated with the unpaved parking area. Under Alternative 4 with an aggregate surface, dust would occur, increasing through time with a break down in the aggregate material.

If pile burning of residual slash from tree removal does occur, it would be conducted in compliance with National Ambient Air Quality Standards and Oregon Department of Forestry Smoke Management

regulations and restrictions. Burning would occur during favorable weather conditions, with the transport winds necessary to disperse smoke away from Smoke Sensitive Receptor Areas and Class I areas.

If pile burning does occur, emissions would produce approximately 232 pounds of PM 2.5, and 267 pounds of PM 10. It is anticipated that burning treatments may take up to 1 day to complete, burning either 1 large landing pile or 2-4 piles in areas that will be impacted by the parking area.

Emissions will not exceed air quality standards in Class I airsheds or any SSRA due to the distance of these features from the project area and the small amount of emissions from the limited amount of fuels. The greatest potential for emissions exceeding air quality standards will be limited to the immediate project area and fire personnel will be most vulnerable to smoke exposure. Mitigations will be in place to minimize smoke exposure.

The Clean Air Act lists 189 hazardous air pollutants to be regulated. Some components of smoke, such as polycyclic aromatic hydrocarbons (PAH) are known to be carcinogenic. Probably the most carcinogenic component is benzo-a-pyrene (BaP). Other components, such as aldehydes, are acute irritants. In 1994 and 1997¹, air toxins were assessed relative to the exposure of humans to smoke from prescribed and wildfires. The five toxins most commonly found in prescribed fire smoke were:

Particulate matter - Particulates are the most prevalent air pollutant from fires, and are of the most concern to regulators. Research indicates a correlation between hospitalizations for respiratory problems and high concentrations of fine particulates (PM2.5, fine particles that are 2.5 microns in diameter or less). Particulates can carry carcinogens and other toxic compounds. Overexposure to particulates can cause irritation of mucous membranes, decreased lung capacity, and impaired lung function. Particulate matter is analyzed for Alternative 2 in the Air Quality section, page 35.

Acrolein - An aldehyde with a piercing, choking odor. Exposure severely irritates the eyes and upper respiratory tract.

Formaldehyde - Low-level exposure can cause irritation of the eyes, nose and throat. Long-term exposure is associated with nasal cancer.

Carbon Monoxide - CO reduces the oxygen carrying capacity of the blood, a reversible effect. Low exposures can cause loss of time awareness, motor skills, and mental acuity. Also, exposure can lead to heart attack, especially for persons with heart disease. High exposures can lead to death due to lack of oxygen.

Benzene - Benzene causes headache, dizziness, nausea and breathing difficulties, as well as being a potent carcinogen. Long-term exposure can cause anemia, liver and kidney damage, and cancer. The closest Designated Area to the analysis area is the city of Bend, Oregon; the communities of Crescent, Sunriver, and La Pine are closer to the analysis area but are not as highly populated.

The greatest risk of exposure to airborne toxins from pile burning would be to firefighters and forest workers implementing the burning activity. It is unlikely the general public would be exposed to toxin levels adverse to human health during burning activities because of the prescriptions designed to lessen the release of particulate matter particularly during times that favor dispersion of smoke. The Forest Service voluntarily follows the guidelines assigned by Oregon Smoke Management to limit state-wide exposure on a cumulative basis, in compliance with the Clean Air Act.

¹ Results of an April 1997 conference to review the results of health studies and develop a risk management plan for the protection of fire crews were published by Missoula Technology Development Center in Health Hazards of Smoke, Technical Report 9751-2836-MTDC.

WILDLIFE

SUMMARY

Table 10: Anticipated Effects Associated with the Proposed Activities summarizes the projects actions and the anticipated effects to forested habitat structure and wildlife species. These anticipated effects were used to help analyze the potential effects/impacts to species and their habitat that occur within and adjacent to the project. Refer to the individual species analysis for details.

Table 10: Anticipated Effects Associated with the Proposed Activities

Proposed Activities – All Action Alternatives	Anticipated Direct/Indirect Effects
Construction of parking lot and trailhead	Direct: Permanent loss of forested habitat, including live trees, snags, logs, and shrubs; noise disturbance, and habitat fragmentation on 1 to 3 acres of ponderosa pine habitat. New introduced use in an area not previously directly used by recreationists (expanded parking area, i.e. songbird impacts); pathway for predators and nest parasitism.
Road reconstruction	Direct: Noise disturbance. Indirect: None.

Threatened and Endangered Species

No Federally threatened, endangered, candidate, or proposed candidate species habitat occurs within the Phil's Trailhead (PTH) Project. Therefore, a "no effect" determination from implementation of the proposed project is expected for the northern spotted owl, Oregon spotted frog, Pacific fisher, and California Wolverine.

Regional Forester Sensitive Species Considered

Implementation of Alternatives 2, 3, or 4 may impact white-headed woodpecker habitat minimally (very few snags occur in the project area) due to the removal of 20-65 ponderosa pine trees, impacting approximately 1.4 to 3.1 acres of ponderosa pine habitat. The project would not lead to a trend towards Federal listing.

INTRODUCTION

This wildlife report, including the biological evaluation (BE), analyzes effects/impacts from implementation of the PTH Project on the Bend/Ft. Rock Ranger District of the Deschutes National Forest.

The BE analyzes effects to:

- Federally Listed or Proposed Species
- Regional Forester's Sensitive Species

The wildlife report analyzes effects to:

- LRMP Management Indicator Species and Habitats
- Landbird Focal Species
- Birds of Conservation Concern
- High Priority Shorebirds

REGULATORY FRAMEWORK

The wildlife report and BE meet the direction of the Forest Service Manual 2600, the Deschutes National Forest Land and Resource Management Plan (LRMP, USDA FS 1990) as amended by the Regional Forester's Forest Plan Amendment #2 (Eastside Screens, USDA FS 1995), and the Endangered Species Act of 1973.

ANALYSIS METHODS

Analyses incorporated field reconnaissance, GIS data, current literature, and staff knowledge. The Deschutes LRMP and amended Eastside Screens present standards and guidelines (S&Gs) for the maintenance of wildlife habitat. Short-term impacts are for 5 years while long-term impacts project are greater than 5 years.

For bounding in time, generally, greater than 10-15 years is considered long-term (with less than 10-15 years considered short-term). Not only can these times represent multiple generations of a species, but also tree growth can alter the classification of habitat structure in this timeframe, and often, new management policies are in place. This variance (10-15 years) can occur within different habitat types and for different wildlife species.

For species in this report, potential cumulative effects were bounded by the Overturf Butte – Deschutes River (19,305 acres) 12th field subwatershed. This boundary takes in multiple territories of a majority of wildlife species and gives a landscape perspective in regards to management and human uses.

For analysis of cumulative effects and other actions, the following present and reasonably foreseeable actions within the subwatershed are considered. Any effects of past actions are indistinguishable from each other and combined have been considered as part of the existing condition and the suitability or quality of the habitat.

- Ongoing road maintenance
- Ongoing roadside danger tree removal
- Ongoing bike/hike trail clearing
- Ongoing/increased use on nearby trails
- Skyliners Road Reconstruction
- Cascade Lakes Welcome Station Project
- West Bend Project

BIOLOGICAL EVALUATION

The BE considers effects to federally listed or proposed species and Regional Forester Sensitive Species. A Forest Programmatic Biological Assessment (BA) for Section 7 informal consultation under the Endangered Species Act was completed in 2010 for projects proposed from 2010 to 2013 (USDA FS 2010). The BA established project design criteria (PDC) to streamline consultation with the U.S. Fish and Wildlife Service (FWS). Project design criteria focus on habitat alteration and disturbance effects. The northern spotted owl, bald eagle, and Oregon spotted frog were included in the BA. The bald eagle was delisted in 2007 but is under a five-year monitoring plan and managed according to the 2007 National Bald Eagle Management Guidelines. The Pacific fisher is a Federal candidate species but was not included in the BA.

Habitat manipulation affects species differently. An action that may increase habitat for one species may decrease habitat for another species. Federal threatened, endangered, and regionally sensitive species lists are always consulted first. Species that do not appear on these lists but show up as a management indicator species or focal species (Wildlife Report) may have persistence issues at a regional or national level but may not have persistence issues at the state or local level. In order to get an idea of the level of concern for these species, rankings were obtained from Natureserve Explorer: an online encyclopedia of life, available at <http://www.natureserve.org/explorer>. Rankings are given for global, national, and state levels. Only the state rankings are used in this analysis. This source has been incorporated into table 3 and species discussions from table 4.

Table 11 includes those species that are federally listed, proposed, and Regional Foresters Sensitive Species. It includes whether it is affected by the PTH Project and the rationale of the stated effects.

Those species that are in bold are analyzed further and contain habitat that occurs within or adjacent to the project areas and that the particular habitat and/or species may be negatively affected. Those species that are not in bold may or may not contain habitat within or adjacent to the project area, of which that habitat or species would not be impacted by the proposed projects.

Table 11: Federally Listed and Proposed Species and Regional Forester Sensitive Species Occurring or Potentially Occurring on the Deshutes National Forest and Effects from the Proposed Project (Those in bold receive further consideration and analysis)

Species	Status	Effects	Rationale
Federally Listed and Proposed Species¹			
Northern spotted owl (<i>Strix occidentalis caurina</i>)	Federal threatened, MIS, S3	No effect due to lack of habitat.	Late-successional mixed conifer forests with multi-storied structure and downed wood. The project is east of the spotted owl line.
Oregon spotted frog (<i>Rana pretiosa</i>)	Federal Candidate, Regional Forester Sensitive, S2	No effect due to lack of habitat.	Inhabits shallow edges of lakes and ponds and riparian areas
Pacific fisher (<i>Martes pennanti</i>)	Federal Candidate, Regional Forester Sensitive, S2	No effect due to lack of habitat.	High elevation mixed coniferous forests
California Wolverine (<i>Gulo gulo</i>)	Federal Candidate, Regional Forester Sensitive, MIS, S1	No effect due to lack of habitat.	Mixed conifer high elevation forests
Regional Forester Sensitive Species¹			
Birds			
Northern bald eagle (<i>Haliaeetus leucocephalus</i>)	Regional Forester Sensitive, MIS, BCC, S4B, S4N	No impact due to lack of habitat.	Lakes, large rivers with nearby large diameter trees, usually ponderosa pine
American peregrine falcon (<i>Falco peregrinus anatum</i>)	Regional Forester Sensitive, MIS, BCC, S2B	No impact due to lack of habitat.	Riparian and cliff habitat.
Lewis's woodpecker (<i>Melanerpes lewisi</i>)	Regional Forester Sensitive, MIS, BCC, Landbird focal species (ES), S2, S3B	No impact due to lack of habitat.	Large diameter snags in open ponderosa pine, burned forests.
White-headed woodpecker (<i>Picoides albolarvatus</i>)	Regional Forester Sensitive, MIS, S2, S3B	May impact but would not lead to a trend towards Federal listing (all alternatives).	Large diameter snags in open ponderosa pine forests. Potential habitat occurs within the project area. Recent thinning of the surrounding stand (approximately 65 acres) has set the stage for future nesting habitat. Currently, there are not enough decadent trees for nesting, but foraging habitat occurs. To date this species has not been documented within the project area.
Bufflehead (<i>Bucephala albeola</i>)	Regional Forester Sensitive, MIS, S2B, S5N	No impact due to lack of habitat.	Snags associated with lakes
Harlequin duck (<i>Histrionicus histrionicus</i>)	Regional Forester Sensitive, MIS, S2B, S3N	No impact due to lack of habitat.	Rapid streams, large trees
Horned grebe (<i>Podiceps auritus</i>)	Regional Forester Sensitive, MIS, S2B, S5N	No impact due to lack of habitat.	Lakes
Tricolored blackbird (<i>Agelaius tricolor</i>)	Regional Forester Sensitive, BCC, S2B	No impact due to lack of habitat.	Lakeside, bullrush
Yellow rail (<i>Coturnicops noveboracensis</i>)	Regional Forester Sensitive, BCC, S1B	No impact due to lack of habitat.	Marsh
Northern waterthrush (<i>Seiurus</i>)	Regional Forester	No impact due to	Riparian habitat with dense willows along

Species	Status	Effects	Rationale
<i>noveboracensis</i>)	Sensitive, S2B	lack of habitat.	streambanks
Greater sage grouse (<i>Centrocercus urophasianus phaeios</i>)	Proposed Federal Candidate, Regional Forester Sensitive, BCC, Landbird Focal Species (CP), S3	No impact due to lack of habitat.	Sagebrush flats
Mammals			
Townsend’s big-eared bat (<i>Corynorhinus townsendii</i>)	Regional Forester Sensitive, MIS, S2	No impact due to lack of habitat.	Caves, mines, bridges, rock crevices, ponderosa pine and juniper forests. Very low foraging potential; no known roosts
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	Regional Forester Sensitive, S2	No impact due to lack of habitat.	Sagebrush flats
Pacific Fisher (<i>Martes pennanti</i>)	Regional Forester Sensitive, MIS, S2	No impact due to lack of habitat.	Mixed conifer, riparian, complex physical structure
California Wolverine (<i>Gulo gulo</i>)	Regional Forester Sensitive, MIS, S1	No impact due to lack of habitat.	Mixed conifer high elevation forests
Invertebrates			
Crater Lake tightcoil (<i>Pristiloma arcticum crateris</i>)	Regional Forester Sensitive, S1	No impact due to lack of habitat.	Perennial wet areas along streams.
Silver-bordered fritillary (<i>Boloria selene atrocotalis</i>)	Regional Forester Sensitive, S2	No impact due to lack of habitat.	Late-successional mixed conifer forests with dwarf mistletoe
Johnson’s hairstreak (<i>Callophrys johnsoni</i>)	Regional Forester Sensitive, S2	No impact due to lack of habitat.	No impact due to lack of habitat.

***Federally listed** species come from the Region 6 Threatened, Endangered, and Sensitive species list for the Deschutes National Forest (January 2008). ***Regional Forester Sensitive** species come from the Region 6 Threatened, Endangered, and Sensitive species list for the Deschutes National Forest (June 2008); **Management Indicator Species** come from the Deschutes National Forest Land and Resource Plan (LRMP)[1990]; **Birds of Conservation Concern (BCC)** come from the US Fish and Wildlife Service Birds of Conservation Concern – BCR 9 (Great Basin) [2002]; **Landbird Focal Species (ES)** come from the Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington (Altman 2000); **Landbird Focal Species(CP)** come from the Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington (Altman 2000); Oregon Sensitive Species determined from the **NatureServe** database for Oregon (2010): S1, critically imperiled, S2 = imperiled, S3 = vulnerable, S4 = apparently secure, S5 = secure, B = breeding, N = non-breeding.

THREATENED AND ENDANGERED SPECIES

No Federally threatened, endangered, candidate, or proposed candidate species habitat occurs within the PTH Project. Therefore, a “no effect” determination from implementation of the proposed project is expected for the northern spotted owl, Oregon spotted frog, Pacific fisher, and California Wolverine.

SENSITIVE SPECIES

Regional Forester Sensitive Species Considered

Regional Forester Sensitive Species were considered and impacts to one species was analyzed, the white-headed woodpecker. The bald eagle, bufflehead, harlequin duck, horned grebe, tricolored blackbird, yellow rail, northern waterthrush, greater sage grouse, American peregrine falcon, Lewis’ woodpecker, Townsend’s big-eared bat, pygmy rabbit, Pacific fisher, California wolverine, Crater Lake tightcoil, silver-bordered fritillary, and Johnson’s hairstreak, are all sensitive species that are known to occur or potentially occur on the Forest. There is no suitable habitat for any of these species in or near the project area. Therefore, these species have been given the determination of “No impact” from implementation of the proposed project.

White-Headed Woodpecker: *Regional Forester’s Sensitive, MIS, BCC, Landbird Focal Species, S2 Imperiled, S3B - Vulnerable in Breeding Range*

White-headed woodpeckers utilize both live and dead ponderosa pines. They will forage on both live and dead pines often selecting the large diameter pines because they have more seeds and make more suitable nesting habitat. Having large ponderosa pine does not assure this species’ presence. Indications have been made that a well-developed understory of trees and shrubs may encourage

mammalian predation on nests (Marshall 1997). White-headed woodpeckers are absent from early seral ponderosa pine stands. These woodpeckers are poor excavators and generally select for a more moderately decayed or softer snag in which to nest (Dixon 1995). Home ranges for the white-headed woodpecker are large, ranging from 257 to 793 acres (Dixon 1995).

The white-headed woodpecker is identified in the *Conservation Strategy for Landbirds of the East-Slope of the Cascades Mountains in Oregon and Washington* as a landbird focal species of large patches of old ponderosa pine forest with large snags (Altman 2000). Conservation issues include loss of large diameter ponderosa pine trees to logging, lack of recruitment of young ponderosa pine due to fire suppression that has allowed understory encroachment of firs, increased fuel loads that predisposes ponderosa pine stands to stand-replacement fires, loss of snags and downed wood, and fragmented habitat that increases energy expenditure and risk of predation to individual woodpeckers. Biological objectives include providing the following in ponderosa pine stands to promote late-seral conditions: (1) a mean of > 10 trees/acre greater than 21" dbh with at least two of the 10 trees > 31" dbh for foraging and replacement snags; (2) a mean of 1.4 snags/acres greater than 8" dbh with >50% of the snags larger than 25" dbh in a moderate to advanced state of decay; and (3) a mean canopy closure of 10-40%.

Conservation strategies stated in Altman (2000) include: 1) inventory to identify stands meeting desired conditions (i.e. high quality white-headed woodpecker habitat) and stands that can be managed to meet desired conditions; 2) conduct thinning, partial cuts, group selection cuts, shelterwoods, planting, snag creation, or prescribed burning as appropriate to meet desired conditions but not clear cuts or overstory removal; 3) manage for large diameter trees through wider tree spacing and longer rotation periods; and 4) retain all snags and high cut stumps greater than 10" dbh, soft snags, broken-topped snags, leaning logs, high stumps, downed logs, and all ponderosa pine trees greater than 17" dbh. This project would be conducting overstory removal of trees for construction of the parking lot associated with the trailhead.

The project area, which consists of black bark ponderosa pine (trees less than 110-120 years old), was thinned in 2008 with the Net Timber Sale. The particular stand that surrounds the trailhead site is approximately 65 acres in size. Currently, this area does not provide for larger snags that are necessary for cavities and nesting. This woodpecker's home range is rather large (257-793 acres), so this area could be used for foraging habitat. There have been no known observations of white-headed woodpeckers within or near this project area. There is approximately 4,554 acres of suitable habitat for the white-headed woodpecker within the Overturf Butte – Deschutes River Subwatershed where the impacted habitat would occur.

Alternative 1

Direct and Indirect Effects: There would be no change from the current existing condition and therefore no impacts to white-headed woodpeckers.

Alternatives 2, 3, and 4

Direct and Indirect Effects: The proposed action (trailhead parking lot) would directly alter (by removing trees and fragmentation) habitat on approximately 1 (Alternatives 3 and 4) to 3 acres (Alternative 2) of potential white-headed woodpecker habitat. Loss of these acres would not be current nesting habitat but of future nesting habitat. Currently, the area provides for foraging habitat for this woodpecker species.

The proposed action adds to the conservation issue of fragmentation by creating a parking lot and breaking up the habitat that is currently available, with Alternative 2 fragmenting more habitat because of its larger size. This fragmentation would occur next to the heavily used 4604 Road.

Habitat is often limited in watersheds due to the lack of climax ponderosa pine associations as a result of previous timber harvest and encroachment of firs from wildfire suppression. Forest-wide, nesting

habitat has declined due to loss of large-diameter nest trees and competition for nest holes. Approximately 1 to 3 acres of black bark ponderosa pine would be removed under the action alternatives, removing these acres from maturing into later-seral ponderosa pine. This project would add incrementally to ongoing and reasonably foreseeable actions occurring from the Cascade Lakes Scenic Byway Welcome Station (removing 5 acres of black bark ponderosa pine habitat). This addition is very minimal, as this project and all action alternatives (even combined with the Welcome Station) would be less than 0.1% additive reduction of habitat within the Overturf Butte – Deschutes River Subwatershed. The future West Bend Project, which also occurs within the subwatershed, would be thinning ponderosa pine stands (>6,000 acres), but in the process would be promoting large trees for future habitat.

