United States Department of Agriculture
Forest Service

Parks Eddy Watershed Restoration

Environmental Assessment

Mt. Shasta Ranger District, Shasta-Trinity National Forest, Siskiyou County, California

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Contents

Contents ... ii
Changes Between the June 2014 and Final Environmental Assessments ... vii
Introduction ... 1
Summary ... 1
Proposed Project Location ... 1
Forest Plan Land Allocations and General Area Information ... 2
Management Direction ... 4
Late-Successional Reserves – Management Objectives ... 6
Riparian Reserves – Management Objectives ... 7
Inventoried Roadless Area and Special Interest Area – Management Objectives ... 7
Purpose and Need for the Proposal ... 7
Decision Framework ... 15
Public Involvement and Tribal Consultation ... 16
Issues ... 16
Measurable Indicators ... 17
Alternatives, Including the Proposed Action ... 18
Alternative 1 – No Action ... 18
Alternative 2 – Proposed Action ... 18
Transportation System ... 18
Recreation Actions ... 21
Alternative 3 ... 23
Transportation System ... 23
Recreation ... 24
Alternative 4 ... 24
Transportation System ... 25
Recreation ... 25
Activities Common to all Alternatives ... 26
Resource Protection Measures (RPMs) ... 26
Monitoring ... 35
Alternatives Considered but not Studied in Detail ... 35
Environmental Impacts of the Proposed Action and Alternatives ... 37
Sensitive Plants ... 45
Indicators, Boundaries, and Analysis Methodology ... 45
Existing Condition ... 46
Environmental Consequences ... 48
Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Sensitive Plants ... 50
Effects Relative to Key Issues as They Pertain to Sensitive Plants ... 51
Weed Risk Assessment ... 51
Indicators, Boundaries, and Analysis Methodology ... 51
Indicators ... 51
Boundaries ... 51
Methodology ... 52
Existing Condition ... 52
Environmental Consequences ... 53
Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Weeds ... 54
Effects Relative to key Issues as they Pertain to Weeds ... 54
Cultural ... 54

Boundaries and Analysis Methodology ... 54
Existing Condition ... 55
Environmental Consequences ... 56
Geology ... 57
Indicators, Boundaries, and Analysis Methodology ... 57
Existing Condition ... 57
Environmental Consequences ... 60
Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Geology ... 63
Effects Relative to Key Issues as they Pertain to Geology ... 63
Hydrology ... 63
Indicators, Boundaries, and Analysis Methodology ... 63
Existing Condition ... 64
Environmental Consequences ... 67
Summary ... 78
Aquatic Conservation Strategy Objectives ... 79
The Degree to Which the Alternatives Meet the Purpose & Need for Action as it Pertains to Hydrology ... 83
Effects Relative to Key Issues as They Pertain to Hydrology ... 84
Recreation ... 84
Indicators, Boundaries, and Analysis Methodology ... 84
Existing Condition ... 85
Environmental Consequences ... 87
The Degree to Which the Alternatives Meet the Purpose and Need as It Pertains to Recreation ... 93
Effects Relative to Key Issues as They Pertain to Recreation ... 93
Socio-Economics ... 94
Indicators, Boundaries, and Analysis Methodology ... 94
Existing Condition ... 95
Project Area Use and the Local Economy ... 96
Environmental Consequences ... 97
The Degree to Which the Alternatives Meet the Purpose & Need for Action as It Pertains to Economics ... 99
Effects Relative to Key Issues as They Pertain to Economics ... 99
Soils ... 99
Indicators, Boundaries, and Analysis Methodology ... 100
Existing Condition ... 101
Environmental Consequences ... 104
Degree to Which the Alternatives Meet the Purpose and Need for Action as It Pertains to Soils ... 108
Effects Relative to Key Issues as They Pertain To Soils ... 108
Transportation ... 109
Indicators, Boundaries, and Analysis Methodology ... 109
Existing Condition ... 110
Environmental Consequences ... 111
Degree to Which the Alternatives meet the Purpose and Need for Action as It Pertains to Transportation ... 115
Effects Relative to Key Issues as They Pertain to Transportation ... 115
Visual/Scenery ... 116
Indicators, Boundaries, and Analysis Methodology ... 116
Existing Condition ... 117

Environmental Consequences ... 117
Wildlife-Threatened and Endangered Species ... 119
Indicators, Boundaries, and Analysis Methodology ... 120
Existing Condition ... 123
Environmental Consequences ... 129
Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Threatened or Endangered Wildlife ... 139
Effects Relative to Key Issues as They Pertain to Threatened or Endangered Wildlife ... 140
Wildlife – Sensitive Species ... 142
Indicators, Boundaries, and Analysis Methodologies ... 142
Bald eagle (Haliaeetus leucocephalus) ... 145
Willow flycatcher (Empidonax trailii) ... 147
Northern goshawk (Accipiter gentilis) ... 148
Pacific fisher (Martes pennanti pacifica) ... 151
California wolverine (Gulo gulo luteus) ... 154
American marten (Martes americana) ... 155
Pallid bat (Antrozous pallidus) ... 158
Townsend's big-eared bat (Corynorhinus townsendii) ... 161
Fringed myotis (Myotis thysanodes) ... 162
Western bumble bee (Bombus occidentalis) ... 163
Southern torrent salamander (Rhyacotriton variegatus) ... 165
Foothill yellow-legged frog (Rana boylii) ... 168
Cascades frog (Rana cascadae) ... 169
Western pond turtle (Clemmys marmorata) ... 170
Shasta Hesperian (Vespericola shasta) ... 171
Indicator Summary ... 172
Fisheries – Listed, Sensitive and Management Indicator Species ... 173
Indicators, Boundaries, and Analysis Methodology ... 174
Existing Conditions ... 176
Environmental Consequences ... 180
Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Threatened or Endangered Fish ... 189
Effects Relative to Key Issues as They Pertain to Threatened or Endangered Fish ... 190
Additional Compliance Topics ... 190
Management Indicator Assemblages – Wildlife ... 190
Management Indicator Species – Fish ... 191
Essential Fish Habitat ... 191
Late Successional Reserves ... 191
Executive Order 13186 – Migratory Birds ... 193
Executive Order 12898 – Environmental Justice ... 194
Survey and Management Botanical Species ... 195
Watch List Botanical Species ... 196
Ethnobotanical Species/Special Forest Products ... 197
Unique Habitats ... 197
Executive Order #11990 – Protection of Wetlands ... 199
Survey and Manage Wildlife Species ... 199
Consultation and Coordination ... 200
Interdisciplinary Team Members ... 200
Federal, State, and Local Agencies ... 200
Tribes ... 200
Works Cited ... 202