Cumulative Effects: This project would add incrementally to ongoing and reasonably foreseeable actions occurring from the Cascade Lakes Scenic Byway Welcome Station and the proposed West Bend Project. This addition is very minimal, as this project (even combined with the Welcome Station) would be less than 1% additive reduction of habitat.

Consistency: This project would not be consistent with the Conservation Strategy for Landbirds by adding to conservation issues by fragmenting potential habitat and not adhering to conservation strategies by cutting ponderosa pine trees 17 inches dbh and larger. However, this project is small in comparison to the context of the subwatershed that contains 4,554 acres of white-headed woodpecker habitat. The biological objectives addressed above would still be met on a subwatershed level.

Conclusion: Implementation of Alternatives 2, 3, or 4 may impact white-headed woodpecker habitat by a small reduction in habitat (very few snags occur in the project area) due to the removal of 20 - 65 black bark ponderosa pine trees, impacting 1 to 3 acres of habitat. Alternatives 3 and 4 would have the least impact because of a lesser degree of habitat removal. The PTH Project would result in less than 0.1% decrease in habitat for the white-headed woodpecker species within the Overturf Butte – Deschutes River Subwatershed. Based on this, the PTH Project would not contribute to a downward trend of species viability at the Forest level and would not lead to a trend towards Federal listing.

WILDLIFE REPORT

The wildlife report analyzes impacts to the species and habitats listed below. Those species in Table 12 that are in bold contain habitat that occurs within or adjacent to the project area, may be negatively impacted, and are analyzed further. Species/habitats that are not present within or adjacent to the project area are not further analyzed.

- LRMP Management Indicator Species (MIS)
- LRMP Special or Unique Habitats
- LRMP Snags and down wood/green tree replacements
- LRMP Late and Old Structural Stands and Connectivity (Eastside Screens)
- Survey and Manage Species
- Focal Landbird Species
- Birds of Conservation Concern
- High Priority Shorebirds

Table 12: Impact Conclusions for LRMP Management Indicator Species and Habitats, Survey and Manage Species, Special Habitats, Landbird Focal Species, Birds of Conservation Concern, and High Priority Shorebirds. Those species in bold receive further consideration and analysis.

Species or Habitat	Impacts under Proposed Actions	Rationale for Impacts Conclusions
Management Indicator Species		

Species or Habitat	Impacts under Proposed Actions	Rationale for Impacts Conclusions
Northern spotted owl (<i>Strix occidentalis caurina</i>)	No effect. Lack of habitat.	Habitat is mature and old-growth mixed coniferous forest. The project is east of the spotted owl line.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	No impact. Lack of habitat	Lakes and large rivers with nearby large diameter trees, usually ponderosa pine.
Golden eagle (<i>Aquila chrysaetos</i>)	No impact. Lack of habitat	Elevated nest sites in open ponderosa pine or mixed conifer or cliff habitat.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	No impact. Lack of habitat	Riparian and cliff habitat.
Great gray owl (<i>Strix nebulosa</i>)	No impact. Lack of habitat	Mature and old growth forests with meadows and openings.
Northern goshawk (<i>Accipiter gentiles</i>)	No impact. Lack of habitat	Mature and old-growth forests, especially with high canopy closure and large trees.
Cooper's hawk (<i>Accipiter cooperi</i>)	No impact. Lack of habitat	Mature forests with high canopy closure/tree density.
Sharp-shinned hawk (<i>Accipter striatus</i>)	No impact. Lack of habitat	Mature and old-growth forests, especially in high canopy closure with large trees in addition to young, dense, even-aged stands.
Red-tailed hawk (<i>Buteo jamaicensis</i>)	No impact. Lack of habitat	Large snags, open country interspersed with forests.
Woodpeckers/cavity nesters. Species with potential habitat include the white-headed woodpecker, northern flicker, and hairy woodpecker. The white-headed woodpecker is analyzed within the BE.	May impact the northern flicker and hairy woodpecker (all alternatives).	Variety of habitats and snag sizes. Recent thinning of the stand (approximately 65 acres) has set the stage for future nesting habitat. Currently, the stand does not have enough decadent trees for nesting, but does provide for foraging. With project construction would be the loss of current foraging habitat and future nesting habitat.
Waterfowl	No impact. Lack of habitat	Lakes, ponds, and streams
Osprey (<i>Pandion haliaetus</i>)	No impact. Lack of habitat	Large snags associated with fish bearing water bodies.
Great blue heron (<i>Ardea herodias</i>)	No impact. Lack of habitat	Riparian edge habitats (lakes, streams, marshes, estuaries).
American marten (<i>Martes americana</i>)	No impact. Lack of habitat	Mixed conifer of high elevation late successional forests with abundant down woody material.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	No impact. Lack of habitat	Caves, buildings, bridges, ponderosa pine and juniper habitats. No known roosts in or near project site. Low potential for foraging in area.
California wolverine (<i>Gulo gulo</i>)	No impact. Lack of habitat	Mixed conifer high elevation forests
Elk (<i>Cervus elaphus</i>)	No impact	Project occurs within winter range for elk, but use is outside of the Ryan Ranch Key Elk Area.
Mule Deer (<i>Odocoileus hemionus</i>)	May impact (all alternatives).	Project is in mule deer biological winter range and in Tumalo Deer Winter Closure area. Minimal loss of foraging habitat is expected (1 – 3 acres), plus potential displacement of winter use at/near the project site because of habitat loss, but not a barrier.

Species or Habitat	Impacts under Proposed Actions	Rationale for Impacts Conclusions
Other habitats and species analyzed		
Special or Unique Associated Habitats	No impact due to lack of habitat.	None in or near project area.
Snags /Down Wood and Log Associated Species	May impact (all alternatives).	Snags > 21” dbh would not be removed (none are available) with few smaller snags removed. Any available pieces of down wood would be removed (numbers are minimal). Approximately 30-40 green trees (within 1-3 acres) of various sizes (some 21” or greater) would be removed.
Late and Old Structural Stage Stands and Connectivity	No impact. Lack of habitat	No LOS stands in project area. Project activities would not degrade connectivity between LOS stands.
Landbird Focal Species. Species with potential habitat include the white-headed woodpecker, pygmy nuthatch, and chipping sparrow. The white-headed woodpecker is analyzed within the BE.	May impact white-headed woodpecker, pygmy nuthatch and chipping sparrow (all alternatives).	Project adds to conservation issues associated with these species and is not consistent with some species habitat strategies of the Landbird Conservation Strategy.
Birds of Conservation Concern. One species with potential habitat includes the white-headed woodpecker. This species is analyzed within the BE.	May impact white-headed woodpecker, but would not lead to a trend towards Federal listing (all alternatives).	Large diameter snags in open ponderosa pine forests. Potential habitat occurs within the project area. Recent thinning of the stand (approximately 65 acres) has set the stage for future nesting habitat. Currently, the stand does not have enough decadent trees for nesting, but does provide for foraging. To date this species has not been documented within the project area.
High Priority Shorebirds	No impact. Lack of habitat	No wetland, wet meadow, or shrub/grass habitat occurs in or near project area.

Management Indicator Species come from the Deschutes National Forest Land and Resource Plan (LRMP)[1990]; **Birds of Conservation Concern (BCC)** come from the US Fish and Wildlife Service Birds of Conservation Concern – BCR 9 (Great Basin) [2008]; **Landbird Focal Species (ES)** come from the Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington (Altman 2000); **Landbird Focal Species (CP)** come from the Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington (Altman 2000); and **Shorebirds** come from the 2004 US Fish and Wildlife Service U. S. Shorebird Conservation Plan.

LRMP MANAGEMENT INDICATOR SPECIES AND HABITATS

The Deschutes LRMP identifies management indicator species (MIS) and habitats to assess effects of management activities for a wide range of wildlife species with similar habitat needs. LRMP habitat categories include Special or Unique Associated Habitats, Snags and Down Wood, and Late and Old Structural Stage (LOS) stands and Connectivity.

Table 4 lists these species and whether potential habitat exists in the project area. Management Indicator Species analyzed in this wildlife report include woodpeckers and mule deer.

Management Indicator Species not analyzed in this report include northern spotted owl, bald eagle, golden eagle, American peregrine falcon, great gray owl, northern goshawk, Cooper’s hawk, sharp-shinned hawk, red-tailed hawk, waterfowl, osprey, great blue heron, American marten, Townsend’s big-eared bat, California wolverine, and elk, either due to a lack of habitat or that habitat occurs, but no impacts to the habitat or species are expected. Appendix 1 lists woodpecker species that occur on the Forest while Appendix 2 lists the waterfowl species that occur on the Forest. The proposed project would not contribute to a negative trend in viability at the Forest level for any of these species. LRMP habitats not analyzed from lack of habitat constituents or the habitat would not be impacted by the

project include special and unique habitats late and old structural stands and connectivity (Eastside Screens).

Woodpeckers

Northern Flicker: Management Indicator Species, S5 Secure

Habitat Needs and Existing Condition

Northern flickers are perhaps the most common woodpecker resident in Oregon. They can be found in a range of terrestrial habitat but are generally abundant in open forests and forest edges adjacent to open country (Marshall et al. 2003). Being a large cavity nester (12.5" long according to Sibley 2005), they require large snags or large trees with decay in order to build their nests.

Although there has been a large reduction of LOS stands within the watershed, this species has managed to tolerate and even thrive in habitats created by human-induced change. This bird locally and regionally remains secure.

Northern flickers have been observed within the subwatershed and within proposed activity areas. Potential habitat for this species within the subwatershed is approximately 4,636 acres. Since few snags exist within the project area, it is expected that the area would be used mainly as foraging habitat.

Hairy Woodpecker: Management Indicator Species, S4 Apparently Secure

Habitat Needs and Existing Condition

Bull et al. (1986) reported hairy woodpeckers using both lodgepole and ponderosa pine and mixed conifer habitats and a variety of snags sizes. This species would be in mature stands and utilize (i.e. nest and forage) snags greater than 10 inches in diameter. Hairy woodpeckers may forage along the edges of existing timber sale units.

Hairy woodpeckers have been observed within the watershed and in proximity to the project area. Since few snags exist within the project area, it is expected that the area would be used mainly as foraging habitat.

Because of its wide use of plant associations, in general, habitat is not limited for this species within the watershed (approximately 14,786 acres).

Alternative 1

Direct and Indirect Effects: There are no impacts to northern flickers or hairy woodpeckers because there is no proposed action under this alternative, and without a proposed action that would add incrementally to the ongoing or reasonably foreseeable actions, there would be no cumulative impacts.

Alternatives 2, 3 and 4

Direct and Indirect Effects: Construction for the PTH Project is expected to remove current foraging habitat and future nesting habitat for these two species of woodpeckers, impacting 3 acres with Alternative 2 and 1 acre with Alternatives 3 and 4). There may be impacts to these species by a small reduction in habitat, but the impacts are expected to be minimal.

Approximately 1 to 3 acres of black bark ponderosa pine would be removed under the action alternatives, removing these acres from maturing into late-seral ponderosa pine, and thus future large snags. This project is additive to ongoing projects in the subwatershed that remove future large trees and dead wood (e.g. hazard trees and firewood cutting and loss of 5 acres of black bark ponderosa pine habitat with the Welcome Station) and future timber sales including the West Bend Project (treating >6,000 acres of habitat to promote future large trees). The additive effect of the proposed actions are expected to be minimal because of the small amount of habitat affected (<0.1% of the available habitat

within the subwatershed), the scattered loss of snags hazard tree removal (ongoing activity within the subwatershed), and the amount of habitat still available.

Cumulative Effects: The additive effect of the proposed actions are expected to be minimal because of the small amount of habitat affected (<1%), the scattered loss of snags to firewood cutting and hazard tree removal, and the amount of habitat still available.

Consistency: The PTH Project would be consistent with Forest Plan S&G's for snag levels.

Although there may be individuals and habitat impacted at the local scale, viability is expected to continue for the northern flicker and hairy woodpecker on the Deschutes National Forest.

Conclusion: There may be impacts to these species by a small reduction in habitat, but the impacts are expected to be minimal with a loss of 1 – 3 acres of habitat for these woodpeckers. Alternatives 3 and 4 would have the least impact because of a lesser degree of habitat removal (1 acre). The PTH Project would result in less than 0.1% decrease in habitat for these woodpecker species within the Overturf Butte – Deschutes River Subwatershed. Based on this, the PTH Project would not contribute to a downward trend of species viability of the Forest level. The northern flicker is considered “secure” and the hairy woodpecker considered “apparently secure” by Natureserve (2010).

Mule deer: Management Indicator Species, S5 Secure

The mule deer forages on grasses and forbs (non-woody, broad-leaved plants) and browse (leaves and twigs of woody shrubs) primarily in shrub habitats. Unlike elk, they select the most nutritious vegetative parts meaning they have more specific foraging needs and a higher-quality diet (Hayden et al. 2008). Shrubs occur mostly in early successional habitats—those recently disturbed and those maturing to climax state. Disturbance events in forested areas including wildfire, prescribed fire, wind storms, insect infestation, tree disease, and timber harvest are key elements in maintaining these shrub components. Inadequate foraging habitats in or adjacent to summer range can be a limiting factor for winter conditioning and survival. Mule deer are migratory and move from high-elevation summer ranges to low-elevation winter ranges where foraging is easier under reduced snow depths. Bitterbrush is a major component of the vegetation on these winter ranges, which is an important food source for deer during winter months. Where deer winter in forests with deep snow conditions, removal of forest canopy may have deleterious effects on deer survival due to increased snow depth.

The project area is within LRMP deer habitat (MA-7), within ODFW biological deer winter range and within the Tumalo Deer Winter Closure area (an area that covers approximately 25,053 acres). This closure restricts motor-propelled vehicles and equipment from December 1-March 31 to reduce disturbance to mule deer on the winter range. There is one gate to the south of the proposed project that is closed during this time period and would remain closed with this project. The project area currently affords limited foraging opportunities for deer, and does not provide hiding or thermal cover.

The use of mule deer in this area has changed from the use that occurred in the 70s and 80s. During this time, even during periods of low deer numbers, this area of winter range was a popular place for deer hunting as the area was heavily utilized as winter range (Glen Ardt, personal communication). These days, this winter range habitat is in poor condition for several reasons, including the condition of the forage, housing developments encroaching on prime habitat, and increased and expanded recreational disturbance throughout the Tumalo Winter Range area. Use of the winter range by deer is decreasing and is being utilized more as a transition range as deer move further north and west to areas with better forage and less human impact (Glen Ardt, personal communication).

Recreational trail use including hiking and mountain biking has been demonstrated to decrease ungulate feeding and resting times and increase flushing and travel time, thereby increasing energy expenditures and stress levels (Taylor and Knight 2003, Wisdom et al. 2004, Naylor et al. 2009). Energy

expenditures are of higher concern for ungulates during winter when foraging opportunities are reduced and thermoregulation needs increase.

Alternative 1

Direct and Indirect Effects: There are no impacts to mule deer because there is no proposed action under this alternative, and without a proposed action that would add incrementally to the ongoing or reasonably foreseeable actions, there would be no cumulative impacts. The existing black bark pine and forage (bitterbrush) would remain surrounding the existing trailhead and parking areas and could develop into climax ponderosa pine over time.

Alternatives 2, 3, and 4

Direct and Indirect Effects: One to three acres of foraging habitat in winter range would be permanently removed due to the construction of the trailhead. Due to the proximity of the project area to Skyliners Road, human development, and the highly used 4604 Road (road used to access the trailhead), deer use is probably limited in the project area, thus impacts from loss of this area to foraging would not be critical to deer that may winter here. There is also no hiding or thermal cover in the project area.

The existing use of the area by mule deer and impacts to them during the winter would not change immediately by construction of the new parking area (from any of the action alternatives) for the trailhead. Use of the trailhead is expected to increase whether or not this project occurs as recreational use of the Forest also increases. Increased human use and presence on this winter range from all recreational activities may continue to have a negative impact to wintering mule deer by increased energy expenditure and stress levels of wintering animals and possibly displacement of these animals from their historical winter range.

Cumulative Effects: This project would add incrementally to reasonably foreseeable actions occurring from the Cascade Lakes Scenic Byway Welcome Station. There would be a loss of 1 to 3 acres of foraging habitat with this project and a loss of 5 acres of foraging habitat with the Welcome Center. This additional loss of foraging habitat is very minimal, with less than 0.1% additive reduction within the Overturf Butte – Deschutes River Subwatershed. Cumulative impacts would also occur from ongoing and increased recreational use of trails associated with this trailhead. With this increased use comes demand for additional trails in the area. The pressure on deer that continue to utilize this winter habitat will always be present, and is expected to increase.

Project Design Criteria: PTH would include interpretive information on maintaining deer winter habitat security, use of migration corridors, and mitigation of negative effects from recreational use (i.e., keeping dogs on leash, staying on trails, observing area closures) and what the impacts of recreational use has on mule deer and other wildlife that utilize the area.

Conclusion: There may be impacts to mule deer and their use of the area as winter range by construction of the trailhead and parking area. The permanent loss of 1-3 acres of foraging and winter range habitat may displace some deer from utilizing the area, but it would not be a barrier to movement. Alternatives 3 and 4 would have the least impact because of a lesser degree of habitat removal (1 acre). This displacement is expected to be minimal as the project area is adjacent to Skyliners Road, human development, and the highly used 4604 Road (road used to access the trailhead), plus, hiding and thermal cover are not available within the project area. The PTH Project would result in less than 0.1% decrease in foraging and winter range habitat within the Overturf Butte – Deschutes River Subwatershed and the Tumalo Winter Range. Based on this, the PTH Project would not contribute to a downward trend of species viability at the Forest level. Mule deer are considered “secure” by Natureserve (2010).

SPECIAL OR UNIQUE ASSOCIATED HABITATS

There are no Special or Unique Associated Habitats in or near the project area. No impacts are anticipated for any species associated with these habitats from implementation of the proposed project.

SNAGS AND DOWN WOOD/GREEN TREE REPLACEMENTS

A snag is defined as a dead tree that is over 10" diameter at breast height (dbh) and taller than 10 feet. Down woody material is considered to be dead and down material that is greater than 5 inches in diameter (Mellen et. al 2006). The most notable species using snags and down woody material are the primary cavity nesters (e.g. woodpeckers and nuthatches) that excavate nest cavities in decayed wood in standing trees. Vacated cavities are subsequently used by many other birds, bats, American marten, and small mammals (i.e., secondary cavity users).

Logs provide organic and inorganic nutrients in soil development, provide microhabitats for invertebrates, plants, amphibians, and other small vertebrates, and provide structure for riparian associated species in streams and ponds. Size, distribution, and orientation may be more important than tonnage or volume. Small logs provide escape cover or shelter for small species. It is still unknown what levels of down woody material are needed to provide quality habitat for associated species.

Small mammals use logs extensively as runways, making these areas important for birds of prey or other mammals that feed on these small mammals. Orientation has also been shown to be important, where logs that lie along a contour are used more than those lying across contours. Larger sized logs are also used more and by more species than smaller logs (Bull et al. 1997).

Snags and down wood do not occur in abundance within or adjacent to the project areas. This is due to the large number of acres that have been thinned within the past 10-15 years. These thinning are to improve conditions for future large-diameter trees that would provide potential for snag and down wood recruitment over time. Long-term, the stands are anticipated to develop late-seral conditions that would provide more snags, green tree replacements, and downed wood

Direct, Indirect, and Cumulative Effects

Alternative 1 (No Action)

Direct and Indirect Effects: There is no proposed action under this alternative; therefore there would be no changes from the existing conditions. There are no expected negative impacts to snags, down wood and green tree replacements. Without a proposed action that would add incrementally to the ongoing or reasonably foreseeable actions, there would be no cumulative impacts.

Alternatives 2, 3, and 4

Direct and Indirect Effects: Construction of the project would remove few snags and down wood from the area. An estimated 60 green trees under Alternative 2 and 25 green trees under Alternatives 3 and 4 would be removed, removing these trees from providing foraging substrate and future snags and down wood at the site.

This project would add incrementally to ongoing and reasonably foreseeable actions. The proposed West Bend Project (possibly removing snags and down wood) and localized woodcutting and hazard tree removal are additional activities within the subwatershed that would further degrade snag and down wood habitat. Since there is only a small amount of snag/down wood habitat impacted by the PTH Project compared to that available within the entire Overturf Butte – Deschutes River Subwatershed, and the continuity of snags being created in all habitat types across the subwatershed due to ongoing insect mortality, additive or cumulative effects of the proposed actions with other ongoing or reasonably foreseeable projects that remove snags would not be measurable.

Cumulative Effects: Because of the small amount of this habitat impacted by the project (<1%) compared to what is available within the watershed, and the continuity of snags being created in all habitat types across the watershed due to ongoing insect mortality, additive or cumulative effects of the proposed actions with other ongoing or reasonably foreseeable projects that remove snags are very minimal.

Consistency: This project is not a timber harvest, thus the project is consistent with the Deschutes LRMP S&Gs (WL-37 and 38) and the Eastside Screens.

Conclusion: The project is not expected to have immeasurable impacts to snags and down wood within the Overturf Butte – Deschutes River Subwatershed. Therefore, the PTH Project would not contribute to a downward trend of species viability to those species dependent upon this habitat on the Deschutes National Forest.

LATE AND OLD STRUCTURAL STANDS AND CONNECTIVITY

The goal of late and old structural stage (LOS) stands is to provide representation of landscape ecology and habitat for plants and animal species associated with old growth forest ecosystems. Late and old structural stages are defined by the Eastside Screens as multi-strata stands with large trees and single strata stands with large trees. Multi-stratum stands are comprised of two or more tree canopy layers and two or more cohorts of trees. Medium and large sized trees dominate the overstory but trees of all size classes may be present. Stand structure and tree sizes are diverse. Single stratum stands are comprised of a single dominant canopy stratum consisting of medium or large sized trees. Large trees are common. Young trees are absent or few in the understory. The stand may appear “park-like.” Multi-stratum LOS conditions are favorable to those species that require or prefer more complex forested structure (e.g. northern goshawk), while the single stratum LOS habitats are preferred by species such as the white-headed woodpecker and pygmy nuthatch.

Maintaining connectivity between habitats, particularly late and old structured habitat, is believed to be important for numerous wildlife species to allow free movement and interaction of adults and dispersal of young. Management direction pertaining to maintaining connectivity between late and old structured stands, as well as allocated old growth management areas is provided by the Eastside Screens.

Direct, Indirect, and Cumulative Effects: Neither LOS habitat nor connectivity between this habitat would be impacted by construction of the PTH project activities under any of the alternatives.

FOCAL LANDBIRD SPECIES

The biological objectives of the Forest Service Landbird Strategic Plan (January 2000) are to maintain, restore, and protect habitats necessary to sustain healthy migratory and resident bird populations. Biological objectives are all based on “where ecologically appropriate,” meaning actions must occur in the proper habitat addressed to be consistent. The purpose of the strategic plan is to provide guidance for the Landbird Conservation Program and to focus efforts in a common direction.

On a more local level, the Conservation Strategy for Landbirds of the East-Slope of the Cascade Mountains in Oregon and Washington (Altman 2000) outlines conservation measures, goals and objectives for specific habitat types found on the east-slope of the Cascades and the focal species associated with each habitat type. The Forest is in the Central Oregon subprovince. Table 13 lists specific habitat types, habitat feature needed and conservation focus, and the focal bird species for each. There is no mixed conifer, lodgepole pine, meadows, aspen or subalpine fir plant associations in the project area; therefore, species associated with these habitat types will not be analyzed.

The white-headed woodpecker, pygmy nuthatch, and chipping sparrow are the focal landbird species that have potential habitat within or adjacent to the project area (in ponderosa pine habitat). Impacts to the pygmy nuthatch and chipping sparrow are discussed below, while effects to the white-headed woodpecker, are have been previously analyzed under *Regional Forester Sensitive Species* in the BE.

Table 13: Priority Habitat Features and Associated Focal Landbird Species for Central Oregon

Habitat	Habitat Feature	Focal Species for Central Oregon
Ponderosa Pine	Large patches of old forest with large snags	White-headed woodpecker
	Large trees of old forest with large snags	Pygmy nuthatch
	Open understory with regenerating pines	Chipping sparrow
	Large trees of old forest with large snags patches of burned old forest, cottonwoods	Lewis's 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
Meadows	Wet/dry	Sandhill Crane
Aspen	Large trees with regeneration	Red-naped sapsucker
Subalpine fir	Patchy presence	Blue grouse

Pygmy Nuthatch: Landbird Focal Species, S4 - Apparently Secure

Habitat Needs and Existing Condition

Pygmy nuthatches are a focal species for large trees in the ponderosa pine stand types (Altman 2000). In Oregon, it occurs in mature and old growth ponderosa pine or mixed-species forests dominated by ponderosa pine. Pygmy nuthatches will nest in cavities in snags or dead portions of live trees (Norris 1958). Pygmy nuthatches will use snags greater than 10" dbh in a range of stand structural classes provided larger nest trees are available (Mellen et al. 2006). It is a secondary cavity nester and uses large trees > 21" dbh for nesting and for foraging, however, sometimes they forage in young ponderosa pines and in lodgepole pine stands adjoining or near ponderosa pine stands (Stern et al. 1987). Foraging is on outer branches in upper canopy on needle clusters, cones, and emerging shoots. Their diet varies by season and locale, but consists mainly of insects (Norris 1958). Nesting territory sizes range from 1-3 acres.

Population declines have been based on habitat deterioration caused by loss of large diameter snags and replacement of large ponderosa pines with smaller trees and other conifer species through fire control and logging (Agee 1993).

According to Altman (2000), conservation issues for this species (similar to Agee 1993) include: loss of large diameter ponderosa pine trees to logging; lack of recruitment of young ponderosa pine due to fire suppression that has allowed understory encroachment of firs; increased fuel loads that predisposes ponderosa pine stands to stand-replacement fires; and fragmentation of habitat which increases energy expenditure and risk of predation to individual nuthatches.

Conservation strategies listed in Altman (2000) include: managing for large diameter trees through wider tree spacing and longer rotation periods; and retaining all snags greater than 10" dbh and all ponderosa pine trees greater than 17" dbh. Biological objectives under the landbird conservation strategy include initiating actions in ponderosa pine forests to provide the following conditions: (1) a mean of > 10 trees per acre \geq 21" dbh, and at least 2 of the trees > 31" dbh for foraging trees and replacement snags and (2) a mean of > 1.4 snags per acre > 8" dbh with 50% > 25" dbh in a moderate to advanced state of decay.

The project area does not currently provide adequate nesting structure for the pygmy nuthatch, but does provide foraging habitat and future nesting habitat for this species.

Chipping Sparrow: Landbird Focal Species, S4 - Apparently Secure**Habitat Needs and Existing Condition**

Chipping sparrows are a focal species of more open ponderosa pine stands with active regeneration (Altman 2000). The chipping sparrow is a low-tree/ground-nester that uses open-overstory ponderosa pine and lodgepole pine (Marshall et al. 2003). This species prefers these open coniferous forests or stands of trees interspersed with grassy species or other areas of low foliage suitable for ground foraging (Farner 1952). In Central Oregon, they are found in good numbers in juniper, ponderosa pine, and lodgepole pine forests. This bird species feeds primarily on seeds of grasses and herbaceous annuals, adding insects and other invertebrates when breeding (Middleton 1998). Habitat changes have brought on increased risk of cowbird brood parasitism and competition with house sparrows and house finches (Middleton 1998).

According to Altman (2000), conservation issues for this species include: understory removal because of fire hazard or as part of restoration activities, intensive grazing, and vulnerability to cowbird parasitism where matrix land-use provides for cowbirds. Conservation strategies listed in Altman (2000) include: conduct overstory removal and burning outside the nesting season (April 15 – July 15), and conduct thinning and/or overstory removal to provide suitable open conditions.

Biological objectives under the landbird conservation strategy are to provide the following conditions in ponderosa pine forests: (1) interspersed herbaceous ground cover with shrub and regenerating pine patches; (2) 20-60% cover in the shrub layer; (3) > 20% of the shrub layer in regenerating sapling conifers (especially pines); and (4) a mean canopy cover 10-30%.

Habitat for the chipping sparrow occurs within and adjacent to the PTH Project. It is estimated that greater than 7,000 acres of chipping sparrow habitat occur within the Overturf Butte – Deschutes River Subwatershed.

Effects Common to Pygmy Nuthatch and Chipping Sparrow**Alternative 1 (No Action)**

Direct and Indirect Effects: There is no proposed action under this alternative; therefore there would be no changes from the existing conditions. There are no expected negative impacts to pygmy nuthatches or chipping sparrows. Without a proposed action that would add incrementally to the ongoing or reasonably foreseeable actions, there would be no cumulative impacts.

Alternatives 2, 3, and 4

Direct and Indirect Effects: Removal of trees for the PTH Project would impact/remove approximately 1 - 3 acres of current foraging habitat and future nesting habitat for the pygmy nuthatch. The proposed action also adds to the conservation issue of fragmentation by creating a parking lot and breaking up the habitat that is currently available, with Alternative 2 fragmenting more habitat because of its larger size. This fragmentation would occur next to the heavily used 4604 Road.

This PTH Project would also remove 1 - 3 acres of chipping sparrow habitat (shrubs). Project activities including habitat removal could impact this species if it occurs during the nesting season (April 15 – July 15) (Altman 2000).

Similar to the white-headed woodpecker, habitat for the pygmy nuthatch is often limited in watersheds due to the lack of climax ponderosa pine associations as a result of previous timber harvest and encroachment of firs from wildfire suppression. Forest-wide, nesting habitat has declined due to loss of large-diameter nest trees and competition for nest holes. Approximately 1 to 3 acres of black bark ponderosa pine would be removed under the action alternatives, removing these acres from maturing into later-seral ponderosa pine. This project would add incrementally to ongoing and reasonably foreseeable actions occurring from the Cascade Lakes Scenic Byway Welcome Station (removing 5

acres of black bark ponderosa pine habitat). This addition is very minimal, as this project (even combined with the Welcome Station) would be less than 0.1% additive reduction of habitat within the Overturf Butte – Deschutes River Subwatershed. The future West Bend Project, which also occurs within the subwatershed, would be thinning ponderosa pine stands (>6,000 acres), but in the process would be promoting large trees for future habitat.

For the chipping sparrow, the 1-3 acre loss of shrub habitat is additive to the 5 acre shrub loss from the Welcome Station and the loss from the West Bend Project (>1,500 acres). This addition is also very minimal, and would be less than 0.1% additive reduction of habitat within the Overturf Butte – Deschutes River Subwatershed.

Consistency: This project would add to conservation issues for the pygmy nuthatch by fragmenting habitat and would not meet conservation strategies in the Plan by removing green trees greater than 17” dbh. However, this project is small in comparison to the context of the subwatershed (19,305 acres). The biological objectives addressed above would still be met on a subwatershed level. This project may also not be consistent with the Conservation Strategy for Landbirds if project activities occur during the nesting period for the chipping sparrow (April 15 to July 15).

Conclusion: The PTH Project would remove 1-3 acres of foraging habitat and future nesting habitat for the pygmy nuthatch, plus would remove 1-3 acres of chipping sparrow habitat (less than 0.1% of the total available habitat within the Overturf Butte – Deschutes river Subwatershed). This loss of habitat is minimal. The project could also impact nesting chipping sparrows if the project occurs during the nesting season. The mitigation measure could reduce these potential impacts. Both species are considered “apparently secure” by Natureserve (2010), so although the project may impact habitat and individuals, they are not expected to contribute to a downward trend in populations.

BIRDS OF CONSERVATION CONCERN

The Birds of Conservation Concern (BCC, USDI FWS 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 prevent or remove the need for additional ESA bird listings by implementing proactive management and conservations actions. Bird Conservation Regions (BCRs) were developed based on similar geographic parameters. BCR 9 (Great Basin) encompasses the District. The white-headed woodpecker is a BCC species that has potential habitat within the project area, and this species was previously analyzed within the *Regional Forester Sensitive Species* section in the BE. Appendix 3 lists BCC species occurring or potentially occurring on the Forest.

HIGH PRIORITY SHOREBIRDS

The U.S. Shorebird Conservation Plan (USDI FWS 2004) identifies the conservation status of U.S. and Canadian shorebird populations. The proposed project would not impact any of these species due to a lack of habitat.

SOILS

INTRODUCTION

Interpretations and descriptions contained in this specialist report rely heavily on local information derived from the Deschutes National Forest's (DNF) Soil Resource Inventory (SRI, USDA 1976) and corporate digital spatial data in the Forest Service's Geographic Information System (GIS). These information sources were used along with topographic maps, aerial photographs, site reports, and field-based reconnaissance to characterize local conditions and support analysis used to predict environmental consequences of the alternatives. Actions addressed here include those associated with the reconstruction, use, and maintenance of the PTH facilities and connected actions.

The discussion of soil effects for this project will be focused on the proposed location of the trailhead facilities. Both a quantitative and 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 site. The analysis also considered the effectiveness and probable success of Best Management Practices (BMPs) to limit and contain ground disturbance and control surface erosion during reconstruction and related activities.

AFFECTED ENVIRONMENT

The PTH site is a little over an acre in size and is located next to the forest boundary just west of Bend on the Bend-Fort Rock Ranger District (see Chapter 1 of the Environmental Assessment for the project's location). The climate of the area is generally characterized by hot dry summers and cold dry winters. Average annual precipitation is about 13 inches. In winter average snow accumulations of about 6 inches periodically develop in most years, and on average there are about a dozen seasonal thunderstorms in the spring and summer.

The trailhead is situated just south of Skyliner Road near the edge, but on top of a broad gently sloping upland ridge that trends downward about 3 percent in a north-easterly aspect. Just to the south of the site the gentle ridge angles down a short distance to a broad draw at a slope of about 10-15 percent. There are no streams or water bodies adjacent to, or near the trailhead site, or any that drain to or from it.

Soils at the site consist primarily of pumiceous loamy sands over gravelly-sandy pumice. They are comparatively young soils that are not well developed and have about four inches of topsoil. The drainage is good and the infiltration capacity of the soil is high, which coupled with gentle terrain equates to low soil erosion potential. These are not considered to be sensitive soils, and they are capable of supporting fully stocked to dense stands of dry Ponderosa pine (*Pinus ponderosa*).

Because of the lack of development and thin A horizons the soils at the trailhead are considered to exhibit low to moderate site productivity. They are moderately resilient in that they are not overly susceptible to compaction or other forms of detrimental disturbance such as displacement, but can be somewhat slow to recover when organic and topsoil horizons are removed, which hinders their ability to retain moisture and store and cycle nutrients.

Land use at the trailhead has changed. Early in the 20th Century the focus was the harvest of Ponderosa pine to support the local mill industry. Railroads were their primary infrastructure for product transport. Afterward many segments of those rail lines became primary haul routes when roads and trucks became the mode of transportation. In the draw immediately to the south of the site there is an old quarry where gravel used to be mined. Roads were needed to access it. The trailhead is located at a crossroads where these activities once occurred. Now the area has been converted to a recreational site, and the road and railway features that once crossed it have become the access routes and parking areas that are heavily used today at the trailhead. The site has undergone a lot of past disturbance.

The parking area of the trailhead has been converted to a semi-permanent non forested condition, mostly due to several roads that bisected it. It is heavily compacted, barren of effective ground cover, and

surfaced with crushed cinders and aggregate. Currently it's a trailhead where the tradeoff from productive forest land to a recreation objective is acknowledged.

FOREST WIDE STANDARDS AND GUIDELINES

The Deschutes National Forest's Land and Resource Management Plan (LRMP, USDA 1990) provides direction for managing natural resources and land uses on the forest. It defines standards and guidelines for maintaining or enhancing long-term soil productivity, minimizing the extent of detrimental soil impacts, limiting mechanical treatments on sensitive soil types, minimizing erosion and mass wasting, and measures for rehabilitation of detrimental soil conditions.

The primary objective of this direction is to ensure that management activities are planned and conducted so that on-site loss of soil productivity is minimized on lands which are not officially dedicated to permanent facilities. Soil quality standards and guidelines do not apply however to intensively developed sites, such as mining sites, recreation facilities, and administrative sites. These are considered to be accepted trade-offs where soils are dedicated to a land use that may convert or maintain them in a non-forest condition.

ENVIRONMENTAL CONSEQUENCES

The magnitude and duration of potential effects to the physical and biological parameters of soil productivity depend on the intensity of site disturbance, the timing and location of activities, and the inherent properties of the volcanic ash-influenced soils within activity areas affected by the proposed actions. Direct effects such as soil displacement and compaction from equipment operations occur at essentially the same time and place as the actions that cause soil disturbance. Indirect effects occur sometime after or some distance away from the initial disturbance, such as increased surface erosion as a result of compaction or loss of vegetative cover. Cumulative effects include all past, present, and reasonably foreseeable actions that cause soil disturbance within the same activity areas proposed with this project. The environmental effects are presented and tracked by the issue measures used to evaluate the estimated impacts on soil productivity.

EFFECTS COMMON TO ALL ALTERNATIVES

Direct and Indirect Effects: Direct impacts to soil resources will be in the form of hardened and compacted surfaces used primarily for vehicle access, group staging, parking, and bike riding. The trailhead's parking facilities and hardened surfaces under any of the alternatives will remain in a semi-permanent non forested condition for the life of the site. Soils will be dedicated for the use of recreation facilities at the trailhead and not forest production.

The potential for sedimentation to indirectly affect a water body as a result of either the maintenance or creation of hardened and compacted surfaces is very low or negligible under any of the alternatives. Drainage from hardened surfaces will be controlled using design features that prevent the concentration of runoff and erosion. Intercepted runoff from snow melt or occasional downpours will be dissipated using drainage structures and site features designed specifically to distribute it for infiltration on-site. Soils at the site have a high infiltration capacity and are very capable of absorbing dissipated runoff. Furthermore there is no water body or drainage network that is directly connected to, or within a deliverable proximity to the site.

ALTERNATIVE 1 (NO ACTION)

Direct and Indirect Effects: Management, use, and maintenance of the trailhead site would continue as it currently is under the No Action alternative. Direct impacts to soil resources would not increase and the extent of hardened and compacted surfaces currently dedicated to the recreational facility would remain static in the same location for the foreseeable life of the trailhead.

ALTERNATIVE 2 (PROPOSED ACTION)

Direct and Indirect Effects: The Proposed Action would shift the location of the trailhead site and its facilities and expand its size to about 1.8 acres (76.6 M ft²). The disturbance footprint would shift to the immediate north into a recently thinned stand of middle-aged Ponderosa pine. A portion of the new lot would overlap a portion of the existing lot so that some of the compacted and hardened surfaces would be reused. The north leg of the existing parking loop would become the south leg of the new parking loop, and the south leg of the existing parking loop would become a staging/picnic area.

Shifting the location of the trailhead's hardened and compacted surfaces would directly impact about 1.8 new acres, converting them from productive forest soils to a semi-permanent non-forest condition. The extent of hardened and compacted soil surfaces dedicated to recreational use at the trailhead would be greater than the existing footprint by about 0.8 acres.

ALTERNATIVE 3 AND ALTERNATIVE 4

Alternatives 3 (the preferred) and 4 both propose to partially shift the location of the trailhead site and its facilities, expanding its size to about 1.4 acres (62.4 M ft²). Like Alternative 2 the disturbance footprint would shift to the immediate north into a recently thinned stand of middle-aged Ponderosa pine although not as far. Nearly half of the new disturbance footprint would utilize the hardened and compacted surfaces from the existing site.

Shifting the location of the trailhead's hardened and compacted surfaces would directly impact about 0.4 new acres, converting them from productive forest soils to a semi-permanent non-forest condition, dedicating those soil surfaces to recreational use at the trailhead.

Although Alternative 3 proposes to use paved surfaces for the parking lot while Alternative 4 proposes to use an aggregate surface, both are considered to be hardened or compacted surfaces that will remain in a non-forest status for the life of the trailhead's use. The difference between the two surface types relative to soils would be the level of effort needed to rehabilitate them if the trailhead becomes defunct in the future.

CONNECTED ACTIONS

Road reconstruction of the primary access route (Road 4604) is a connected action to be considered with each of the proposed 'action' alternatives. The primary objective of which is to discourage parking along side of it. The road would be made narrower and its prism would include ditch lines down either side that would serve to deter parking and provide drainage and retention for runoff and stormwater. There would be no additional area dedicated as a hardened or compacted surface for the trailhead as the existing disturbance footprint of the access road would be re-used.