Appendix A. Wildlife Biological Assessment A-1
Appendix B. Road and Trail Proposed Actions B-1
Alternatives 2 and 4 ..... B-1
Parks Creek Drainage: NFS Roads B-1
Eddy Creek Drainage: NFS Roads B-3
Project Trails Routes B-5
Project Unauthorized Routes B-5
Alternative 3 ..... B-6
Appendix C. Best Management Practices C-1
Appendix D. Response to Public Scoping Comments D-1
Appendix E. Past, Present and Resonably Foreseeable Management Activities E-1
Appendix F. Maps F-1
Appendix G. Photographs G-1
Appendix H. Public Comments/Responses H-1

List of Tables

Table 1: Forest Plan Land Allocation, Management Prescription Acres and Percentages of Total Project Area. 3
Table 2: Summary of Activities for the Action Alternatives 25
Table 4: Resource Protection Measures 26
Table 5: Summary and Comparison of Environmental Effects by Alternative 37
Table 6: Sensitive Species with Potential to Occur in the Parks-Eddy Project Area 46
Table 7: Two Sensitive Species Known to Occur In or Near Disturbance Areas 48
Table 8: Post-Project Open Road Densities by Alternative (mi/mi^2) 76
Table 9: Riparian Reserve Benefits - Comparison by Alternative (acres benefited). Acres benefited was calculated by totaling the Riparian Reserve acres containing road actions and adding the Riparian Reserve downstream area within 0.25 miles of the lower end of treatments. 76
Table 10: Projected HUC5 ERA 77
Table 11: Projected HUC8 ERAs (Past and Future). 77
Table 14. Soil Quality Standards Matrix for Alternatives – Overall Direct & Indirect Effects .. 107
Table 15: Open Road Densities 115
Table 16 Northern Spotted Owl Habitat Types Within the Action Area 126
Table 17. Acres of Northern Spotted Owl Suitable and Dispersal Habitat 126
Within the Defined Treatment Areas (Alternative 2) 126
Table 18. Acres of Suitable Northern Spotted Owl Habitat 127
Within Action Area Home Ranges and Cores^ 127
Table 19. Acres of Northern Spotted Owl Dispersal and Non-Habitat 127
Within the Action Area Home Ranges and Cores 127
Table 20. Acres of Northern Spotted Owl Suitable, Dispersal and Non-Habitat 127
Within the Eddy and Scott Mountain LSRs 127
Table 21. Summary of Suitable, Dispersal and Habitat Classified as Non-Habitat 128
for All Project Spatial Scales 128
Table 22: Critical Habitat Acres Within the Project and Action Areas 128
Table 23: Northern Spotted Owl Activity Center Information for the Action Area 130
Table 24: Habitat Acres Affected by Various Road and Trail Treatment Actions in the Four Northern Spotted Owl Activity Centers - Habitat Function is Maintained at all Spatial Scales 132
Table 25: Road and Trail Actions Within ST-014 (by Miles) 134

Table 26: Road and Trail Actions Within ST-015 (by Miles)..... 135
Table 27: Road and Trail Actions Within ST-016 (by Miles)..... 135
Table 28: Road and Trail Actions Within ST-019 (by Miles)..... 135
Table 29: Mileage and Acres of Critical Habitat Affected by Road and Trail Actions 136
Table 31: Forest Plan Northern Goshawk Habitat Capability Model..... 149
Table 32: Sensitive Wildlife Indicator Summary by Alternative 173
Table 33: Fisheries Indicator Summary by Alternative..... 190
Table 32. Poverty Status by State and County, 2000 and 2008..... 195
Table Appendix E-1. Summary of Cumulative Effects Analysis Bounding by Resource E-2
Table Appendix E-2: Present and Reasonably Foreseeable Future Activities in the Porcupine Vegetation Management Project's General Cumulative Effects Boundary and the Project Boundary. E-3

List of Figures

Figure 1. Vicinity map..... 2
Figure 2. Geology (Bedrock) Map of the Project Area 59
Figure 3 – Soils of the Parks Eddy Watershed Restoration Project 102

Changes Between the June 2014 and Final Environmental Assessments

In response to comments received on the June 2014 EA, additional clarifications and explanations were made. Minor wording changes were made throughout the document for clarification. In addition, the following sections received udpates:

- Purpose and Need section:
  - Additional details on the existing conditions for trails, cultural resources, the West Parks Lakes and Caldwell Lakes areas, and Parks Creek Trailhead were included (pgs. 13-15).
- Alternatives section:
  - For the Proposed Action (Alternative 2), clarifications and additional details were included in the descriptions for various road, trail, and trailhead actions (pgs. 18-23). Note the actual actions did not change. In Alternatives Considered but not in Detail, an explanation of alternative development was added, as was Alternative 7 - Close and/or Decommission All Roads and Trails, and No New Activities in Late Successional Reserves, Northern Spotted Owl Core Areas, and Home Ranges (pgs. 36-37). In Resource Protection Measure Cultural PI-2, "laying filter cloth or padding and gravel over the road within and/or adjacent to the site boundary" was replaced with "flagging the road through the site and lifting the blade when the equipment is passing through the site…The resource will be monitored by heritage personnel during implementation" in light of new information since the June 2014 EA (pg. 28).
- Environmental Impacts section:
  - In the Botany section, additional information on pallid bird's beak is presented (pg. 49).
  - In the Hydrology section, the cumulative effects temporal boundary was clarified, and the recent purchase of parcels of land in the vicinity of the project area were noted. The cumulative effects temporal boundary was also clarified in Appendix E (pg. E-1) in the Summary of Cumulative Effects analysis Bounding by Resource table.
  - In the Recreation section, an additional explanation of the analysis methodology was added (pg. 88), Figure 3 was dropped, Recreational Opportunity Spectrum discussion was added (pg. 90), accessibility standards and guidance was explained (pg.92), and some environmental consequences were clarified (pgs. 92-94).
  - In the Socio-Economic section, an explanation of the preliminary estimated costs used was added (pg. 99).
  - The Soils section was updated with additional information on soil compaction/porosity (pg. 107).
  - In the Transportation section the cumulative effects temporal boundary was clarified and updated with additional explanation of the West Parks Lakes current conditions (pg. 115). Road actions were clarified. Open road density discussion was edited for clarity.
  - The Wildlife-Threatened/Endangered Species section was updated with new survey data , updated species lists, and added discussion in the cumulative effects section (pgs. 124, 1129 142-144). An addendum to the Biological Assessmement was added to Appendix A.
  - The Wildlife Sensitive Species section was updated with new survey information for Northern goshawk Southern torrent salamander, Foothill yellow-legged frog, Cascade frog, Western pond turtle, and Shasta Hesperian (pgs. 156, 173, 175-180).

- The lists of interdisciplinary team members and tribes were updated.
- Appendix F was updated with new maps removing map errors from Alt. 3 map.
- Appendix H - Public Comments/Responses was added to this Final EA.

Introduction

We prepared this Environmental Assessment (EA) to determine whether implementation of the Parks Eddy Watershed Restoration Project (Parks Eddy project) may significantly affect the quality of the human environment and thereby require the preparation of an Environmental Impact Statement (EIS). By preparing this EA, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA). For more details of the proposed action, see the Proposed Action and Alternatives section of this document.