Under Alternative 2, subsoiling (de-compaction of hardened and compacted surfaces) would be conducted to convert the southern leg of the existing parking loop into a staging and picnic area. This would serve to partially revert existing hardened and compacted surfaces to a more pre-disturbance condition, although one that would still be dedicated to a recreational use. Soil productivity would be partially restored so that the staging and picnic area could be revegetated.

CUMULATIVE EFFECTS

PTH is located within the 31,374 acre Overturf Butte-Deschutes River subwatershed (Hydrologic Unit Code: 170703010502), which is comprised of about 60 percent federal land and 40 percent private ownership. Private ownership consists primarily of the city of Bend and its west side neighborhoods and considered to be an urban environment. The federal ownership is the Deschutes National Forest and mostly forested. It consists chiefly of Ponderosa pine, lodgepole pine, and mixed conifer plant associations that have been intensively managed since the early part of the 1900s, and where thinning and fuels reduction activities continue to occur.

Timber harvest in the subwatershed has almost exclusively always been conducted using ground-based machinery, heavy equipment that can cause excessive ground disturbance. There exist within the subwatershed detrimental soil conditions that have resulted from past logging practices, such as old railroad grades, roads, landings, and skid trails. Except for several small areas within the mixed conifer plant association zone in the upper portion of the subwatershed, nearly every acre has been subject to some kind of treatment. A majority of the Ponderosa pine stands have been treated more than once.

Wild and prescribed fires have occurred within the subwatershed such as the Awbrey Hall fire of 1990 and are in various stages of re-growth. Recreation use is heavy due to proximity to town, and there are miles of trails committed to mountain bike use. There have also been some past mining and aggregate extraction activities as evidenced by six pits within the subwatershed. Restoration such as subsoiling has been completed on many of the landings that were recently created for the Katalo timber sale as well as some of the other older sale areas.

Vegetation management, prescribed fire, and intense recreation will continue to occur into the foreseeable future on federal lands, which will necessitate some ground disturbance. BMPs such as re-use of old landings and skid trails will continue to be implemented to minimize the cumulative effect of ground disturbing activities. Restoration activities will also be pursued, such as subsoiling of detrimental compaction at select sites, tree planting in under-stocked areas, and invasive weed eradication. Most of these activities will happen cyclically from decade to decade as forest vegetation grow and develop.

Improvement of trailhead facilities will be an upgrade to accommodate the current level of use. The project is not intended to provide for an increase or expanded level of use. Extent of the mountain bike trail network is not proposed to increase but remain as is.

Soils dedicated to recreation development remove small parcels of land from production and preclude other uses for as long as they remain in use. The expanded area proposed for development of the trailhead site for facilities is very small within the subwatershed, and only amounts to an additional 0.4 to 1.8 acres being converted and maintained for a non-forest use, a relatively negligible amount (<0.001%) of land within the Forest Service portion of the subwatershed.

UNAVOIDABLE ADVERSE IMPACTS

Expanded trailhead facilities and increased ground disturbance would result in an estimated 0.8 to 1.8 acres being converted from a non-forest use to the dedicated trailhead facilities. During the life of use, the hardened and compacted surfaces around the trailhead site will remain.

SHORT-TERM EFFECTS VERSUS LONG-TERM PRODUCTIVITY

Short-term effects will result during construction where islands and other areas around the trailhead are to remain vegetated. While these will not become hardened and excessively compacted soils, they will experience near year-around trampling by users. It's the hardened and compacted surfaces that are created or persist at the trailhead however that will remain in that condition, resulting in a loss of tree growth and forest productivity for the life of the trailhead's facilities.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The hardened and compacted surfaces will remain in a non-forest condition, equating to an estimated 1.1 to 1.8 acres.

FISH AND HYDROLOGY

SUMMARY OF FINDINGS FOR PROPOSED, THREATENED, ENDANGERED, AND SENSITIVE FISH SPECIES

Table 14 displays the species considered in the biological evaluation (BE) of this project. There are no threatened or endangered aquatic species or habitat present within the project area.

Table 14: Threatened, Endangered, and Sensitive (TES) Fish Species Considered in Analysis

Species	Scientific Name	Status ¹	Occurrence	Effects Determination ²
Columbia Basin Redband Trout	<i>Oncorhynchus mykiss gairdneri</i>	S	None	Alternative 1 – NI Alternative 2 – NI

1. S = Sensitive species from Regional Forester's list

2. NI = No Impact

Alternative 1 (No Action): No Impact

Alternative 2 (Proposed Action): No Impact

EXISTING CONDITION

The proposed project area is approximately 2.5 miles northwest of the Deschutes River and approximately one mile southeast of Tumalo Creek. The project area is outside the Tumalo Creek 10th field watershed and does not influence Tumalo Creek. The project area is within the 10th field North Unit Diversion Dam – Deschutes River watershed.

The project area lies within lands to be managed in accordance with the Inland Native Fish Strategy (INFISH), which amended the Deschutes National Forest Land and Resource Management Plan (LRMP) in 1995. Management direction within INFISH requires Riparian Habitat Conservation Areas (RHCAs) to be delineated for watersheds. RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. The project area is outside of any RHCAs. There are no perennial or intermittent streams, wetlands or riparian areas within the project area.

MANAGEMENT DIRECTION

Applicable Rorest Plan Standard and Guideline: RP-8: Evaluate the cumulative effects of proposed projects on water quality, runoff, stream channel conditions, and fish habitat and adopt measures to avoid adverse effects to these resources.

ENVIRONMENTAL CONSEQUENCES:

Alternative 1 (No Action)

Direct and/or Indirect Effects: No activity would take place. There would be no change in the direct, indirect, or cumulative effects to water or fisheries resources by taking no action. This alternative would have **No Impact** to redband trout.

Alternative 2 (Proposed Action), Alternatives 3, and Alternative 4

Direct, Indirect and Cumulative Effects: The nearest water resource or riparian area within the watershed is approximately 2.5 miles from the proposed project site. There would be no direct or indirect effects to water resources, fisheries, or riparian areas because of the distance from ground disturbance and the relatively flat topography to water. The small size of the project (less than 2 acres impacted, 0.001% of the watershed) would have no measurable effect to evapotranspiration of water within the watershed; there would be no cumulative effects to river flows in the Deschutes River. There would be no effects to Essential Fish Habitat (EFH), **No Impact** to redband trout and **No Effect** to threatened, endangered, proposed, or candidate fish species.

The Deschutes River is listed as a water quality impaired river (Oregon Department of Environmental Quality 303(d) list). This alternative would have no effects to the parameters for which it is listed. There would be no effects to any other 303(d) listed water body. There would be no effects to the INFISH Riparian Management Objectives, which for a forested system are pool frequency, water temperature, large woody debris, and stream width/depth ratio.

This alternative meets INFISH standards and guidelines as it maintains the Riparian Management Objectives. There would be no effects to Executive Order 11988 (Floodplains) and Executive Order 11990 (Wetlands). The effects analysis was done at the 10th field watershed scale.

BOTANY: THREATENED, ENDANGERED, AND SENSITIVE SPECIES

SUMMARY OF FINDINGS

The proposed activities will have no impact on Proposed, Endangered, Threatened, or Sensitive (TES) plant species.

EXISTING CONDITION

The area is dominated by a ponderosa pine/bitterbrush/Idaho fescue plant association. The project supports soils that are sandy volcanic ash on buried soils formed from glacial outwash. The average annual precipitation measures from 10-15”.

This site has been visited many times by Forest Service botanists during the past 5-10 years, including visits during 2011, mainly associated with a weed site that is present. No TES plants have ever been located. There is no high-probability habitat present. The species that has the greatest potential to occur is the green-tinged paintbrush (*Castilleja chlorotica*), because there are known sites about 3 miles distant.

ENVIRONMENTAL CONSEQUENCES

Alternative 1 (No Action), Alternative 2 (Proposed Action), and Alternatives 3 and 4

Direct, Indirect, and Cumulative Effects: There are no anticipated effects to TES plants at the project site, because none have been located or are suspected there.

LRMP CONSISTENCY

The PTH project is consistent with the Deschutes LRMP (1990) in regard to 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 PTH project.

BOTANY: INVASIVE PLANTS / NOXIOUS WEEDS

SUMMARY

The Phil's Trailhead Project has a HIGH risk of introducing noxious weeds into the project area.

INTRODUCTION

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 will be undertaken during project implementation (FSM 2081.03).

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 Appendix C.

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.

AFFECTED ENVIRONMENT

The area is dominated by a ponderosa pine/bitterbrush/Idaho fescue plant association. The project supports soils that are sandy volcanic ash on buried soils formed from glacial outwash. The elevation lies at 3880'. The average annual precipitation measures between 10 and 15 inches.

The project site has one known spotted knapweed population at the current parking area; there are also populations of knapweed, toadflax, and medusahead in the old pumice pits immediately to the south of the project footprint.

At the project site, the weeds have been located primarily at the edges of the road, as well as within the existing vegetated median within the parking area. There are no known weeds within the undisturbed portions of the project that are proposed to be converted to parking. Dalmatian toadflax also occurs in the close vicinity. The weed populations are listed in the Natural Resources Information System (NRIS) database (Refer to the Botany report for specific site numbers).

RISK RANKING

Factors that are considered in determining the level of risk for the introduction or spread of noxious weeds:

X HIGH

Combination of the following three factors:

1. Known weeds in/adjacent to project area.
2. Any of vectors* #1-8 in project area.
3. Project operation in/adjacent to weed population.

MODERATE

1. Any of vectors #1-5 present in project area.

LOW

1. Any of vectors #6-8 present in project area.

OR

2. Known weeds in/adjacent to project area without vector presence.

***Vectors** (Bold: project proposal or present use) ranked in order of weed introduction risk:

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

A risk ranking of HIGH is appropriate for this project because heavy equipment will be used at the site (risk of importing weed seeds or parts), there is a known weed site present (spotted knapweed), and gravel will be imported (Refer to Botany Mitigations, Chapter 2).

Bringing in clean equipment and fill material from a clean source will diminish, but not eliminate, the risk of weed introductions. Hand-pulling the weeds prior to project implementation will prevent seeds from being added to the existing seedbank. This will not prevent existing seeds from being spread during project implementation. Posting educational literature about invasive plants at the trailhead will help raise awareness but will likely not prevent the weed populations from entering and being spread.

ENVIRONMENTAL CONSEQUENCES

Alternative 1 (No Action)

Direct and Indirect Effects: Because no actions would occur, there would be no identifiable direct or indirect effects from choosing this alternative.

Alternative 2 (Proposed Action), Alternative 3, and Alternative 4

Direct and Indirect Effects: Past hand-pulling of weeds has occurred in and adjacent to the project area. Continuation of monitoring and pulling at the sites will occur, including prior to and during project implementation. Past weed treatment activities have been effective in reducing the weed populations, which are now present in manageable numbers. Any new populations would be expected to also be manageable with control efforts.

During project implementation, weed parts or seeds may be brought into the project on the equipment used to work on the project, and/or the existing seedbank may be spread by the disturbance created by project work. Weeds, most likely spotted knapweed, can be expected to appear at the edges of the new parking area, in the new ditchline work at the edge of FSR 4604, and near the new toilet and kiosk because of the existing seedbank.

Cumulative Effects: The scale of analysis for cumulative effects is the immediate project area and the western city limits of Bend. This scale provides a landscape of reasonable size in which to determine effects upon this small project.

Vehicles have been shown to be a major vector in the spread of invasive plants and there is a high volume of vehicles that currently access the area. The site is in very close proximity to the city of Bend, where the weed populations are growing unchecked in many areas, including vacant lots and roadsides leading to the 4604 road turnoff from Skyliner Road. Monitoring and treatment, beginning immediately after the project is completed, and continuing, will be key to whether the weeds become established.

CONSISTENCY WITH THE LRMP

There are no Standards and Guidelines included in the LRMP addressing the weed issue. A Record of Decision for Preventing and Managing Invasive Plants (2005) was signed and was thereby incorporated into the LRMP. See discussion below under “Prevention Strategy”.

The PTH project meets the Forest Service Manual direction stating that for any project with a moderate to high risk of weed invasion, control measures must be in place (Refer to Botany Resource Protection Measures, Chapter 2).

PREVENTION STRATEGY

Three standards from the Record of Decision (2005) specifically address prevention of weed introductions (#’s 1, 2, and 7; Appendix B) into projects of the type that the PTH project represents. These standards obligate the Forest Service to incorporate weed prevention into its planning documents and implementation phase. This includes the inspection of fill material (Refer to Botany Resource Protection Measures, Chapter 2).

Noxious And Exotic Weeds Of Concern For The Project Area



Spotted knapweed, *Centaurea biebersteinii*, is a very invasive plant which grows along most major highways in Central Oregon. There are sites located intermittently along the Cascade Lakes Highway. It is a perennial forb in the sunflower family that lives for 3-5 years. It is very competitive on disturbed dry to mesic sites because it is able to germinate in a wide range of conditions and it grows early in spring before many native plants. Seeds may be dispersed on animals and humans, and by being caught up in vehicle undercarriages and tire treads. Distribution over large areas is linked to transportation systems.

Dalmation toadflax (*Linaria dalmatica*) looks like bright yellow snapdragons with leathery leaves clasping the stem and grows easily in dry

rangeland sites, gravel pits, and along roadsides. It is a perennial plant and stands 2-4 feet tall. One plant can produce up to 500,000 seeds per year, and they remain viable in the soil for up to 10 years. Pulling this plant will usually result in more plants sprouting from its root system, unless all root parts are removed from the soil, which is often difficult to do.



CULTURAL RESOURCES

It has been determined that this project complies with Section 106 of the National Historic Preservation Act, under the terms of the 2004 Programmatic Agreement (PA) for the State of Oregon. This project meets the criteria in the PA for a **No Historic Properties Affected** determination because there are no heritage sites located within project boundaries.

INTRODUCTION

Management direction for heritage resources is found in the Deschutes National Forest Resource Management Plan, in Forest Service Manual section 2360, in Federal Regulations 36CFR64 and 36CFR800 (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 addition, the 2004 Programmatic Agreement among the United States Forest Service R6, Advisory Council on Historic Preservation, and the State Historic Preservation Office provides a regulatory framework for project review.

The goal for Cultural Resources is “To provide for the protection and preservation of prehistoric and historic sites, buildings, objects, and antiquities of local, Regional, or National significance” (LRMP, Cultural Resources, page 4-34).

The desired condition is protecting cultural resources to the reasonable extent possible.

ANALYSIS METHODS

A previous archaeological inventory, utilizing 30 meter spacing transects, was recently conducted throughout the entire proposed project area. The inventory was associated with the West Bend vegetation management project. No cultural resources were discovered as a result of the inventory.

EXISTING CONDITION

There are no cultural properties within the project activity areas as determined by surveys.

ENVIRONMENTAL CONSEQUENCES

Alternative 1 (No Action) and Alternative 2 (Proposed Action)

Direct, Indirect and Cumulative Effects: Because there are no cultural properties within the project activity area, there would be no effect to cultural resources.

OTHER DISCLOSURES

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time, such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line right of way or road.

The action alternatives would not be expected to create any impacts that would cause irreversible damage to soil productivity. There is low risk for the proposed actions to cause soil mass failures (landslides) due to the inherent stability of dominant landtypes and the lack of seasonally wet soils on steep slopes.

Soil quality standards and guidelines do not apply to intensively developed sites, such as recreation facilities and administrative sites (FSM 2520, R-6 Supplement No. 2500-98-1) because they could not be constructed to result in limited disturbance below specific thresholds. Soils dedicated to the proposed parking area and the other management facilities are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productive capacity.

PRIME FARMLAND, RANGELAND, AND FORESTLAND

All Alternatives are consistent with the Secretary of Agriculture memorandum 1827 for the management of prime farmland. The Project area does not contain any prime farm land or rangelands. Prime Forest Land is not applicable to lands within the National Forest System.

ENERGY REQUIREMENTS OF THE ALTERNATIVES

Under the action Alternatives, additional consumption of fossil fuels and human labor would be expended for the use of vehicles transporting Forest workers, chainsaws, heavy equipment and trucks. Fossil fuel would not be a retrievable resource. There are no irregular energy requirements involved in implementing any of the action alternatives.

CIVIL RIGHTS AND ENVIRONMENTAL JUSTICE

Civil Rights legislation and Executive Order 12898 direct an analysis of the proposed alternatives as they relate to specific subsets of the American population. The subsets of the general population include ethnic minorities, people with disabilities, and low-income groups.

There would be no effect to civil rights, including those of minorities and women. Activities associated with the action alternatives would possibly be governed by Forest Service permits, which are awarded to qualified permittees regardless of race, color, sex, religion, or other such factor. Forest Service permits contain nondiscrimination requirements. The identified activities would not affect employment, would not provide consumer goods, and would not affect the civil rights, privileges, or status quo of consumers, minority groups, and women.

With implementation of any alternative, there would be no disproportionately high and adverse human health or environmental effects on minority or low-income populations. Nearby communities would mainly be affected by economic impacts as related to visitors that may use the services provided within those communities.

The effects of the proposal on the social context of the protected groups are within those described in the Deschutes National Forest LRMP. The benefits and risks associated with implementation of the

alternatives are provided to all members of the public. The action alternatives provide opportunities for all groups, regardless of racial and economic composition.

AMERICANS WITH DISABILITIES ACT OF 1990, AS AMENDED

All alternatives meet the [*Revised regulations for Titles II and III*](#) of the Americans with Disabilities Act of 1990 (ADA) that were published in the Federal Register on September 15, 2010, providing scoping and technical requirements for new construction and alterations resulting from the adoption of revised 2010 Standards in the final rules for Title II (28 CFR part 35) and Title III (28 CFR part 36).

ADA parking spaces have been designed into each action alternative. ADA access to both the informational kiosk and restroom facility are incorporated into the project design. Refer to EA Chapter 2, Alternatives for descriptions of each alternative.

COMPATIBILITY WITH STATE AND LOCAL LAWS

Implementation of all alternatives would be consistent with State and local laws, land use, and environmental policies. Action alternatives follow State of Oregon requirements in accordance with the Clean Water Act for protection of waters. There are no lakes or perennial streams within the project area. The nearest body of water is East Lake within the Newberry National Volcanic Monument, approximately 22 miles to the southeast of the project area.

EXECUTIVE ORDERS 11988 (FLOODPLAIN MANAGEMENT) AND 11990 (PROTECTION OF WETLANDS)

Executive Orders 11988 and 11990 direct Federal agencies to avoid, to the extent possible, both short-term and long-term adverse impacts associated with the modifications of floodplains and wetlands. All alternatives have no specific actions that adversely affect wetlands and floodplains. Proposed activities are compliant with the orders and USDA Departmental Regulation 9500-3. There are no floodplains or wetlands within the project area. Refer to discussions related to this topic in the soils and fisheries/hydrology resource sections in this EA, Chapter 3 for more information.

INVENTORIED ROADLESS AREAS AND WILDERNESS

The project area does not contain any Inventoried Roadless Areas or Wilderness. Activities would not directly or indirectly affect any of the resources or values of those areas.

The nearest IRA is the Bend Watershed, approximately 7 miles to the west of the project area. The nearest Wilderness Area is the Three Sisters Wilderness, approximately 8 miles to the west-northwest. There would be no impacts from any alternative to Wilderness.

CHAPTER 4: COORDINATION

INTERDISCIPLINARY TEAM

Scott E. McBride	Team Leader, Recreation	Steve Bigby	Road Access
Shelley Borchert	Wildlife Biologist	Penni Borghi	Archaeologist
Todd Reinwald	Soils Scientist	Maureen Durrant	GIS
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Charmane Powers	Botanist	David Frantz	Writer/Editor

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APPENDIX A: RECREATION

A-1: RECREATION OPPORTUNITY SPECTRUM (ROS) PRIMER AND FIELD GUIDE (*EXCERPTS*)

The following ROS matrices establish limits of acceptable change for each indicator in a given setting. The "norm" in the matrices describes normal conditions found in the setting. "Fully compatible" describes conditions that meet or exceed the norm. "Inconsistent" (INCON) represents conditions that are not generally compatible with the norm, but may be necessary under some circumstances to meet management objectives. "Unacceptable" defines conditions that, under any circumstance, do not permit the creation or maintenance of a given setting. Where unacceptable conditions are unavoidable, a change in setting will often result, which must be handled appropriately in the Forest planning NEPA process.