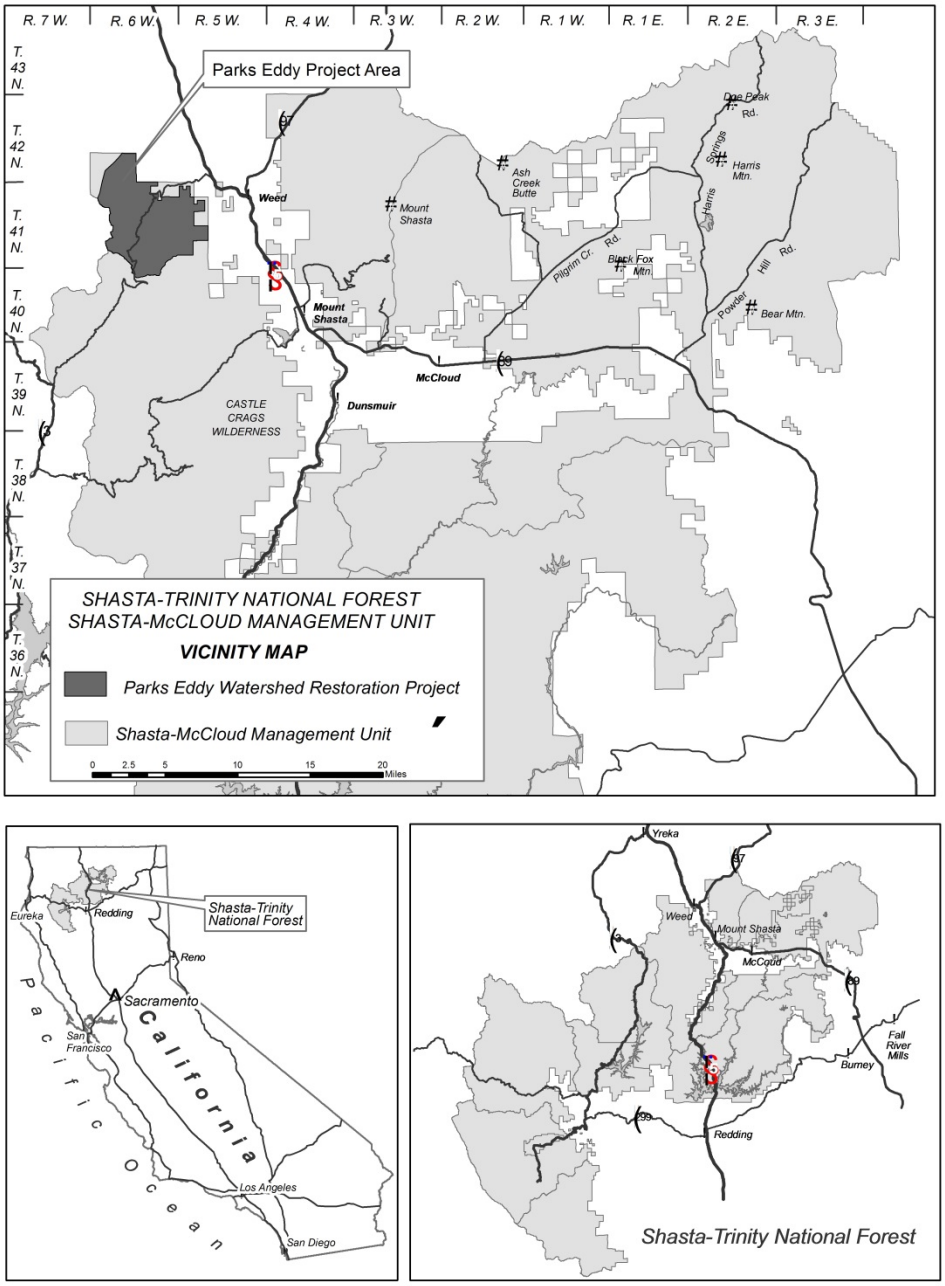
Summary

With the Parks Eddy project, the Forest proposes to maintain, reconstruct, close or decommission a total of approximately 103 miles of roads, user created routes, and trails to reduce their effects on the watersheds and water quality and improve public safety. To improve Forest users' recreation experience, three trailheads will be constructed and one existing trailhead will be improved.

Proposed Project Location

The Parks Eddy project is located in Siskiyou County, California, approximately eight miles west of the community of Weed and 30 miles south of Yreka. The project area under analysis is approximately 23,300 acres in size. The legal location is: Township 42 North, Range 6 West, Sections 28, 29, 31-33; Township 41 North, Range 6 West, Sections 2-17, 20-29, 33-35;Township 40 North, Range 6 West, Sections 1-3, 10-12; and Township 41 North, Range 5 West, Sections 6-8, 18-20, 30, Mt. Diablo Meridian. Elevation ranges from 3,500 to 8,500 feet.

Figure 1. Vicinity map



Forest Plan Land Allocations and General Area Information

Land allocations and management areas from the Shasta-Trinity National Forests Land and Resource Management Plan (Forest Plan) (USDA Forest Service, 1995) in which the project can be found include:

1. **Late-successional reserves** (LSR) associated with the Eddy and Scott Mountain LSR's which are designated as RC-341 and RC-340 in the Forest-wide Late-Successional Reserve Assessment (LSRA) (USDA Forest Service, 1999);
2. **Matrix lands** with wildlife habitat, roaded recreation and commercial wood products emphasis; and
3. **Administratively Withdrawn Areas** including a small area within a designated Inventoried Roadless Area (designated as non-roaded recreation) and a small portion within the Special Interest Area around the summit of China Mountain.

Riparian Reserves are also designated within the Parks Creek and Eddy Creek drainages and their tributaries. Both Parks Creek and Eddy Creek are perennial stream channels with both snow melt and natural springs providing inflow. The project is within the Forest Plan's Parks Eddy Management Area.

Table 1: Forest Plan Land Allocation, Management Prescription Acres and Percentages of Total Project Area.

Forest Plan Land Allocation	Forest Plan Management Prescription	Acres	Percent of Total Treatment Area
Late-Successional Reserves	Late-Successional Reserves (VII)	13,644	61%
Matrix	Commercial Wood Products (VIII)	1,121	38%
	Roaded Recreation (III)	2,376	
	Wildlife Habitat Management (VI)	4,958	
Administratively Withdrawn	Un-roaded Non-Motorized (I)	160	1%
	Special Area Management (X)	131	
Riparian Reserves (overlaps LSR and matrix)	Riparian Management (IX)	(4,841)	Included
TOTAL		**22,390***	

*Note: Total acres do not include areas of private ownership inside the project boundary. Riparian Reserve acres are included in the primary Management Prescriptions.

Wildland urban interface (WUI) is an area where structures and other human development meet or intermingle with undeveloped wildland (USDA Forest Service, USDI, 2001). Within the Parks Eddy project area, there are 7,280 acres of the Weed WUI, which is approximately 33% of the project area. See Appendix F for a map showing the location of the WUI areas within the project area.

The Parks Creek watershed drains a 24 square mile area composed of mixed conifer forests, meadows and small lakes. The Forest lands are located exclusively in the headwaters. The lower watershed in the Shasta Valley is a predominantly rural agricultural environment. The confluence of Parks Creek with the Shasta River is below Dwinnel Reservoir (Lake Shastina), although a considerable amount of watershed runoff is diverted to the reservoir for agricultural irrigation via an open aqueduct. As a primary tributary to the Shasta River in the Klamath River Basin, Parks Creek hosts Klamath Mountains Province steelhead (*Oncorhynchus mykiss*) and Southern Oregon/Northern California coho salmon (*Oncorhynchus kitshuch*) spawning habitat.

The 12 square mile Eddy Creek watershed drains into the Shasta River upstream of Dwinnel Reservoir.

Many unique habitats are found throughout the watersheds due to the primarily ultramafic (serpentine) soils. The Klamath Range is noted for its high species diversity. Soils derived from serpentine ultramafic parent materials support unique botanical communities found in fens, *Darlingtonia* seeps, springs, meadows, ridge tops and serpentine barrens.

Parks Creek Road (42N17), the primary thoroughfare through the project area, provides access to the Pacific Crest Trail and Deadfall Lakes region and is a popular route to points further west. Tamarack Flat, Caldwell Lakes and West Park Lakes are accessed from the Parks Creek Road as well. Additional dispersed recreation occurs along the Eddy Creek (41N26) and Dewey Mine (42N19) Roads.

Management Direction

The project is required to be consistent with Forest Plan direction for several resource conditions:

- Attainment of Aquatic Conservation Strategy Objectives in Riparian Reserves: The Forest Plan (page 4-58) directs attainment of nine Aquatic Conservation Strategy Objectives (ACS) (page 4-53) applicable to Riparian Reserves. The physical integrity of the aquatic ecosystem (ACS 3); water quality necessary to support healthy riparian, aquatic and wetland ecosystems (ACS 4) and; the sediment regime under which aquatic ecosystems evolved (ACS 5) are particularly applicable to the Purpose of this project.
- Riparian Area Values: Maintain riparian area values, particularly when locating and constructing new roads and trails (Forest Plan, page 4-25).
- Riparian Degradation: Identify and treat riparian areas that are in a degraded condition (Forest Plan, page 4-25).
- Protection and Improvement of Trout and Salmon Habitat: The Forest Plan directs the protection, maintenance, and improvement of wild trout and salmon habitat as a Forest Goal (Forest Plan, page 4-4).
- Maintenance or Improvement of Water Quality: The Forest Plan directs water quality and quantity maintenance or improvements to meet fish habitat requirements and to meet or exceed applicable standards and regulations (Forest Plan, page 4-6).
- Watershed Condition Maintained at "Functioning Properly": The Watershed Restoration Action Plan (USDA Forest Service, 2011) includes the maintenance of the "functioning properly" status of the Parks Creek Watershed as the primary goal.
- Sediment Source within the Project Area Does Not Hamper Downstream Dissolved Oxygen Goals: The Action Plan for the Shasta River Watershed Dissolved Oxygen and Temperature Total Maximum Daily Loads (Action Plan) (NCRWQCB, 2006) includes land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials to affected waters of the Shasta River and its Class I and II tributaries (page 8). The Action Plan also notes that reduced sediment loads could lead to increased frequency and depth of pools for lower stream temperatures overall and an increase in the amount of lower temperature pool habitat. While there is no reduction in the dissolved oxygen TMDL prescribed for the headwater reaches, sediment source reduction in the headwaters will aid in achieving downstream dissolved oxygen goals.

The Motorized Travel Management Record of Decision (ROD) (USDA Forest Service, 2010) amended the Forest Plan pertaining to the transportation system. The Motorized Travel Management ROD (page 14) noted the Forest will continue to analyze the existing Forest transportation system to look for opportunities for improvement. The Motor Vehicle Use Map (MVUM) resulting from the Motorized Travel Management and ROD documents the Forest transportation system.

- Maintenance Levels Assignment[1]: The Forest Plan (page 4-17) directs assignment of road maintenance levels based on traffic management and use objectives. All roads need to be maintained at least to Maintenance Level 1.
- Transportation System Maintenance: The Forest Plan directs road maintenance activities be prioritized to provide for user safety, meet contractual and legal obligations, protect natural resources, and provide for an efficient transportation system (Forest Plan, page 4-17). Road surfacing should be upgraded as necessary to protect the road and other resource values (Forest Plan, page 4-17).
- Road Closures: The Forest Plan (page 4-17) directs road closures to assist in management of the Forests' resources to protect the road surface during the wet season so that maintenance and erosion are reduced, and for safety among other administrative reasons.
- Trail Maintenance: Trails will be maintained as needed for specific management objectives. Erosion control and primary access will receive priority (Forest Plan, page 4-17).
- Trail Design and Location: Trails and trail bridges will be located, designed, constructed, and maintained so that they are suitable for the type of travel being served (Forest Plan, page 4-17).
- Rights-of-Way Acquisition: Acquire rights-of-way needed to manage for National Forest System (NFS) resources efficiently (Forest Plan, page 4-19).

The Parks Eddy project is required to be consistent with the Forest Service Watershed Condition Framework (Framework). The Framework proposes to improve the way the Forest Service approaches watershed restoration by targeting the implementation of integrated suites of activities in watersheds that have been identified as priorities for restoration, to cumulatively move a priority watershed to an improved condition. Primary emphasis is on aquatic and terrestrial processes and conditions that Forest Service management activities can influence.

Parks Creek is one of two "priority" watersheds designated under the Framework on the Shasta-Trinity National Forest. In 2011, the Watershed Restoration Action Plan (USDA Forest Service, 2011) developed the objectives and implementation priorities for restoring the Parks Creek watershed.

The Shasta River is a Section 303d[2] listed stream and has North Coast Regional Water Quality Control Board (NCRWQCB) Total Maximum Daily Loads (TMDL) established for temperature and low

[1] Maintenance Levels define the level of service provided by, and maintenance required for, a specific road.
Maintenance Level 1: Roads that have been placed in storage (e.g. "closed") between intermittent uses. With basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs.
Maintenance Level 2: Roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations.
Maintenance Level 3: Roads open and maintained for travel by a prudent driver in a standard passenger car.
Maintenance Level 4: Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced, but may be one lane.
Maintenance Level 5: Roads that provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities.
[2] The Clean Water Act of 1948 (as amended in 1972 and 1987) is Federal policy to control point and non-point source pollution, and assigns the States the primary responsibility for control of water pollution. National forests in California work with state and regional water boards to meet the federal policy. Section 303(d) of the Federal Clean Water Act requires that states develop a list of water bodies that do not meet water quality standards, establish

dissolved oxygen (Shasta River TMDL webpage). The TMDL outlined requirements and implementation strategy in the Action Plan for the Shasta River Watershed Temperature and Dissolved Oxygen TMDL (NCRWQCB, 2006).[3]

TMDL implementation actions primarily occur on private lands on the valley floor. Activities on NFS lands include minimizing, controlling, and preventing discharges of fine sediment, nutrients and other oxygen consuming materials into tributaries of the Shasta River, and implementing Forest Plan water quality protection measures and recommendations for NFS lands pertaining to riparian management, range, and timber harvest activities.