The end product of recreation management is the experience people have. The key to providing most experience opportunities is the setting and how it is managed. Land managers can facilitate (or hamper) many desired experiences by the way they manage such "setting indicators" as access, remoteness, naturalness, facilities, social encounters, visitor impacts, and the visitors themselves.

NATURALNESS

Parking Surface Size and Vegetation Removal/Restoration

Refers to the degree of naturalness of the setting; it affects psychological outcomes associated with enjoying nature. This indicator is portrayed by using a compatible visual quality objective (VQO) for each setting, as shown in the matrix. The USDA landscape Management Handbook series can provide further guidance.

Table 15: ROS Naturalness

	Preservation	Retention	Partial Retention	Modification	Maximum Modification
Primitive	Norm	Inconsistent	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Semi-Primitive Motorized	Compatible	Compatible	Norm (1)	Inconsistent.	Unacceptable
Roaded Natural	Compatible	Norm	Norm	Norm (2)	Inconsistent (3)
Rural	Compatible	Compatible	Norm	Norm (2)	Inconsistent (3)
Urban	Compatible	Compatible	Compatible	Compatible	NA

VISITOR MANAGEMENT

Traffic Control, Directional Signage, Information/Interpretation Kiosk

This includes the degree to which visitors are regulated and controlled as well as the level of information and services provided for visitor enjoyment. In some opportunity settings, controls are expected and appropriate. For instance, people sometimes seek developed settings for security and safety. Elsewhere, on-site controls may detract from desired experiences, such as independence, self-reliance, and risk-taking.

The type and level of information, and where it is provided to the visitor, may facilitate or hinder a desired experience. On-site interpretive and directional signing may adversely affect the visitor where experiences such as self-discovery, challenge, and risk are important. In other situations, on-site information may be essential to achieve desired experiences. Generally, on-site information is more appropriate at the developed end of the spectrum, while off-site sources are preferable at the primitive end.

Table 16: ROS Visitor Management

	Low regimentation. No on-site controls or information facilities.	Subtle on-site regimentation and controls. Very limited information facilities.	On-site regimentation and controls are noticeable but harmonize with the natural environment. Simple information facilities.	Regimentation and controls obvious and numerous but harmonize. More complex information facilities.	Regimentation and controls obvious and numerous. Sophisticated information exhibits.
Primitive	Norm	Inconsistent	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Semi-Primitive Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Roaded Natural	Compatible	Compatible	Norm	Inconsistent	Unacceptable
Rural	Compatible	Compatible	Compatible	Norm	Inconsistent
Urban	Compatible	Compatible	Compatible	Compatible	Norm

ACCESS

Forest Service Road 4604

Access includes type and mode of travel. Highly developed access generally reduces the opportunities for solitude, risk, and challenge. However, it can enhance opportunities for socializing, and feelings of safety and comfort.

Table 17: ROS Access

	Cross-Country Travel	Non-Motorized Trails	Motorized Trails and Primitive Roads (Traffic Ser D)	Controlled (2) TSL B&C Rds.	Full Access
Primitive	Norm	Norm	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Semi-Primitive Motorized	Compatible	Compatible	Norm	Inconsistent	Unacceptable
Roaded Natural	Compatible	Compatible	Compatible	Norm (1)	Norm
Rural	Compatible	Compatible	Compatible	Compatible	Norm
Urban	Compatible	Compatible	Compatible	Compatible	Norm

(1) Roaded Natural may be prescribed in certain circumstances with roads partially or fully closed.

(2) TSL = Traffic Service Level. In TSL-D primitive roads should provide challenge to 4-wheel drive and high clearance vehicles but discourage use by highway vehicles. By definition, they are "Single-use controlled traffic roads. The surface is rough. Stable during dry weather. Rutting is controlled for protection of water only".

VISITOR IMPACTS

Air Quality/Dust; Defined Hardened Parking to Re-Direct Expanding Parking Footprints

This factor refers to the impacts of visitor use on the environment. The relevant question for managers is not "how can impacts be prevented", but rather, "how much change will be allowed and which actions are appropriate for control". The matrix below suggests appropriate actions for controlling impacts on soil and vegetation. Impacts on wildlife habitat, and on air, water, and sound quality affect the visitor's experience as well. Visitor impacts can alter wildlife habitat or displace wildlife species, including indicator species, which provide an important means of monitoring recreation related impacts on fish and other wildlife. Maintaining air, water, and noise quality standards in the face of visitor impacts is important in all ROS classes.

Table 18: ROS Visitor Impacts

	Unnoticeable impacts. No site hardening.	Subordinate impacts. No site hardening.	Subordinate impacts. Limited site hardening.	Subtle site hardening.	Site hardening may be dominant but in harmony.
Primitive	Norm	Incon.	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Compatible	Norm	Incon.	Unacceptable	Unacceptable
Semi-Primitive Motorized	Compatible	Compatible	Norm	Incon.	Unacceptable
Roaded Natural	Compatible	Compatible	Compatible	Norm	Incon.
Rural	Compatible	Compatible	Compatible	Compatible	Norm
Urban	Compatible	Compatible	Compatible	Compatible	Compatible

SOCIAL ENCOUNTERS

Forest Service Road 4604 at Phil's Trailhead

This factor refers to the number and type of other recreationists met along travelways, or camped within sight or sound of others. This setting indicator measures the extent to which an area provides experiences such as solitude, or the opportunity for social interaction. Increasing the number of visitors to an area changes the kind of recreation experience offered, attracting new users and causing others to leave

Table 19: ROS Social Encounters

	* 6 parties or less met per day. Less than 3 visible parties campsite.	6-15 parties met per day. 6 or less parties seen at campsite.	Moderate to high contact on roads. Moderate to low on trails and developed sites.	Moderate to high contact in developed sites on roads and trails.	Large numbers of users on site and in nearby areas. High number of social encounters.
Primitive	Norm	Inconsistent	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Semi-Primitive Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Roaded Natural	Compatible	Compatible	Norm	Inconsistent	Unacceptable
Rural	Compatible	Compatible	Compatible	Norm	Inconsistent
Urban	Compatible	Compatible	Compatible	Compatible	Norm

FACILITIES

Parking Surface, Restroom, Kiosk, Gathering Amenities (Picnic/Bench/Boulders)

This indicator refers to the level of site development. A lack of facilities and site modifications can enhance feelings of self-reliance and independence, and can provide experiences with a high degree of naturalness. Highly developed facilities can add feelings of comfort and convenience, and increase opportunities for socializing.

Table 20: ROS Facilities

	No facilities for user comfort. Rustic and rudimentary ones for site protection only. Use undimensioned native materials only.	Rustic and rudimentary facilities primarily for site protection. No evidence of synthetic materials. Use undimensioned native materials.	Rustic facilities providing some comfort for the user as well as site protection. Use native materials but with more refinement in design. Synthetic materials should not be evident.	Some facilities designed primarily for user comfort and convenience. Some synthetic but harmonious materials may be incorporated. Design may be more complex and refined.	Facilities mostly designed for user comfort and convenience. Synthetic materials are commonly used. Facility design may be highly complex and refined but in harmony or complimentary to the site.
Primitive	Norm	Inconsistent	Unacceptable	Unacceptable	Unacceptable
Semi-Primitive Non-Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Semi-Primitive Motorized	Compatible	Norm	Inconsistent	Unacceptable	Unacceptable
Roaded Natural	Compatible	Compatible	Norm	Inconsistent	Unacceptable
Rural	Compatible	Compatible	Compatible	Norm	Inconsistent
Urban	Compatible	Compatible	Compatible	Compatible	Norm

A-2: FOREST SERVICE MANUAL (FSM) AND HANDBOOK (FSH) DIRECTION

ADMINISTRATIVE FACILITIES

ARCHITECTURAL IMAGE, STYLE, AND MATERIALS

FSM 7510:

Ensure that integration of wood into a architectural design is consistent with the setting and architectural style in which the building or facility is to be placed.

Guide to Forest Service Office Design, Identification, and Location:

The guide discusses the basic design schemes and illustrations, provides guidelines for appropriate office locations, and describes the importance of projecting the Forest Service image and style to visitors.

SITE DEVELOPMENT AND BUILDING DESIGN RESPONSIBILITY

FSM 7510:

In general, Regional Foresters, Station Directors, or Area Directors are responsible for approving the site development and building design unless delegated to next level of organization.

FSM 7515:

The Regional Directors of Engineering (NFS) or the Assistant Station Directors for Administration (Research) are responsible for approving design drawings.

RECREATION FACILITIES

OBJECTIVES AND POLICY

FSM 2530.2: Establishes as objectives for the provision of recreation facilities:

1. To maximize opportunities for visitors to know and experience nature while engaging in outdoor recreation.
2. To develop and manage sites consistent with the available natural resources to provide a safe, healthful, aesthetic, nonurban atmosphere.
3. To provide a maximum contrast with urbanization at National Forest sites.

FSM 2530.3 sets policy for the development and administration of sites and facilities, including:

1. Use recreation opportunity spectrum guidelines (FSM 2510) when developing sites.
2. Develop sites and facilities that will provide recreation experiences toward the primitive end of the spectrum. Do not provide urban class facilities (ex. CI).
3. Use the land and resource management planning process (36 CFR 219, FSM 1920, and FSM 2510) to reach decisions to develop recreation sites.
4. Develop sites and facilities to enhance natural resource-based activities normally associated with a natural environment.

SKILLS AND DESIGN STANDARDS

Skills

FSM 7513:

Qualified professionals and/or qualified technicians shall accomplish or direct all planning, design, and construction of Forest Service buildings and related facilities. Qualified professionals include professional architects, landscape architects, or engineers who have the required training, experience, and knowledge of the following: site planning; vehicle and pedestrian circulation; and various applicable building, electrical, mechanical, safety, and related codes normally associated with the design, construction, and operation of structures, buildings, water and wastewater treatment plants, mechanical systems, and similar facilities.

FSH 9509:

Facility designers and managers shall use the criteria, procedures, and practices established within the professional design disciplines.

Design Standards

Guide to Forest Service Office Design, Identification, and Location

FSM 7513.3

FSH 7509.11, Chapter 34

<p>5. Seriously consider the element of cost efficiency when developing and operating sites and facilities.</p> <p>6. Establish priorities for the development and management of sites in the following order:</p> <ol style="list-style-type: none"> Ensure public health and safety. Protect the natural environment of the site. Manage and maintain sites and facilities to enhance users' interaction with the natural resource. Provide new developments that conform to the National Forest recreation role. <p>7. Allow concession operation of National Forest campgrounds and related recreation facilities (FSM 2340).</p> <p>8. Strive to make it possible for persons with disabilities to be included in the mainstream of life when pursuing outdoor recreation opportunities.</p> <p>9. Prepare site designs and environmental assessments for all sites before undertaking construction or major rehabilitation efforts.</p>	<p>and development, the Regional Forester has the responsibility to:</p> <ol style="list-style-type: none"> Review and approve design narratives and site designs. Seek partnerships with other entities to share in the development, cost, and/or labor of providing recreation opportunities and ensure compliance with requirements on authorizing instruments (agreements, memoranda of understanding, and so forth) in FSM 1550 and FSH 1502.11 Identify and update regional priorities for the recreation capital investment program. This responsibility is reserved to the Regional Forester. <p>2330.42b - Forest Supervisor. The Forest Supervisor has the responsibility to:</p> <ol style="list-style-type: none"> Prepare design narratives, site plans, and final drawings. Develop sites and facilities in accordance with established objectives and policies and land and resource management plans. Monitor operation and maintenance actions. <p>2330.42c - District Ranger. The District Ranger has the responsibility to:</p> <ol style="list-style-type: none"> Prepare operation and maintenance plans. This includes fee compliance plans and vegetative management plans. 	<p>2. Operate and maintain recreation sites and facilities in accordance with plans.</p> <p>3. Enforce payment of recreation fees.</p> <p>SITE AND FACILITY PLANNING AND DESIGN</p> <p>FSM 2333. The guidelines in this section apply to all recreation sites on National Forest System lands.</p> <p>2333.03 - Policy.</p> <ol style="list-style-type: none"> Prepare site plans before construction, rehabilitation, or expansion of a site. Site plans must show the specific location and design of facilities and must provide for control of traffic, sanitation, public safety, site protection, grading, landscape planting, and use distribution. Use the recreation opportunity spectrum class and development scale established in management plans in site designs (ex. O1, FSM 2330.03). Accommodate environmental concerns identified in the environmental assessment in site designs. Carefully consider the cost of installing facilities, as well as future operation and maintenance costs. Design facilities, such as roads, barriers, paths, and water and sanitation systems, so that they are as natural, simple, and unobtrusive as possible. Design and build rustic-looking facilities so that they become
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part of the attraction. For example, use hand pumps rather than hydrants, plantings of berry bushes for barriers, and wood posts rather than steel posts.

4. Design and install facilities that are:
 - a. Simple and durable in nature, adequate for the intended function, and devoid of unnecessary frills and personal preference options.
 - b. Cost-efficient both from the standpoint of initial installation and continued operation and maintenance.
 - c. In close harmony with the surrounding environment.
 - d. Safe to use and in conformance with all applicable standards.
 - e. Suitable for both traditional and nontraditional users.
 - f. Devoid of barriers to persons with disabilities to the degree specified in "Specifications for Making Buildings and Facilities Accessible to, and Usable by, the Physically Handicapped," (American National Standards Institute, Inc. ANSI-A17.1-1981, New York.)
 - g. Suited to the desired experience opportunity selected for the site.
 - h. Vandal-resistant.

A-3: ROS ON-SITE DEVELOPMENT GUIDELINES

The following reflects information contained in FSM 2330.3; the Recreation Opportunity Spectrum Color Poster (RG-REC-118-94); and ROS Primer and Field Guide (RG-REC-021-90). The color matrix shows by ROS Setting the kind of "on-site development" that can be considered "normal," "fully compatible," "inconsistent," or "unacceptable."

ROS Setting	On-Site Development				
	No facilities for user comfort; rustic and rudimentary ones for site protection only. Synthetic** materials excluded. Use undimensioned native* materials only. No site modifications for facilities.	Rustic and rudimentary facilities primarily for site protection. Use undimensioned native* materials. Avoid use of synthetic** materials. Little or no site modifications for facilities. Limited and subtle site modification.	Rustic facilities providing some comfort for the user as well as site protection. Contemporary/rustic design usually based on use of native* materials. Synthetic** materials should not be evident. Moderate site modification.	Some facilities designed primarily for user comfort and convenience. Some synthetic** but harmonious materials may be incorporated. Design may be more complex and refined. Moderate to heavy site modifications for facilities.	Facilities mostly designed for user comfort and convenience. Synthetic** materials are commonly used. Facility design may be highly complex and refined but in harmony or complementary to site. Heavy site modifications for facilities.
Primitive (P)	Normal	Inconsistent	Unacceptable	Unacceptable	Unacceptable
Semiprimitive nonmotorized (SPNM)	Fully compatible	Normal	Inconsistent	Unacceptable	Unacceptable
Semiprimitive motorized (SPM)	Fully compatible	Normal	Inconsistent	Unacceptable	Unacceptable
Roaded Natural (RN)	Inconsistent	Fully compatible	Normal	Inconsistent	Unacceptable
Rural (R)	Inconsistent	Inconsistent	Fully compatible	Normal	Inconsistent
Urban (U)	Inconsistent	Inconsistent	Inconsistent	Fully compatible	Normal

* Native refers to materials found naturally in nature. It needn't come from or near the project site.

** Synthetic materials should not be used in primitive settings. Where possible, they should be avoided in semi-primitive settings, but if used, they should not be evident to the user. In roaded natural settings, native materials are usually used, and synthetics, if used, should not be evident to the user.

Legend



"Normal" describes "normal" conditions found in the ROS Setting



"Fully compatible" describes conditions that meet or exceed the norm for the ROS setting



"Inconsistent" describes conditions not generally compatible with the normal setting conditions, but which may be necessary under some circumstances to meet management objectives. The more removed from the "norm" shown in the above matrix, the more questionable the condition would be. For example, a pit toilet acceptable in a SPNM setting would be very questionable in a rural or urban setting. Use of metal or plastic siding or roofing that appears obviously synthetic to a visitor would be inconsistent in a roaded natural setting.



"Unacceptable" describes conditions that, under any circumstance, do not permit the creation or maintenance of an ROS Setting, and which will cause a change in that setting towards one that is more developed. For example, moderate or heavy site modification and development of facilities for user comfort would change a primitive ROS setting into one that is more developed.

The following example describes typical ROS settings as described in the "1986 ROS Book." Acreages and distances described may vary somewhat between regions.

<p>PRIMITIVE</p> <p>Generally, it is on a setting of at least 5,000 acres and 3 miles away from all roads and trails with motorized use (or has sufficient spatial or topographic characteristics to allow a sense of solitude). Access is via nonmotorized trails or cross country. Very low interactions with other visitors. Very high chance of solitude; unmodified natural or natural-appearing environment.</p>	<p>SEMIPRIMITIVE MOTORIZED</p> <p>A setting that has an area that allows motorized use, is generally at least 2,500 acres in size, and is at least 1/2 mile from a better than primitive road.** It is within 1/2 mile of primitive roads or trails used by motor vehicles. Access is via motorized trails or primitive roads or cross-country, where terrain and regulations permit. Low to moderate contact frequency with other visitors. Environment may have moderately dominant alterations, but these do not dominate views from trails or primitive roads in the area.</p>	<p>RURAL</p> <p>Predominantly a culturally modified setting where the natural environment has been substantially modified, i.e., structures are readily apparent, pastoral or agricultural or intensively managed wildland landscapes predominate as viewed from visually sensitive roads and trails. Access is primarily via conventional motorized use on roads. Contact frequency with other users may be moderate to high in developed sites and moderate away from developed sites.</p>
<p>SEMIPRIMITIVE NONMOTORIZED</p> <p>A setting that has an area of primitive roads* or trails that are not open to motorized use; is generally at least 2,500 acres in size; and is between 1/2 and 3 miles from all roads, railroads, or trails with motorized use. Access is via nonmotorized trails or nonmotorized primitive roads or cross-country. Low contact frequency with other visitors. High probability of solitude; natural-appearing environment.</p>	<p>ROADED NATURAL</p> <p>A setting in an area that is within 1/2 mile of a better than primitive road. Access is primarily via conventional motorized use on roads. Contact frequency with other users may be low to moderate on trails and moderate to high on roads. Environment is natural appearing as viewed from visually sensitive roads and trails.</p>	<p>URBAN</p> <p>Urbanized environment with dominant structures, traffic lights, and paved streets. Access is highly intense, motorized, and often with mass transit supplements. Contact frequency and interaction with large numbers of people is high. Recreation places may be city parks and large resorts.</p>

* Primitive roads are not constructed or maintained and are not generally suitable for highway type vehicles.

** Better than primitive roads are constructed or maintained for the use of highway type vehicles.

The following matrices show in gray shading those portions of the ROS where the well-designed use of material described at the left is either "normal" or "fully compatible." Where not shaded, material use may be "inconsistent" or "unacceptable." Note that Roaded Natural (RN) was enlarged to show more detail, reflecting both the widespread nature and importance of this setting in the national forest built environment. As a rule of thumb, when one-third or less of a setting is shaded, use the material with caution. Check first with FSM direction to determine suitability of certain improvements, e.g. shelters and play equipment.

Buildings

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
Exterior Materials						
Native						
Mix of native and synthetic						
Exterior Colors						
Earthtones						
Complements built environs						
Exterior Coatings						
Stains and some paints						
Stains or paints						
Exterior Finishing						
Roughsawn/rustic/nonglare						
Smoothly finished						
Site Setting						
Natural surroundings dominate						
Natural/built environment codominate						
Built environment dominates						

Roads
(See FSM 7709.58 for Maintenance Level Definitions)

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
Primitive (User defined)*						
Level 2 (High clearance)						
Level 3 (Passenger car single lane with turnouts)						
Level 4 (Passenger car mostly double laned with aggregate surfacing)						
Level 5 (Passenger car mostly double laned with paved surface)						

* Not necessarily closed to vehicles, so not Level 1. The above does not preclude use of designed drainage and other features to minimize road-caused resource impacts.

Site Circulation and Traffic Control

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
Trails						
Native material						
Gravel						
Asphalt/concrete						
Primary Access Routes to Recreation Facilities						
3'-wide native material						
3'-wide aggregate						
4'- to 6'-wide aggregate						
4'- to 6'-wide asphalt						
4'- to 6'-wide concrete or pavers						

Site Circulation and Traffic Control (continued)

	Semiprimitive			Roaded Natural			Urban		
	Primitive	Nonmotorized	Motorized				Rural		
4'- to 6'-wide wood boardwalk									
4'- to 6'-wide synthetic boardwalk									
6'- to 8'-wide surfaced trail or any type boardwalk									
Fencing*									
Barbed wire with wood posts									
Woodfence (jackleg, worm, pole)									
Barbed wire with steel posts									
Electric (portable)									
Wood (dimensional lumber)									
Metal, chainlink, plastic									
Barriers/Walls									
Downed logs, plants, or rocks in combinations									
Dry rock walls or earth berms									
Constructed log cribbing or walls									
Mortared rock walls									
Timber or concrete walls									
All-log or dimensional wood wheelstops/barriers									
Combination concrete/wood wheelstops									
Concrete wheelstops									
Recycled plastic wheelstops									

* Although steel fencing materials are synthetic, they may offer less visually impacting solutions that better maintain an ROS setting, especially when not in the immediate foreground.

Water, Sanitation, and Electrical Facilities

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
Drinking Water						
Handpump						
Pressurized water system						
Wood-covered hydrant						
Wood drinking fountain						
Prefab. concrete/metal fountain						
Showers, Laundry, Utilities						
Showers/laundry						
RV Dumps						
Telephone						
Electrical/sewer hookups						
Garbage Collection						
Pack it in, pack it out						
Garbage cans						
Dumpsters						
Toilets						
Pit toilets						
Wood-frame SST w/o screen						
Wood-frame SST w/screen						
Precast concrete SST						
Flush toilets (all kinds)						

Signs for Recreation Sites and Trails (Adapted from EM-7100-15 Sign and Poster Guidelines for the Forest Service)

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
Sign Panel Materials						
Solid wood (or appearing so)						
Plywood						
Metal, fiberglass, synthetics*						
Sign Panel Color/Finish						
Natural						
Preservative not evident (if used)						
Stained						
Painted						
Etched or decals						
ReflectORIZED						
Sign Support Material						
Tree						
Rustic wood post (preservative not evident)						
Wood post						
Metal or synthetic post						
Sign Support Color/Finish						
Natural (or appearing so)						
Preservative not evident (if used)						
Stained						
Painted						
Anodized						

* Limited use in SPM/RN.

Interpretive Facilities

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
No interpretive facilities						
Simple signs of native material						
Simple signs or wayside exhibits of native or natural appearing material with some refinement of design						
More complex wayside exhibits						
Major interpretive sites (typically staffed)						

Nonvehicular Bridges

	Primitive	Semiprimitive Nonmotorized	Semiprimitive Motorized	Roaded Natural	Rural	Urban
Logs						
Logs with dimensional wood*						
Dimensional wood						
Concrete						
Steel						
Wood preservatives not evident (if used)						
Synthetic						

* Use of dimensional lumber for decking of bridges in P and SP settings is often necessary, although such materials in those ROS settings should not otherwise be used.

A-4: RECREATION MANAGEMENT DEVELOPMENT LEVELS

H. RECREATION SITE DEVELOPMENT SCALE DEFINITIONS	
Scale #	Definition
0	<p>No site modification</p> <ul style="list-style-type: none"> ○ No constructed improvements evident at the site ○ Little to no controls or regimentation ○ Primary access usually over primitive roads ○ Spacing informal and often established by user
1	<p>Almost no site modification.</p> <ul style="list-style-type: none"> ○ Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. ○ Use of synthetic materials excluded. ○ Minimum controls are subtle. ○ No obvious regimentation. ○ Primary access usually over primitive roads ○ Spacing informal and extended to minimize contacts between users.
2	<p>Minimal site modification.</p> <ul style="list-style-type: none"> ○ Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. ○ Use of synthetic materials avoided. ○ Minimum controls are subtle. ○ Little obvious regimentation. ○ Spacing informal and extended to minimize contacts between users. ○ Primary access usually over primitive roads. ○ Interpretive services informal, almost subliminal.
3	<p>Moderate site modification.</p> <ul style="list-style-type: none"> ○ Facilities about equal for protection of natural site and comfort of users. ○ Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. ○ Roads may be hard surfaced and trails formalized. ○ Development density about 3 family units per acre. ○ Primary access may be over high standard roads. ○ Interpretive services informal if offered, but generally direct.
4	<p>Heavy site modification.</p> <ul style="list-style-type: none"> ○ Some facilities designed strictly for comfort and convenience of users. ○ Luxury facilities not provided. ○ Facility design may incorporate synthetic materials. ○ Extensive use of artificial surfacing of roads and trails. ○ Vehicular traffic control usually obvious. ○ Primary access usually over paved roads. ○ Development density 3-5 family units per acre. ○ Plant materials usually native. ○ Interpretive services, if offered, often formal or structured.
	<p>Extensive site modification.</p> <ul style="list-style-type: none"> ○ Facilities mostly designed for comfort and convenience of users and usually include flush toilets; may include

5	<ul style="list-style-type: none">showers, bathhouses, laundry facilities, and electrical hookups.○ Synthetic materials commonly used.○ Formal walks or surfaced trails.○ Regimentation of users is obvious.○ Access usually by high-speed highways.○ Development density 5 or more family units per acre.○ Plant materials may be non-native.○ Formal interpretive services usually available. Designs formalized and architecture may be contemporary.○ Mowed lawns and clipped shrubs not unusual.
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A-5: FOREST SERVICE OUTDOOR RECREATION ACCESSIBILITY GUIDELINES (FSORAG)

<http://www.fs.fed.us/recreation/programs/accessibility/>

A-6: BUILT ENVIRONMENT IMAGE GUIDE

<http://www.fs.fed.us/recreation/programs/beig/>

APPENDIX B: WILDLIFE

WOODPECKER SPECIES

Table 21: Woodpecker Species Occurring on the Deschutes National Forest

Species	Habitat	Habitat and Presence in the Project Area
Lewis's Woodpecker	Ponderosa pine forests, burned forests	No habitat
Williamson's Sapsucker	Mature or old growth conifer forests with open canopy cover; weak excavator	No habitat
Red-naped Sapsucker	Riparian hardwood forests	No habitat
Downy Woodpecker	Riparian hardwood forests	No habitat
Hairy Woodpecker	Mixed conifer and ponderosa pine forests	Potential habitat. Analyzed under LRMP Species.
White-headed Woodpecker	Mature ponderosa pine forests; weak excavator	Potential habitat. Analyzed under Regional Forester Sensitive Species
Three-toed Woodpecker	High elevation and lodgepole pine forests	No habitat
Black-backed Woodpecker	Lodgepole pine forests, burned forests	No habitat
Northern Flicker	Variety of forest types but more associated with forest edges	Potential habitat. Analyzed under LRMP Species.
Pileated Woodpecker	Mature to old growth mixed conifer forests	No habitat

WATERFOWL SPECIES

Table 22: Waterfowl Species Occurring on the Deschutes National Forest

Species	Habitat	Habitat/Presence in Project Area
Common Loon	Edges of remote freshwater ponds and lakes	No habitat
Pied-billed Grebe	Edge of open water in freshwater lakes, ponds, sluggish rivers and marshes	No habitat
Horned Grebe	Open water with emergent vegetation	No habitat
Red-necked Grebe	Lakes and ponds in forested areas	No habitat
Eared Grebe	Open water with emergent vegetation	No habitat
Western Grebe	Marshes with open water and lakes and reservoirs with emergent vegetation	No habitat
Canada Goose	Variety of habitats; shores of lakes, rivers, and reservoirs especially with cattails and bulrushes	No habitat
Wood Duck	Cavity nester	No habitat
Gadwall	Concealed clumps of grasses in meadows or tall grasslands	No habitat
American Wigeon	Clumps of grasses or other vegetation near water	No habitat
Mallard	Open water with emergent vegetation	No habitat
Blue-winged Teal	Marshes, lakes, ponds, slow-moving streams	No habitat
Cinnamon Teal	Cover of vegetation near shoreline	No habitat
Northern Shoveler	Grassy areas near water	No habitat
Northern Pintail	Open areas near water	No habitat
Green-winged Teal	Freshwater marshes with emergent vegetation	No habitat
Canvasback	Emergent vegetation	No habitat
Redhead	Freshwater marshes and lakes concealed in vegetation	No habitat
Ring-necked Duck	Thick emergent vegetation on shorelines	No habitat

Species	Habitat	Habitat/Presence in Project Area
Lesser Scaup	Dry grassy areas near lakes at least 10' deep	No habitat
Harlequin Duck	Shorelines of low gradient streams	No habitat
Common Goldeneye	Cavity nester	No habitat
Bufflehead	Cavity nester	No habitat
Barrow's Goldeneye	Cavity nester	No habitat
Hooded Merganser	Cavity nester	No habitat
Common Merganser	Cavity nester	No habitat
Ruddy Duck	Freshwater marshes, lakes, ponds in dense vegetation	No habitat

BIRDS OF CONSERVATION CONCERN

Table 23: 2008 Birds of Conservation Concern, BCR-9 (Great Basin)

Bird Species	Preferred Habitat	Habitat within or adjacent to the Project Area (Yes or No)
Greater Sage Grouse	Sagebrush dominated Rangelands	No
Eared Grebe	Lakes, ponds, large pools in rivers and streams	No
Bald eagle	Lakes	No
Ferruginous Hawk	Elevated Nest Sites in Open Country	No
Golden Eagle	Elevated Nest Sites in Open Country	No
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
Sanderling	Sandbars and beaches	No
Wilson's Phalarope	Meadow/Marsh	No
Yellow-billed Cuckoo	Dense riparian/cottonwoods	No
Flammulated Owl	Ponderosa pine forests with meadows	No
Black Swift	Cliffs associated with waterfalls	No
Calliope Hummingbird	Mountain meadows, coniferous forest	No
Lewis's Woodpecker	Large diameter ponderosa pine, cottonwoods, burned and insect-killed forests	No
Williamson's Sapsucker	Mixed conifer forests	No
White-headed Woodpecker	Large diameter open ponderosa pine forests	Yes
Loggerhead Shrike	Open country with scattered trees or shrubs	No
Pinyon jay	Juniper, Sagebrush	No
Sage thrasher	Arid scrub habitat	No
Green-tailed towhee	Ponderosa pine, desert sagebrush	No
Virginia's Warbler	Scrubby vegetation in arid montane woodlands	No
Brewer's Sparrow	Sagebrush clearings in coniferous forests/bitterbrush	No
Black-chinned sparrow	Arid scrub habitat	No
Sage Sparrow	Sagebrush	No
Tricolored Blackbird	Cattails or Tules	No
Black rosy-finch	Alpine habitat	No

APPENDIX C: BOTANY

DESCHUTES NATIONAL FOREST SENSITIVE PLANT HABITAT DESCRIPTIONS

VASCULAR PLANTS

***Agoseris elata*.** This species occurs in nonforest areas and openings in ponderosa pine forest between 3000 and 4800 feet elevation. Habitat includes dry edges of moist ecotones adjacent to moist meadows, lakes, stream courses, and riverbanks. The closest known sighting is on the Sisters Ranger District.

***Arabis suffrutescens* var. *horizontalis*.** Crater Lake rockcress is found in meadows, woods, summits, ridges, and steep, exposed rock outcrops between 5500-8900'. Oregon Natural Heritage records (as recent as 1993) are only from Crater Lake National Park, Lake of the Woods, and Mt. McLoughlin, all in south-central and southern Oregon.

***Arnica viscosa*.** Shasta arnica is found on the Bend/Ft. Rock Ranger District. Typical habitat is rock, scree, talus, and lava flows, between 6500-9200'. May be w/in moraine lake basins or crater lake basins. At or above subalpine mixed conifer in western white pine and mountain hemlock, sparsely vegetated openings.

***Aster gormanii*.** Now *Eucephalus gormanii*.

***Astragalus peckii*.** A perennial legume that is found in non-forested areas, forest openings, and open forest. It is most commonly found in shrub-steppe plant associations, but has also been reported from common juniper woodlands, ponderosa pine forest edge and lodgepole pine forest openings. It grows in loose, deep pumice, loamy sand, or sandy soils with flat to gentle slopes. It has often been found in or along dry watercourses, old lakebeds (basins), pumice flats and other natural openings. It has been found in previously-disturbed areas on the Crescent Ranger District, namely in a powerline corridor and between berms in a lodgepole pine plantation.

***Botrychium pumicola*.** This inconspicuous plant is a perennial which may regrow from a bud located 1-3 inches below the ground surface. It reproduces through spore dispersal, and, vegetatively, through the formation of tiny underground buds called gemmae. This species is endemic to Central Oregon open-canopy pumice soils at high elevations in the Oregon Cascades and Newberry Crater, and at lower elevations within a lodgepole pine matrix. Within the lodgepole pine matrix, it prefers relatively flat, open basins where frost heaving tends to prevent the establishment of tree seedlings and most other vegetation as well.

***Calamagrostis breweri*.** A perennial tufted grass found in moist to dry alpine and subalpine meadows, open slopes, streambanks, and lake margins.

***Calochortus longebarbatus* var. *longebarbatus*.** Also known as the long-bearded mariposa lily, it is found in dry portions of low meadows and grassy openings in pine forest or in moist open ground along rills at 1800-3600 feet. It has not been found on the Deschutes National Forest.

***Carex abrupta*.** Abrupt-beaked sedge. Ponderosa forests, alpine fell fields, meadows, roadsides, and open slopes, usually in dry soil. From 1,400m to high elevations. It has been found on the Bend/Ft. Rock Ranger District in dry cindery soil at 6,000 feet.

***Carex capitata*.** Capitata sedge. Usually in open, wet places, but sometimes in drier sites at high elevations. Known from five sites on the Sisters, Bend, and Crescent districts of the Deschutes National Forest.

***Carex diandra*.** Lesser paniced sedge. Swamps, sphagnum bogs, lake margins, and wet, often calcareous meadows at moderate elevations. It has not been found on the Deschutes National Forest.

***Carex lasiocarpa* var. *americana*.** Slender sedge. Swamps and wet meadows at mid elevations. Found on the Deschutes National Forest along the Deschutes River, south of Bend.

***Carex livida*.** Pale sedge is found within all forest types in peatlands including fens and bogs, as well as wet meadows with still or channelled water. It has not been found on the Deschutes National Forest.

***Carex retrorsa*.** Retrorse sedge. Wet meadows, bogs, swamps, and edges of streams, lakes, and rivers. Foothills and lowlands. ORNHIC data elevations range from 10' – 3,000'. It has not been found on the Deschutes National Forest.

Carex vernacula. Native sedge. Moist or wet places at high elevations, especially at the edges of melting snowfields and in meltwater streams. ORNHIC data elevations range from 7760' – 9110'. It has not been found on the Deschutes National Forest.

Castilleja chlorotica. Also known as the green-tinged paintbrush, this species is a perennial eastern Oregon endemic, known only from Deschutes, Lake, and Klamath Counties. It occurs on the Bend/Ft. Rock Ranger District in numerous populations. It has been found at 4300' to 8200' elevation in open and forested ponderosa, lodgepole, and mixed conifer. It has also been found in nonforested sagebrush-bitterbrush types. Soils are often very poor and rocky.

An important life history factor to note about the *Castilleja* genus is that it is hemiparasitic, which means it contains chlorophyll and may or may not be able to complete its life cycle without a host species; hemiparasites primarily draw water and minerals from the host. It is not known which species is the host for CACH15, although it is suspected to be a shrub (Dr. Richard Everett, pers. comm.). On the Fremont National Forest, upon which the majority of the known CACH population exists, the host is suspected to be sagebrush; on the Deschutes National Forest sites, it may be bitterbrush. Successful CACH15 reestablishment after a fire or other disturbance likely depends upon the reestablishment of its host.

Cheilanthes feei. Fee's lip-fern. Located in crevices on cliffs, generally those with calcareous content. Known from NE Oregon. It has not been found on the Deschutes National Forest.

Cicuta bulbifera. Shoreline marshes. Considered by Oregon Natural Heritage ranking to be extirpated from Oregon. Only Nature Conservancy records are for margins of Klamath Lake in 1902 and 1950. Persistence at these sites considered doubtful.

Collomia mazama. Meadows (dry to wet, level to sloping); stream banks and bars; lakeshores and vernal pool margins; forest edges and openings; alpine slopes. Numerous recent sites within Klamath, Jackson, and Douglas Counties. It has not been found on the Deschutes National Forest.

Cyperus acuminatus. Short-pointed cyperus. A tufted annual. On the Deschutes NF, located on damp mineral soil of a broad, low-gradient shore of reservoir, in a community just below the *Spiraea* community. Sites on Crane Prairie Reservoir, Davis Lake.

Cyperus lupulinus* ssp. *lupulinus. Upper shorelines. Known from NE Oregon. It has not been found on the Deschutes National Forest.

Elatine brachysperma. Short-seeded waterwort. Tiny, prostrate herb, rooting at the nodes, submerged to terrestrial, on mudflats or the edges of ponds. In California, 164 - 1640 ft elev. Hitch. and Cron. says Cent. OR. Known sites in Grant, Lake, Malheur, Union, Wallowa Counties. In addition, Lucile Housley (BLM) reported (2004) Harney, Malheur Cos. One site says heavy horse, cattle use. It has not been found on the Deschutes National Forest.

Eucephalus (formerly Aster) gormannii. A perennial member of the sunflower family that is found on dry cliffs, open rocky ridges, steep rocky washes, or fine gravelly andesic scree in subalpine and alpine areas at elevations of 5000 to 6100 feet. Dry SW, S, ESE, E exposures are most common. The closest documentation of this species is in the Mt. Jefferson Wilderness on the Willamette National Forest.

Gentiana newberryi* var. *newberryi. Newberry's gentian is a perennial species occurring between 4700 and 8700 feet in subalpine and alpine meadows in moist to moderately dry sandy loam, on level to moderate slopes. It is also found in mesic to moderately well-drained meadows or mesic grassy borders and flats adjacent to lakes and streams. It occurs on the Bend/Ft. Rock Ranger District.

Heliotropium curassavicum. Salt heliotrope. Alkaline w/ greasewood. Harney, Malheur, Union, Baker, Lake Cos. It has not been found on the Deschutes National Forest.

Lipocarpa aristulata. Aristulate lipocarpa. Delicate, tufted annual. A sedge-like plant found in wet bottomlands, sand bars, and beaches; Nevada willow. Documented in Washington with *Rorippa columbiana* and *Rotala ramosior*. Wallowa and Malheur Cos. It has not been found on the Deschutes National Forest.

Lobelia dortmanna. Water lobelia is a fibrous rooted aquatic perennial species, found in water of lake, pond, slow river or stream, or wet meadow. Sisters Ranger District site is the only known Oregon locality.

Lycopodiella inundata. Deflation areas in coastal back-dunes; montane bogs, including sphagnum bogs; less often, wet meadows. Known on Deschutes National Forest from the Crescent Ranger District.

Lycopodium complanatum. Edges of wet meadows; dry, forested midslope with 25% canopy cover. Associated with Englemann spruce, Douglas-fir on the Wallowa-Whitman National Forest. Has been found on the Sisters Ranger District.

Muhlenbergia minutissima. Annual dropseed. Weathered lava soils in riparian; only ORNHIC site in Oregon is Jordan Crater, Malheur Co. It has not been found on the Deschutes National Forest.

Ophioglossum pusillum. Northern adder's tongue is a fernlike plant associated with dune deflation plains, marsh edges, vernal ponds, and stream terraces in moist meadows. In Oregon, only known from Lane County; chiefly on the Siuslaw and Willamette National Forests. Not yet found on the Deschutes National Forest.

Penstemon peckii. Peck's penstemon occurs on the Sisters Ranger District in ponderosa pine openings, open ponderosa pine forests, pine/mixed conifer openings, recovering fluvial surfaces (streambanks, overflow channels, inactive floodplains), seeps, rills, springs, vernal pools; draws, ditches, skid roads; dry or intermittent stream channels; moist-wet meadows.