Since the TMDL was implemented, the Forest Service has received a waiver from the Regional Water Quality Control Board providing coverage for management activities (Waiver) (Kuhlman, 2010). Remediation of sediment delivery sites (#25) is among the waiver conditions, as is implementing Shasta River TMDL (#26), and implementing watershed restoration projects that require inventory, prioritization and remediation of pre-existing sediment sources (#27). Forest Service compliance with the conditions, monitoring, and reporting of this Waiver constitutes compliance with the TMDL implementation plan for the Shasta River watershed (Waiver, page 9).

The Watershed Analysis (WA) for the Willow-Parks planning watershed (USDA Forest Service, 2014) includes the Parks Creek and Eddy Creek drainages. The WA provides detailed background and other relevant environmental information relating to existing and reference conditions and recommends management actions responsive to watershed processes.

The Travel Analysis Process (TAP) (USDA Forest Service, 2014) is completed for the Willow-Parks planning watershed. The TAP identifies the transportation system needed for safe and efficient travel and for administration, recreational use, health and safety on roads, trails, and protection of NFS lands and waters. It also suggests changes to existing routes and recommended improvements to routes as well as recommendations for decommissioning. The TAP provides a road and trail risk/benefit analysis describing resource and transportation issues for each route. The TAP recommendations will be reviewed for consistency with the Proposed Action during the analysis process.

The Parks Creek and Eddy Creek watersheds are within Forest Plan Management Area 5 (Parks-Eddy). The project incorporates supplemental management direction for trail access and improved recreation.

Coordination and consultation with potentially affected Native American Tribes, the United States Fish and Wildlife Service (FWS), and the NCRWQCB has started and will continue throughout the planning process.

Late-Successional Reserves – Management Objectives

The project area contains over 13,644 acres (approximately 61% of the project area) within LSR as designated by the Forest Plan, in accordance with the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (Northwest Forest Plan) (USDA Forest Service, USDI Bureau of Land Managment, 1994).

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priority rankings for waters on the list, and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality. The Shasta River TMDL was approved by the US Environmental Protection Agency in January 2007.

[3] Approved by the US Environmental Protection Agency January 2007. P. 8, 18, Appendices E, F, and G). Also see Shasta River TMDL webpage The Shasta River TMDL information represents a partial summary of TMDL implementation actions. Refer to Resolution No. R1-2006-0052 for more information on the TMDL and a complete description of TMDL implementation actions (CRWQCB, 2006).

Management objectives within LSR are to maintain, protect and enhance conditions of late-successional forest ecosystems.

The Forestwide Late Successional Reserve Assessment included review of actions such as those proposed in this project and determined they are consistent with the Forest Plan and Northwest Forest Plan (USDA Forest Service, 1999)(Misc. Activities 1, 10, and 11, pages 203-207).

Riparian Reserves – Management Objectives

As noted in the Forest Plan, Riparian Reserves are some of the most productive, sensitive and diverse sites within the National Forest. The project area includes over 4,800 acres in riparian reserves and is required to be consistent with Forest Plan standards and guidelines for resource activities in Riparian Reserves, and with the nine ACS objectives.

Inventoried Roadless Area and Special Interest Area – Management Objectives

A small corner (160 acres) of the Mt. Eddy Inventoried Roadless Area (IRA) is included in the southern edge of the project area. No project activities are proposed in IRA. Much of the water in the IRA drains to the east down the Wagon Creek watersheds to the Sacramento River basin. A small portion drains to the west into the Deadfall Lake region and the North Fork Trinity River. One road segment within the project (41N50A) ends approximately 0.1 mile from the edge of the IRA and is proposed for decommissioning.

A small corner (131 acres) of the China Mountain Special Interest Area (SIA) is included along the western boundary of the project area above the Caldwell Lakes basin. While the current trail reaches to within 1 mile of the boundary, the project does not propose any changes or modifications to that portion of the trail. A few dispersed recreation locations[4] are located around the three lakes; however the SIA includes only the steep upper slopes of the Caldwell Lakes basin below China Mountain summit where little use is occurring. No project activities are proposed in the SIA.

Purpose and Need for the Proposal

Purpose and need for action is generated by identifying the departure of the existing condition from the desired condition. The purpose of this project is watershed restoration in the Parks and Eddy Creek watersheds to promote long-term ecological integrity while providing safe and efficient access for administration of NFS lands and recreation opportunities. The existing and desired conditions, which are the basis for the needs for action, are described later in this document.

In summary, an identified need exists for:

1) Watershed Condition Restoration

- Sediment Source Reduction: A need exists to reduce sediment sources to help restore riparian and aquatic habitats to improve and maintain water quality, in alignment with the Shasta McCloud

[4] Dispersed recreation locations may include unimproved camping or day use areas that are not part of a developed facility and occur in the General Forest Area.

Management Unit Watershed Restoration Action Plan and Waiver of Waste Discharge Requirements.[5]

- Restoration and maintenance of aquatic and terrestrial ecosystems: A need exists to maintain the "functioning properly" status of the Parks Creek watershed into the foreseeable future. ACS objectives need to be attained or not prevented from future attainment in the Riparian Reserves.

2) Transportation System Operation and Management

- Transportation System Management: A need exists for an improved motorized and non-motorized Forest transportation system in support of watershed condition restoration, and for safe and efficient administrative and public access. Road maintenance levels should reflect Forest Service access requirements. Maintenance Level 1 roads need to be properly stored (closed) for future use while protecting the environment. Roads and routes not included in the system need to be permanently decommissioned. Proposed rights-of-way need to be acquired.