Pilularia americana. American pillwort is a small grasslike plant that is found in alkali and other shallow vernal pools; not recently used stock ponds; reservoir shores. In Oregon, recent collections have been made in Deschutes, Klamath, and Jackson Counties. There is an historical site from about 100 years ago from the extreme eastern edge of the Bend/Ft. Rock Ranger District, but targeted surveys in recent years has not re-discovered it.

Potamogeton diversifolius. Rafinesque's pondweed. Lakes, ponds, including created habitat. Klamath, Harney and Lake Cos. It has not been found on the Deschutes National Forest.

Rorippa columbiae. This perennial from the mustard family occurs in wet to vernal moist sites, meadows, fields, playas, lakeshores, intermittent stream beds, banks of perennial streams, along irrigation ditches, river bars and deltas. In Oregon, this species is found in Klamath, Lake, and Harney Counties. It has been found on the Crescent district of the Deschutes National Forest.

Rotala ramosior. Lowland toothcup. In Oregon, low elevation (<2300 ft) below high water, including created habitat in wet, swampy places, lakes and pond margins, and free-flowing river reaches. Benton, Columbia, Marion, Hood River., Harney, Multnomah and Linn Cos. It has not been found on the Deschutes National Forest.

Scheuchzeria palustris ssp. americana. Rush-like perennial. Open canopied bogs, fens, and other wetlands where often in shallow water. Pacific silver fir and douglas-fir forests (in west Cascades). Found on the Bend district of the Deschutes National Forest.

Schoenoplectus (formerly Scirpus) subterminalis. Swaying bulrush. Generally submerged to emergent in quiet water 2-8 decimeters deep, in peatlands, sedge fens, creeks, ditches, ponds and lakes. Found on the Crescent district of the Deschutes National Forest.

Utricularia minor. Lesser bladderwort. Occurs underwater in lowland and montane fens, sedge meadows, low-nutrient lakes and peatbog pools. Deschutes, Clackamas, Lane, Klamath, Jackson, Coos, Douglas, Harney, Marion and Linn Cos. There are documented populations on the Bend and Sisters districts of the Deschutes National Forest.

BRYOPHYTES

Barbilophozia lycopodioides. Liverwort. Forming mats on peaty soil on damp ledges of rock outcrops and cliffs at higher elevations. Sites receive abundant snowfall. Elevations of known sites in Oregon and Washington range from 3400 to 7500 feet. Forest types include *Abies amabilis*, *Abies lasiocarpa*, *Abies procera*, *Abies lasiocarpa*, *Picea engelmannii*, *Pinus contorta* ssp. *latifolia*, and *Tsuga mertensiana* associations. It has not been found on the Deschutes National Forest.

Brachyodontium olympicum. Moss. Forming loose mats on exposed acidic boulders or soil in rock crevices. In boulder fields, moraines, and ledges of cliffs, often in areas of late snowmelt. Subalpine to alpine elevations between 5,000 and 6,000 feet. On Oregon's Mt. Hood *Brachyodontium* occurs above timberline at about 6,000 ft where the plant association is probably *Phyllodoce empetriformis* and *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest, *Brachyodontium* probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* associations. It has not been found on the Deschutes National Forest.

Chiloscyphus gemmiparus. Liverwort. Forming small turfs or clumps on rocks in beds of cold montane streams, submerged or emergent in the splash zone, full shade to partial sun. Some streams drain lakes with motorized boating access. Elevations in Oregon range from 5000-7000 feet. Known sites in the Pacific Northwest include *Abies amabilis*, *Abies lasiocarpa*, and *Tsuga mertensiana* associations. It has not been found on the Deschutes National Forest.

Conostomum tetragonum. Moss. Occurring as small sods or inconspicuous individual shoots intermixed with other bryophytes, on soil in rock crevices in boulder fields, moraines, and ledges of cliffs. Subalpine to alpine elevations, often in areas of late snowmelt. On Oregon's Mt. Hood, *Conostomum* occurs above timberline at about 6,500 ft, where the plant association is probably *Phyllodoce empetriformis* and *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest, *Conostomum* probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* associations. It has not been found on the Deschutes National Forest.

Helodium blandowii. Moss. Forming mats and small hummocks in medium to rich montane fens with calcareous groundwater. Sometimes under sedges and shrubs around the edges of fens or along streamlets in fens. Elevations range from 5000-6000 feet. Forest types include *Abies amabilis*, *Abies concolor*, *Abies x shastensis*, and *Pinus contorta* ssp. *latifolia* associations. Accompanying vascular species include *Betula glandulosa*, *Salix geyeriana*, *Carex limosa*, *Eleocharis quinqueflora* and *Scheuchzeria palustris*. Associated mosses include *Aulacomnium palustre*, *Calliargon stramineum*, *Hamatocaulis vernicosus*, *Meesia triquetra*, and *Tomentypnum nitens*. Found on the Bend district of the Deschutes National Forest.

Polytrichum sphaerothecium. Moss. Forming green to brown sods on igneous rocks in exposed or sheltered sites, subalpine parkland to alpine krummholz. On Oregon's Mt. Hood, *Polytrichastrum sexangulare* var. *vulcanicum* occurs at or above timberline at about 6,500 ft elevation, where the plant association is probably *Phyllodoce empetriformis* or *Cassiope mertensiana* heath. Elsewhere in the Pacific Northwest it probably also occurs in *Pinus albicaulis*, *Tsuga mertensiana*, *Abies lasiocarpa*, and possibly *Abies amabilis* associations. Associated bryophytes may include *Conostomum tetragonum* and *Gymnomitrium*. It has not been found on the Deschutes National Forest.

Pseudocalliargon trifarium. Moss. Forming lawns or inconspicuously intermixed with other bryophytes in medium to rich montane fens where it grows submerged to emergent in pools or on saturated ground, usually in full sunlight. Fen pools may dry up in late summer. Elevations range from 5000-6000 feet. Forest types include *Abies amabilis*, *Abies concolor*, *Abies x shastensis*, and *Pinus contorta* ssp. *latifolia* associations. *Calliargon trifarium* is one of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include *Eleocharis quinqueflora*, *Carex limosa*, *Scheuchzeria palustris*, and *Triglochin maritimum*. Associated bryophyte species include *Hamatocaulis vernicosus*, *Tomentypnum nitens*, *Meesia triquetra* and *Helodium blandowii*. It has not been found on the Deschutes National Forest.

Splachnum ampullaceum. Moss. Forming green sods on old dung of herbivores, or on soil enriched by dung, in peatlands or other wetlands. The sodden, decomposed dung will scarcely be visible, or may be completely humified. The two known sites for *Splachnum ampullaceum* in Oregon are at 5000 feet elevation, but Hutten et al. (2005) reported it from as low as 500 feet in Olympic National Park. Plants in Oregon occurred in fens dominated by *Eleocharis quinquefolia*, *Hamatocaulis vernicosus*, and *Pinus contorta* var. *latifolia*. *Splachnum ampullaceum*

tends to outcompete *Tetraplodon mnioides* in wet habitats, indicating that wetlands are optimal habitat for this species (Studlar and Byers 2007). It has not been found on the Deschutes National Forest.

Schistostega pennata. Moss. On mineral soil in damp caves and crevices and on the soil-bearing root masses of fallen trees. Often near streams or other wet areas. Requires humid, heavily shaded microsites. Most commonly found within silver fir plant series but also common in western hemlock and mountain hemlock series. Also in lodgepole pine stands near water. Stands are typically late seral or old growth. Found on the Crescent district of the Deschutes National Forest.

Tomentypnum nitens. Moss. Forming loose or dense sods or intermixed with other bryophytes in medium to rich montane fens where it favors slightly elevated sites such as logs, stumps, or hummocks formed by *Vaccinium uliginosum* and *Betula glandulosa*. Elevations range from 5000 to 6000 feet. Fens occur in openings in forest types that include *Abies amabilis*, *Abies concolor*, *Abies lasiocarpa*, and *Pinus contorta* ssp. *latifolia* associations. *Tomentypnum nitens* is one of the more conspicuous of several species of so-called "brown mosses" that occur in mineral-rich fens. Associated vascular plants in Oregon and Washington include *Eleocharis quinqueflora*, *Carex limosa*, *Carex aquatilis* ssp. *dives*, *Scheuchzeria palustris*, and *Triglochin maritimum*. Associated bryophyte species include *Hamatocaulis vernicosus*, *Pseudocalliergon trifarium*, *Meesia triquetra* and *Helodium blandowii*. Many sites on all three districts of the Deschutes National Forest.

Trematodon boasii. Moss. Forming loose mats on moist bare soil along the edges of trails, streams and ponds in the subalpine zone. Soils usually have some organic content and are irrigated by meltwater from late-season snowbeds. Little is known about associated species. Habitats probably include *Phyllodoce empetriformis* and *Cassiope mertensiana* heath and *Tsuga mertensiana*, *Abies lasiocarpa*, and *Abies amabilis* forest associations. It has not been found on the Deschutes National Forest.

Tritomeria exsectiformis. Moss. Within the Pacific Northwest this species is currently known from mid-elevation (3200-5200 feet) riparian zones. Typically, its habitat is open to shaded coniferous forest in association with low volume, perennial water flow at or near springs and seeps, along very gentle topographic gradients. Lodgepole pine (*Pinus contorta*) is present at nearly all sites of *T. exsectiformis* within the Oregon and Washington Cascades. Other tree species occurring at these sites include white fir, ponderosa pine, Engelmann spruce (*Picea engelmannii*), Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), mountain hemlock (*Tsuga mertensiana*), and subalpine fir (*Abies lasiocarpa*). Currently, all but one of the *T. exsectiformis* sites in the Oregon and Washington Cascades occur within spring-fed hydrologic systems.

LICHENS

Dermatocarpon luridum. On siliceous rocks in and along streams or lakesides where frequently wetted.

Leptogium cyanescens. On trees in humid forests; widely scattered. On mossy trees and rocks or directly on rock when near water. Considered riparian through 2001. Recently documented in upland settings on vine maple, big leaf maple, and in moss on white oak. Associated with Western Hemlock and Pacific Silver Fir Zones in mixed conifer stands, mature big leaf maple and Douglas-fir stands, maple and willow thickets.

Texosporium sancti-jacobi. Documented on The Island and near Canadian Bench, Crooked River National Grassland. Undocumented occurrences by R. Demmer on BLM along breaks of lower John Day R. Most likely to occur in Central Oregon in Crooked River National Grassland habitats. It has not been found on the Deschutes National Forest.

SURVEYS IMPRACTICAL OR KNOWN SITES LIKELY MANAGED

Alpova alexsmithii. Occurs principally on soil in Pacific Silver Fir (44%) and Mountain Hemlock (44%) series at elevations of 2742-5764 feet. A mycorrhizal associate of *Tsuga*. Associated species include Pacific silver fir, lodgepole pine, Engelmann spruce and mountain hemlock. Other woody associates include *Vaccinium membranaceum* and *Vaccinium scoparium*. Fruits August-December. Documented from the Mt. Jefferson Wilderness on the Deschutes National Forest.

Dermatocarpon meiophyllizum (formerly *D. luridum*). Lichen. Usually submerged most of the year. Rocks or bedrock in streams, rivers, or seeps, usually submerged or inundated for most of the year. Associated with *Alnus rubra*, *Pseudotsuga menziesii*, *Tsuga heterophylla*, *Acer* spp., subalpine or alpine meadow vegetation.

Gastroboletus vividus. Found in association with the roots of *Abies magnifica* and *Tsuga mertensiana* above 5,000'. Fruits July-September. A known site at Crater Lake National Park. No known sites on the Deschutes National Forest.

Helvella crassitunicata. Occurs in montane forests containing *Abies* spp., from old growth and younger age groups, from low to high elevation in the fall and winter, occasionally on trails, or other moderately disturbed areas. Documented on the Sisters district of the Deschutes National Forest.

Hygrophorus caeruleus. Associated with roots of Pinaceae; may be restricted to *Abies*. Typically fruits in mid-elevation to montane conifer forests in the spring near melting snowbanks. Fruits May-July. Documented on the Deschutes National Forest.

Ramaria amyloidea. Fungus. Coral-like fungi on moist humus or wood, or under duff. May favor hemlock. Fall species. Associated with *Abies* spp., *Pseudotsuga menziesii* and *Tsuga heterophylla*.

Rhizomnium nudum. Moss. On humus or mineral soil in seepages, vernal (at least) wet depressions or intermittently wet, low gradient channels. Exposure varies from full sun to full shade. On Deschutes NF, associated conifer types include lodgepole pine, Engelman spruce, mountain hemlock and western white pine.

Scouleria marginata. Moss. Often forming dark mats on exposed to shaded rocks in streams; seasonally submerged or emergent.

**LIST OF FEDERALLY ENDANGERED, THREATENED, AND
CANDIDATE PLANT SPECIES*****PLANTS LISTED AS ENDANGERED**

Arabis macdonaldiana
Astragalus applegatei
Erigeron decumbens var. *decumbens*
Fritillaria gentneri
Lilium occidentale
Limnanthes floccosa ssp. *grandiflora*
Lomatium bradshawii
Lomatium cookii
Plagiobothrys hirtus
Stephanomeria malheurensis

PLANTS LISTED AS THREATENED

Castilleja levisecta
Howellia aquatilis
Lupinus sulphureus ssp. *kincaidii*
Mirabilis macfarlanei
Sidalcea nelsoniana
Silene spaldingii
Thelypodium howellii ssp. *spectabilis*

CANDIDATE PLANTS FOR LISTING

Artemisia campestris var. *wormskioldii*
Botrychium lineare
Calochortus persistens

* Source: Oregon Natural Heritage Program web site, February 2005.

LIST OF FEDERALLY ENDANGERED, THREATENED, AND CANDIDATE PLANT SPECIES' HABITATS AND RANGES*

PLANTS LISTED AS ENDANGERED

* © 2004 Oregon Natural Heritage Information Center. This is the source for all species listed except for *Botrychium lineare* and *Calochortus persistens* (their source listed on final page of this appendix).

Arabis macdonaldiana

Habitat Description

Open rocky areas, outcrops and cliffs, with little associated vegetation.

Range Description

Del Norte, Trinity, and Mendocino counties; along north fork of Smith River and at Red Mountain, California. Also in Curry and Josephine Counties, Oregon.

Astragalus applegatei

Habitat Description

Occurs in meadows and moist ground along wayside ditches and along the Klamath River at ca. 1250 m. Primarily in grasslands dominated by *Puccinella lemmonii* and *Poa juncifolia*, with *Chrysothamnus nauseosus* usually present. Alfalfa and other weeds also common.

Range Description

Found only in Lower Klamath Basin, e.g., near the city of Klamath Falls, in Klamath County, Oregon. Perhaps in adjacent Siskiyou County, California ('to be sought', Barneby 1964).

Erigeron decumbens var. *decumbens*

Habitat Description

Erigeron decumbens ssp. *decumbens* is found in all native grasslands in the Willamette Valley, including the wet tufted hairgrass bottomland prairies, and the well drained, deep soiled red fescue grasslands. Associated species: *Aster hallii*, *Festuca rubra*, *Danthonia californica*, *Deschampsia cespitosa*, *Fragaria virginiana*, and the other WV endemic plants.

Range Description

Occurs only in the southern end of the Willamette Valley, Oregon.

Fritillaria gentneri

Habitat Description

Inhabits dry open woods of fir or oak at lower elevations. Associated species: *Brodiaea* spp., *Ceanothus cuneatus*, *Phacelia* spp., *Microseris* spp., and *Erythronium* spp.

Range Description

Scattered localities in southwest Oregon along the Rogue and Illinois River drainages in Josephine and Jackson Counties, Oregon.

Lilium occidentale

Habitat Description

Occurs in forest or thicket openings, often along the margins of ephemeral ponds and small channels, and usually established under cover of shrubs. Associates are *Gaultheria shallon*, *Myrica californica*, *Vaccinium* spp., *Rubus* spp., *Lonicera involucrata*, *Ledum glandulosum*, *Pinus contorta*, *Picea sitchensis*, *Chamaecyparis lawsoniana*, *Salix hookeriana*, *Calamagrostis nutkaensis*, *Carex lynxbyei*, *Cornus canadensis*, *Tofieldia glutinosa*, *Gentiana sceptrum*, *Sphagnum* spp., and *Darlingtonia californica*.

Range Description

Extremely limited distribution: a 2-mile wide strip of land along the coast in northern California and southern Oregon. Endemic to three counties. Historical occurrence in Coos County, Oregon and extant occurrences in Curry

County, Oregon. One extant occurrence in Humboldt County, California.

Limnanthes floccosa ssp. grandiflora

Habitat Description

Inhabits the periphery of vernal pools at ca 375-400 m, near the wetter, inner edges as opposed to the drier outer fringes like the sympatric ssp. floccosa. Assoc. species: Lupinus sp., Trifolium sp., Myosurus minimus & Baeria chrysostoma.

Range Description

Endemic to the Rogue River Valley of Jackson County. Most populations centered in the Agate Desert region near the city of Medford, Oregon. Known populations occur within an 8 x 15 km area (5 x 9 mile area).

Lomatium bradshawii

Habitat Description

Occurs in flat bottomlands, usually Deschampsia cespitosa valley prairies, with heavy clay soils. Grows in depressions or seasonal channels or rarely in vernal pools. In the northern sites, it occurs in moist, vernal stream corridors with minimal soil over basalt.

Range Description

Regional endemic; found mainly in the south end of the Willamette Valley, in two counties. A large population has recently (1994) been discovered in Clark County, in the state of Washington.

Lomatium cookii

Habitat Description

Occurs along the margins of vernal pools in the Agate Desert, usually with native forbs and introduced annual grasses. In the Illionis Valley, it occurs in moist alluvial floodplains, with native bunchgrasses (Poa scabrella and Danthonia californica) adjacent to Pinus ponderosa - Quercus garryana savanna with Ceanothus cuneatus and Arctostaphylos species.

Range Description

Narrow, local endemic. Restricted to two counties in the southwestern portion of the state of Oregon. It is limited to two small areas: the Agate Desert area north of the city of Medford, Jackson County, and the Illinois River Valley area near Cave Junction, Josephine County. Both are highly developed valley bottoms.

Plagiobothrys hirtus

Range Description

Plagiobothrys hirtus occurs only in Douglas County, Oregon, near the towns of Sutherlin and Yoncalla, although habitat in the valley 50 miles to the north appears to be appropriate for this species.

Stephanomeria malheurensis

Habitat Description

Found only on the top of a broad hill above surrounding flats. The soil is derived from volcanic tuff layered with thin crusts of limestone. The surrounding soils are derived from basalt. Assoc. species: Artemisia tridentata, Chrysothamnus nauseosus, C. viscidiflorus, Salsola kali, and most recently, Bromus tectorum.. The closest similar substrate is miles away. S. malheurensis seems to be one of the few species able to survive near harvester ant hills.

Range Description

Endemic to central Harney Co., Oregon, U.S.A. near Malheur and Harney lakes.

PLANTS LISTED AS THREATENED

Castilleja levisecta

Habitat Description

Inhabits gravelly prairies at low elevations, generally where damp in the winter but not from standing water. Associated species: Sidalcea campestris, Camassia spp., Potentilla spp., Delphinium pavonaceum, Aster hallii, & Deschampsia sp.

Range Description

Historically known from low elevations west of the Cascades from Vancouver Island south through the Puget Trough of Washington to the Willamette Valley in Oregon. Currently thought to have been extirpated from Oregon and southwestern Washington.

*Howellia aquatilis***Habitat Description**

Inhabits low elevation ponds or sloughs, submersed or partially floating on the surface of slow moving water. Seasonal pools in *Fraxinus latifolia* woodland is one known locality in Clark County, WA. Associated species include *Spiraea douglasii*, *Callitriche heterophylla*, *Fontinalis antipyretica*, *Ranunculus aquatilis*, and *Veronica* spp. Absent from pools with introduced carp. Carp muddy water and eat all aquatic vegetation.

Range Description

W Washington and NW Montana; Idaho?; 6-10 sites recently found in Mendocino County, California (K. Wolcott, Northern Central Valley Fish and Wildlife Office, pers. comm. to K. Maybury, 7/97). Possibly extirpated in Oregon.

*Lupinus sulphureus ssp. kincaidii***Habitat Description**

Grasslands and open woodlands at low elevations in the Willamette and Umpqua Valleys.

Range Description

Willamette and Umpqua Valleys, Oregon.

*Mirabilis macfarlanei***Habitat Description**

Prefers steep slopes with sunny exposure at approx. 330-450m elevation. The substrate is talus loosely covered with soil. Assoc. species: *Agropyron spicatum*, *Balsamorhiza sagittata*, *Phacelia heterophylla*, *Phacelia linearis*, *Cryptantha* sp.

Range Description

Mirabilis macfarlanei is narrowly endemic to portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho. The species global range is approximately 28.5 miles (46 km) by 17.5 miles (28.5 km).

*Sidalcea nelsoniana***Habitat Description**

Inhabits gravelly, wet soils. Once an undisturbed wet prairie species, now it's found primarily where remnant patches of native grassland species still occur, often where prairie merges with deciduous woodland.

Range Description

75-80% are in Oregon's Willamette Valley; the rest are in the Coast Range (except for 1 pop. in WA, which may have been introduced).

*Silene spaldingii***Habitat Description**

Inhabits undisturbed prairie on loessal hills, at low to mid elevations. Occassionally found in sagebrush scabland or open woodland. Associated species: *Crataegus douglasii*, *Symphoricarpos albus* & *Festuca idahoensis*. In Oregon, most sites are east or northeast slopes, in the *Festuca idahoensis*-*Koeleria nidita* plant association. The largest populations, however, occur on the Wallowa Lake terminal and lateral moraines in various aspects, and in an unusual habitat dominated by *Artemisa ludoviciana* and *Festuca idahoensis*.

Range Description

Regional endemic restricted to remnants of the Poulouse Prairie grasslands of eastern Washington, northeastern Oregon, northern Idaho, and western Montana (barely extending into British Columbia, Canada).

Thelypodium howellii ssp. spectabilis

Habitat Description

Occurs in moist, alkaline valley bottoms, dominated by basin wildrye, alkali-grasses (*Distichlis stricta*, *Puccinella lemmonii*, *Poa juncifolia*), and black greasewood. Sites are usually in alluvial outwash areas, near streams or rivers, with seasonal moisture.

Range Description

Endemic to the northeastern corner of Oregon, occurring in the Baker-Powder River valley in Baker and Union Counties (Fish and Wildlife Service 1999).

CANDIDATE PLANTS FOR LISTING*Artemisia campestris* var. *wormskioldii***Habitat Description**

Rocky, sandy and cobbly shoreline and banks of rivers.

Range Description

The taxon is restricted to the Columbia Basin Province in Washington and historically Oregon. Only 2 EOs are known, separated by about 200 river miles. Reports of this variety from Canada, California, and Greenland (Kartesz, pre-1997 datasets) are erroneous; in the August, 1997, review draft of his revised distribution data, Kartesz accepts only the Oregon and Washington reports for this plant.

*Botrychium lineare***

Habitat Comments: Wagner and Wagner (1994) stated that it is difficult to describe a typical habitat for this species because the known sites are so different. It has been found mostly at higher elevations (about 1500-3000 m) in mountains, but specific habitats have ranged from a meadow dominated by knee-high grass, shaded woods and woodlands, grassy horizontal ledges on a north-facing limestone cliff, and a flat upland section of a river valley. Possibly a colonizer of disturbed, early seral habitats (USFWS 2003).

Range: *B. lineare* is currently known from 12 widely disjunct sites in Colorado, Idaho, Oregon, Montana, Nevada, and Washington, with historic collections from California, Quebec, and possibly New Brunswick. Limited monitoring and survey efforts continue to locate some new populations (USFWS 2003).

*Calochortus persistens***

Habitat Comments: Rocky, open areas within coniferous forests. 1000-1500 m elevation.

Range: Endemic to the Siskiyou Mountains of northern California and southwest Oregon.

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APPENDIX D: 30-DAY PUBLIC COMMENTS

(February 16, 2012 – March 19, 2012)

Table 24: Phil's Trailhead Project 30-Day Comment Summary

Phil's Trailhead Project 30-day Comment Summary			
1	Lauren Hamlin 2/18/12 laurenhamlin@hotmail.com	2	Ron Dale 2/18/12 ron@holyflood.com
3	Troy Smith 2/18/12 Troysmith80@gmail.com	4	Lillian Watah 2/21/12 Cultural Resource Protection Specialist 501Chiloquin, OR 97624 lilliann.watah@klamathtribes.com
5	Jim Allen 2/21/12 3327 Windwood Way Bend, OR 97701 jandballen@bendbroadband.com	6	Gary Kelley 2/22/12 gary.s.kelley@gmail.com
7	Chad Willems 2/23/12 peeling_jaguar@hotmail.com	8	John Kelly 2/23/12 drool@bendbroadband.com
9	Douglas Werme 2/25/12 410 NW Columbia Bend, OR 97701 dwerme@gmail.com	10	Marc K. Henegar 2/26/12 19258 Goose Creek Bend, OR 97702 airmarc@bendcable.com
11	Joy Newhart 3/1/12 joynewhart@hotmail.com	12	Frank Dietsch 3/2/12 fdfdietsch@gmail.com
13	Frank Dietsch 3/2/12 fdfdietsch@gmail.com	14	Bill Valentine, Board Member Highlands at Broken Top Homeowners Association 61645 Rowallan Court Bend, OR 97702 bill@valentineventures.com
15	Terry Harms tlh911s@gmail.com	16	<i>Buzzman (No Name)</i> buzzman@bendbroadband.com
17	Jere Smith Board Member, Central Oregon Snow Busters jere@bendbroadband.com	18	Todd White 259 Camrin Loop Creswell, OR 97426 todd@teddunlimited.com
19	Josh and Jamie Maul jandjmaul@msn.com	20	Doug Peters dpeters@deererunfarms.com
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23	Lori White PO Box 1221	24	Janice Lucht 1947 16thSt.

Phil's Trailhead Project 30-day Comment Summary			
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Subject	Comment	Response to Comment
Opposition to Proposed Action	<ul style="list-style-type: none"> • I do not think change needs to be made to the trailhead parking. • I really don't believe parking is even enough of a concern that it would demand an official parking lot. • My opinion is that we should just leave it as-is. • I am opposed to paving the forest service road near the current lot, or increasing the parking lot in its current location, or moving it anywhere South towards Century Dr. • If a parking lot is installed, it would reduce the natural aesthetic, which is what we mountain bikers like to escape to • The people are there to ride bikes on dirt. They can handle a dirt parking area. • I favor doing nothing at Phil's Trail head. I mountain bike there 100 days a year, and it works fine just the way it is. • If you are indeed concerned with disturbing the surrounding environment then just leave it the way it is – that is far less disruptive than building a hard top parking lot. • I support the idea of leaving the area rustic. I have frequented this area and feel the situation does not warrant being 'improved upon'...Let's leave well-enough alone. (and save a few trees as well) • Please do not pave the area. Leave it as it is. • Why would you want to take paradise and put up a parking lot. I moved here for the rural living. • Please DO NOT build a new parking area. What a waste of the tax payers money. • BAD idea. BAD location. You are inviting more trouble at night. 	<p>The Environmental Assessment includes the Alternative of No Action. These comments are addressed with the No Action Alternative.</p>
Increased Traffic	<ul style="list-style-type: none"> • Increasing traffic on that road will lead to more drunken parties, increased fire risk to adjoining property, and increased vandalism. I live in fear of the current mix of parties camping in the cinder area. Vehicles doing donuts in the dust, fire works, guns and late night noise are common in the summer. This is done by people in vehicles. We spend thousands of dollars on fence repair caused by vehicles along the property line and have had incursions on the property where thousands of dollars of damage was done. 	<p>There is not an expectation that traffic on 4604 will increase. The 4606 road will be closed to parking and rehabilitated reducing the potential for increased traffic and associated issues.</p>
Overflow Parking	<ul style="list-style-type: none"> • Every time I've been to Phil's trail when there was overflow parking, people did their best to park in a manner that was not causing too much impact. If an asphalt parking lot was installed, I think that would attract more motorists, and therefor (sic) create an even bigger demand for overflow parking. At this time, I believe there are enough people aware that parking at Phil's trail can be difficult at times, so there are quite a bit of people who ride out to Phil's trail instead of driving. • If you put ditches in the problem will move down the street a ways but that's it. Paved is expensive and not needed plus it takes away from the raw natural feeling of the trailhead. The current 'damage impact' is moot, are the users complaining? Just expand the overflow parking a bit and let us go. • Overflow users will just find other places to park, probably disturbing ground that so far has not been disturbed. Might as well keep them in the space that is already disturbed. 	<p>Addressed with Alternative 1 (No Action)</p> <p>Overflow addressed in Alternative 2 (Proposed Action).</p> <p>Leaving overflow as is along FR 4604 is addressed in Alternative 1 (No Action)</p> <p>The overflow parking is both a safety and road/resource problem. The action alternatives provide parking that is adequate to accommodate parking on most days.</p>
Displacement of Users	<ul style="list-style-type: none"> • Also, considering cost of construction, and the construction period itself, could turn a lot of bikers away from even wanting to use the trailhead. I think that would cause an impact to other areas that make Phil's trail accessible, such as up by Ben's trail, and towards the base by Marvin's garden. 	<p>The use of the area is not expected to changed considerably in the near future; but given the average daily use, if some of it were to disperse to other areas, the resulting impacts would be minimal.</p>

Design	<ul style="list-style-type: none"> • Doze a bigger area, throw some gravel on it, place a couple of logs down the middle to help establish some parking order, and let riders do what they do. Low cost, solves the problem, end of discussion. • BLOCKING FOREST ROAD 4606... We request that this be blocked off and filled with dirt and vegetation to prevent its use as a parking or congregating area. 	<p>Alternative 4 addresses a more rustic approach.</p> <p>Alternative 3 and 4 would close and rehab FSR 4606. Alternative 2 would limit parking and provide for designated parking in this area.</p>
Design/Costs	<ul style="list-style-type: none"> • It's really not that big of an issue. Certainly not something we should spend over half a million dollars on, only to wind up with less capacity, as would be the case in the preferred alternative! • This is a bad use of money and a terrible location. 	<p>Alternative 2 (Proposed Action) is the most expensive alternative. Alternative 1 would have no associated costs.</p>
Cultural	<ul style="list-style-type: none"> • As with all projects a cultural resource survey must be completed for the project by a qualified archaeologist if one hasn't already been done. And a qualified cultural monitor will need to be present while all ground disturbing activities are taking place. 	<p>A cultural survey has been conducted for the project area. The project is compliant with the Section 106 process of the National Historic Preservation Act.</p>
Design	<ul style="list-style-type: none"> • Better idea: Move the entire complex closer to Skyliner. <ul style="list-style-type: none"> -Save money on paving 4604 (half the cost of the project) -Easier to control and patrol -Next to water line -Less impact on Forrest (sic) -Turn the 4604 into a trail or move the Lair expansion here. • Please consider moving the parking lot closer to Skyliners and gating that road. I realize that racing and commercial interests want growth and large events. It is a large forest out there – why place such a large facility which will draw requests for music, camping and events along the property line of where people live? • Since the FS is not creating enough parking to deal with max usage days, and increased usage is the reason for the project, it is only logical that it would be better for the forest if people were spread out over a larger area. It appears that the EA did not consider this option due to winter deer habitat. • The 104 page study is a waste as well. It cites concerns that dirt might be compacted by the roadside, while suggesting cutting 64 trees and paving the ground over. It makes no mention that the entire area is next to a massive abandoned pumice pit, gravel practically devoid of any life. 	<p>This was considered as an alternative and eliminated from detailed analysis as discussed on page 19 of the EA..</p> <p>Increased usage during peak periods is one reason for this project. Other locations do exist where parking is allowed and the trail system can be accessed.</p> <p>Safety is an important goal for this project.</p>
Alternative Preference	<ul style="list-style-type: none"> • I strongly support the least invasive, least expensive, least congested option. Be that a small improved lot, diffused parking, or nothing at all. • I actually think that improved signage and grading (maybe a new bathroom) would be a sufficient improvement. Make the existing parking lot a more defined area, and add some overflow in the gravel area down below. • I would like to cast my vote for the Proposed Action, Alternative 2. My only comment on that would be less trees than proposed. Helps melt out snow in the lot. 	<p>Alternative 1 (No Action) or Alternative 4 gravel</p> <p>All action alternatives would provide a defined parking area. During most days, overflow parking will not be needed to accommodate use, and can be contained</p> <p>Alternative 2 (Proposed Action) would only remove as many trees as necessary for the development of the parking area.</p>
Comment	<ul style="list-style-type: none"> • Mostly, cyclists need to be encouraged to RIDE FROM TOWN....You can drive to MTB trails from anywhere in the world, but what makes Bend and Phils so special is that you DON'T have to. • However, some people are still going to drive there. For them there is already parking. There are days of 	<p>There is currently a trail that provides access for bikes from the city limits to Phil's Trailhead.</p>

	<p>the week and months of the year when it's busy. That should discourage people from driving- rather than fostering the notion that wherever people go, we will always make room for more, and guarantee accommodation for their vehicles.</p> <ul style="list-style-type: none"> ... the idea that there is no additional need for camping 20-40 miles from Bend, has no bearing regarding camping within 5 miles of Bend. I am sure the demand curves for these two types of campgrounds are not the least bit similar. 	<p>This project is not to encourage or discourage people from driving. Alternatives 2, 3, and 4 will provide for the majority of use taking place; but will not provide for the amount of use shown for the two peak days.</p> <p>The potential development of campground at PTH is outside the scope of the project.</p>
Future Expansion	<ul style="list-style-type: none"> As per the EA, Phil's is not highly used during winter months, so other parking areas would also be limited during those months. This would provide better use information for future expansions as the area continues to grow. 	<p>Future expansion of facilities could take into account the use occurring at Phil's and at other locations.</p>
Safety/Design	<ul style="list-style-type: none"> Narrowing the road will create a safety risk. I would suggest keeping the road wider and creating a bike lane to separate bikes from cars on road 4604. SPEED BUMPS...many, but not all, drivers drive way too fast on the entire stretch of 4604. There are a lot of people walking and biking along this road and this seems an unnecessary risk. Further, it's only natural to expect speeds to increase on a newly-pave 4604. The EA implied that the issue of speed bumps was considered and rejected because of the impact it would have on large logging trucks and bike racks. We disagree wholeheartedly and believe that the argument does not come close to the importance of reducing the risk of an injury or death to pedestrians / bicyclists. We were told that are no logging activities that necessitate logging truck traffic along 4604. Even less understandable is the case that it would unduly jostle bikes on bike racks. Our town has many speed bumps and ubiquitous cars carrying bikes. Accordingly, we request that speed bumps along 4604 be included in the Project. 	<p>Speed bumps are a concern for large trucks. Presently, no logging or pumice hauling is occurring on 4606. Any potential timber sales that may be a result of the West Bend Project may use FSR 4604 for hauling logs.</p>
Costs	<ul style="list-style-type: none"> Please remember you are spending public tax money and need to provide the best options for all FS users. The proposed work on the trailhead of the Phil's Trail complex is an absurd waste of money. In a time when we have record deficits, proposing expenditures as high as \$761,500 to pave a parking area for mountain bike riders is ridiculous. The forest service paid someone to go out there and count cars 87 days. They found, on average, 26 of them. For just \$29,000 per car we can have a gold plated parking area. Just borrow the money from China. Any funds available for this project should be returned to the federal government. Anyone who wasted time on the evaluation needs to be reassigned to work the public actually needs. Yes, it is getting a bit busier, but it does not seem a good use of funding in this environment to build all this infrastructure for an area that does not need it. 	<p>There would be no incurred costs associated with Alternative 1.</p> <p>Alternatives 3 and 4 were developed to address other options than a maximum parking area, including the aesthetics and costs. In the development of all action alternatives, safety was a primary consideration.</p> <p>Counting cars occurred when employees were in the vicinity and by traffic counters.</p>
Concern	<ul style="list-style-type: none"> I am also not in favor of another user fee. AND NO FEES! 	<p>No user fees will be assessed.</p>
Support	<ul style="list-style-type: none"> I do however agree that the pit toilet should be upgraded. 	<p>All action alternatives</p>
Alternative Preference	<p>We think it will reduce the adverse environmental impact being done to the area, improve the aesthetics, and add to the overall attractiveness of our area. These benefits are not lost on us as neighbors, citizens of Bend, bikers, and users of public lands. Specifically, we are in most agreement with Alternatives 3 / 4. While we</p>	<p>Alternative 3 or Alternative 4 address the lower limitations on parking in the immediate Phil's Trailhead area.</p>

	think gravel is the least attractive of the surfacing options, we're agnostic as to the choice between asphalt and chip-seal. We believe Alternative 3 / 4 would limit impact on the landscape (most notably the necessary tree removals), reduce the invitation to unintended use of the lot (overnight camping and long-term RV stays) while providing a preferred parking experience over the current situation.	Alternative 4 provides the more rustic alternative by either an earth tone chip seal or gravel.
Comment Request	BLOCKING FOREST ROAD 4604 BELOW THE TRAILHEAD... To a large extent, our homeowner's anecdotal problems with the management of the Trailhead area has much to do with behaviors that happen in the areas, like the pumice pit (across from our homes), which are accessed by the unlocked gate. Specifically, partying, cars that speed on south 4604 (and spin donuts in the dirt), and fireworks/campfires in the area are a reasonably persistent problem, coupled with inadequate patrolling and enforcement....we're concerned that it may become a source of increasing conflict, absent a good solution...We would ask that you consider <u>keeping the gates closed for the nine months of the year that it is currently not.</u>	The issue with use of FSR 4604 beyond the seasonal closure gate and the potential to close the gate year round, is beyond the scope of this project.
Comment	COMMUNICATION IMPROVEMENT... We would request that the Forest Service make the point to include our group early in the process of approving materially impactful events and projects that affect us homeowners as neighbors. We would also request the name of relevant contact person to address any concerns about behavior on Forest land when it's occurring, so as to not burden County law enforcement unnecessarily.	This groups has been added to the District's mailing list.
General Support	<ul style="list-style-type: none"> • Generally in support of improvements. Restroom needs to be improved. Paving and delineating the parking is going to provide a benefit to the users. COTA has voluntarily maintained trailhead for many years and "hardening" would reduce maintenance needs and provide a more user-friendly and aesthetically pleasing experience. Kiosk and signage are in need of improvement as well. • I would like to suggest a minimum of disturbance to natural vegetation while adhering to the proposed parking capacity. Alternative disturbs too much natural vegetation and Alternatives 3 and 4 are missing key benefits (increased overflow parking, total capacity, striping). Seems there should be a happy medium utilizing all of the existing disturbed areas, utilizes all disturbed areas, minimizes vegetation removal, and adheres to proposed capacity, alignment and other improvements. • Strongly supports Alternative 2 for the following reasons: designated parking = more efficient use; improves traffic flow; reduces dust; accommodate current peak use and future increased use; modern restroom; provide picnic tables and gathering areas. • PTH is nationally known and we need to look to future and plan for increased use. Will improve the overall experience and aesthetics of the area. Will indirectly provide economic benefits to the region. • Would also support Alternatives 3 and 4 (without gravel surface) • Does not support Alternative 1. 	Alternative 2 is the maximum development with reduced development through Alternatives 3 and 4. The design will minimize the impact to undisturbed areas.
Opposition	I prefer the Alternative 1 (No Action)	Addressed with Alternative 1 (No Action)
Opposition	<p>Summary of comments from snowmobile users that are opposed to the expansion of the parking area:</p> <ul style="list-style-type: none"> • These users feel that there are unlimited opportunities, expansions, and improvements are provided without long delays for non-motorized user groups while motorized users need to wait for years of review & environmental studies. • Some feel that other projects need to move forward before the PTH project moves forward, such as Dutchman's and Kapka. • I oppose building of a massive parking lot at the Phil's Trail. • I oppose the Phil's Trail Complex. Money needs to be used at expansion of Dutchman Flat. • Both projects are important but the unresolved issues around Dutchman parking have been out of hand long enough. • Wants a fair examination of the need for park expansion/creation for all groups. 	Comments about the need to expand the Dutchman Flat snow park are outside the scope of this project. The purpose and need are described in the EA p. 3.

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