- Transportation System Maintenance: A need exists to maintain the transportation system to standard.

3) Recreation Facilities and Opportunity Enhancement

- Trailheads: A need exists for improved trailhead facilities including parking, turnarounds, visitor information and services to meet current demand and Forest Service recreation standards.

- Sanitation: A need exists for toilet facilities at high demand locations in support of public sanitation and water quality objectives.

- Trails: A need exists for improved trail access (motorized and non-motorized), tread and design (note, trails are part of the transportation system), and trails that are designed and located to be self-maintaining to reduce erosion and sediment.

- Dispersed recreation: A need exists to protect access to dispersed recreation opportunities to ensure that the public can easily access their forest and recreate.

- Scenery Viewing Opportunities: A need exists for improved scenic opportunity on Parks Creek Road, a designated scenic byway.

Existing and Desired Conditions

Existing condition is identified through multiple avenues. The Willow-Parks Watershed Analysis (WA) describes existing conditions that have departed from reference conditions for multiple resources. The Watershed Restoration Action Plan identifies specific watershed conditions. Sediment source inventories identify areas in need of storm proofing and stabilization. Road condition inventories identify maintenance needs and the TAP describes resource concerns on specific roads and trails and recommends treatment actions.

The desired future condition is embodied in the Forest Goals and Objectives and further clarified by the standards and guidelines in the Forest Plan. The WA, TAP, Watershed Restoration Action Plan, and objectives of the Action Plan for the Shasta River Watershed Dissolved Oxygen and Temperature TMDLs

[5] The North Coast Regional Water Quality Control Board has established a limit for the Total Maximum Daily Load (TMDL) for temperature and oxygen for the Shasta River. The associated Waiver of Waste Discharge Requirements (Order R1-2012-0083, waiver) was adopted by the Board on October 4, 2012.

further refine the Forest Plan desired condition. The WA provides more detailed descriptions of reference conditions, existing conditions and causal mechanisms for the departure between reference and existing conditions. The Motorized Travel Management ROD (USDA Forest Service, 2010) amended the Forest Plan pertaining to the transportation system. The MVUM resulting from the Motorized Travel Management and ROD documents the Forest transportation system designated for public motor vehicle use. The TAP specifically recommends the desired condition for the Forest transportation system in consideration with the Motorized Travel Management ROD; changes may be made under the appropriate level of NEPA decision making.

1) **Watershed Existing Condition –** The Watershed Restoration Action Plan notes the Parks Creek Watershed is in a "Functioning Properly" condition; however, sediment inputs to aquatic systems are mostly related to lack of maintenance and management relating to access and recreation.

   Roads (authorized and unauthorized), User-Created Routes, Old Skid Trails, Recreational Trails and Dispersed Recreation Use Impacting Water Quality and Hydrologic Processes: Most roads and trails in the watershed are not regularly maintained and as a result can impact hydrologic processes and water quality. Impacts from roads, user-created routes and trails can include stream crossing failures, interception and diversion of runoff on road and trail prisms, hill-slope gullying, and sedimentation. Poorly drained and hydrologically connected roads continue to serve as sediment sources to streams and other aquatic habitats. Adverse impacts are caused by plugged and undersized culverts, interception of sub-surface flows (from road cuts), rilling, gullying, and undercutting of unstable areas due to poor road location and lack of maintenance. While some of these problems are caused by poor design, the majority of problems with stream crossings can be attributed to lack of maintenance.

   - Poorly located trails (and associated dispersed parking)and dispersed recreation use are causing some trampling of plants, compaction of soils and damage to streambanks. Adverse impacts from roads and trails include stream crossing failures, interception and diversion of runoff on road and trail prisms, hill-slope gullying, and sedimentation. Additionally, poorly located trails are expensive to maintain and are in need of enhancement to improve safety.

   Fine sediment inputs impact aquatic habitat (e.g. spawning gravels) and elevate turbidity levels during periods of high runoff. Excessively high inputs of fine sediments can also impact water quality by reducing the amount of dissolved oxygen in streams and lakes. Dissolved oxygen levels are of particular concern in the watershed due to the Shasta River TMDL which lists the Shasta River as impaired for both dissolved oxygen and temperature.

- Meadow Habitat Impacted by Roads, Trails and Off Highway Vehicle (OHV) Use: The overall condition of wet meadow habitats can be characterized as good and properly functioning. Many meadow habitats appear relatively undisturbed although it is likely that they experienced active grazing in the past. Some meadows have been impacted by OHV use. Direct impacts of OHV use in meadows or wet areas includes rutting and soil displacement which is most severe in wet areas. Drainage in some meadows, wetlands and seeps/springs has been affected by road cuts resulting in drying of some wetland areas, changes in vegetative communities, and hill-slope erosion.

- Trailheads are Inadequate for Existing Use and Impacting Water Quality: Lack of adequate facilities and poor sanitation practices may be impacting water quality in areas where recreation use is concentrated.

1) **Watershed Desired Condition**

- Maintenance and Improvement of Riparian Areas: The Forest Plan directs the maintenance and improvement of riparian areas as a Forest Goal (Forest Plan page 4-5).
- Maintenance or Improvement of Soils: The Forest Plan directs the maintenance or improvement of soil productivity and prevention of excessive surface erosion, mass wasting, and cumulative watershed impacts as a Forest Goal (Forest Plan page 4-5).
- Attainment of Aquatic Conservation Strategy Objectives in Riparian Reserves: The Forest Plan (page 4-58) directs attainment of nine ACS objectives (page 4-53) applicable to Riparian Reserves. The physical integrity of the aquatic ecosystem (ACS 3); water quality necessary to support healthy riparian, aquatic and wetland ecosystems (ACS 4), and; the sediment regime under which aquatic ecosystems evolved (ACS 5) are particularly applicable to the Purpose of this project.
- Riparian Area Values: Maintain riparian area values, particularly when locating and constructing new roads and trails (Forest Plan, page 4-25).
- Riparian Degradation: Identify and treat riparian areas that are in a degraded condition (Forest Plan, page 4-25).
- Protection and Improvement of Trout and Salmon Habitat: The Forest Plan directs the protection, maintenance, and improvement of wild trout and salmon habitat as a Forest Goal (Forest Plan, page 4-4).
- Maintenance or Improvement of Water Quality: The Forest Plan directs water quality and quantity maintenance or improvements to meet fish habitat requirements and to meet or exceed applicable standards and regulations (Forest Plan, page 4-6).
- Watershed Condition Maintained at "Functioning Properly": The Watershed Restoration Action Plan includes the maintenance of the "functioning properly" status of the Parks Creek Watershed as the primary goal.
- Sediment source within the project area does not hamper downstream dissolved oxygen goals: The Action Plan for the Shasta River Watershed Dissolved Oxygen and Temperature TMDL includes land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials from affected waters of the Shasta River and its Class I and II tributaries (page 8). The Plan also notes that reduced sediment loads could lead to increased frequency and depth of pools for lower stream temperatures overall and an increase in the amount of lower temperature pool habitat. While there is no reduction in dissolved oxygen TMDL prescribed for the headwater reaches, sediment source reduction in the headwaters will aid in the achievement of downstream dissolved oxygen goals.

2) **Transportation System Existing Condition**

A sediment source inventory completed in 2011 identified road segments and road drainage features that were not functioning properly (North State Resources, 2011). A road condition inventory in 2012 confirmed the overall condition of the forest transportation system in the

analysis area and the need for immediate road maintenance.[6] A list of the roads and the proposed treatments in the project area can be found in Appendix B-Road and Trail Proposed Actions.

- Access: Watershed access is hindered by lack of maintenance and lack of active management and some of the roads in the watershed are not drivable. Most roads within the watershed are degraded and not passable for most 2-wheel drive vehicles. About 1/3 of roads that were inventoried in 2012 had been closed by natural events and are not accessible to vehicles. Several routes not included on the MVUM are needed for access to facilities (e.g. Park Mountain Electronic Site), resource management and important dispersed recreation areas. Other user-created routes that remain physically open to vehicles continue to impact resources.

- Outstanding Rights: Several NFS roads remain in cost share agreements despite no longer accessing private lands owned by the cost share participant. Management of these roads is limited pending resolution of agreements.

- Previously Closed Roads Reopened: Some roads that were closed through past management activities have been opened up through vandalism. Roads that were intended for closure have been left open.

- Parks Creek Road – Road 42N17: Parks Creek Road is a maintenance level 3 scenic byway (Trinity Heritage Scenic Byway) and a primary access route to Mt. Eddy, the Deadfall Lakes area, the Pacific Crest Trail, the Trinity Alps, Russian and Marble Mountain Wilderness Areas and to the northern California coast. The road receives a notable amount of annual use by recreationists, including use as a route for a bicycle recreation event. Road condition is slowly deteriorating which may eventually lead to less use by the public. Parks Creek Road has inadequate passing width and sight distance in places. Cemented glacial outwash gravel under the road fill material and subsurface water flow combine to remove material from beneath the road to create a slump, or depression in the road surface. These slumps may be difficult to see on the roadway since they can occur without visually disturbing the surface pavement, thereby creating a safety concern. Michigan California Timber Company owns land in the project area and conducts commercial log haul on the Parks Creek Road.

- Eddy Creek Road – Road 41N26: Eddy Creek Road is a maintenance level 3 road which begins at the County road (North Old Stage) as a disintegrating paved surface across private property through rural residential development and transitions into a native surface road passible only by high-clearance 4-wheel drive vehicles. Watershed access is hindered by lack of maintenance and a poorly located road that frequently washes out in large storm events. Poorly maintained drainage features divert water into the road in several locations. Fine materials have been washed away leaving only the larger, rocky materials. Road prism[7] and crossing failures are impacting water quality and riparian and aquatic habitats. Eddy Creek Road ends near a meadow and turns into a non-motorized trail. Some side roads located in close proximity to Eddy Creek are hydrologically connected and serve as sources of sediment to the creek.

- Caldwell Lakes Access Road – Road 41N74: has erosion damage caused by lack of drainage features and is currently only accessible by high clearance vehicles.

[6] USDA Forest Service, 2012. Roads Condition Assessment, forms only.
[7] The general average road prism width is 10 to 24 feet from centerline (e.g. 20’ to 48’) and varies depending on location within the project area (e.g., some roads have no cut/fill and some are extensive).

- Dewey Mine Road – Road 42N19: Portions of the Dewey Mine Road, Road 42N19A and Road 42N19B do not have Forest Service access across the private lands. Additionally, the switch-back portion of Dewey Mine Road is severely degraded due in part to steep terrain and subsurface water. An existing bypass of this portion is also on private lands without Forest Service access.

- Cultural Resources[8] Impacts: Roads have encroached on some cultural resource sites.

2) **Transportation System Desired Condition**

The Motorized Travel Management ROD amended the Forest Plan to define the current transportation system and legal public access routes, which were finalized and displayed on the MVUM.

- Safe and Efficient Transportation System: A transportation system that provides safe and efficient travel for the utilization, administration and protection of NFS lands, minimizes adverse environmental impacts, meets water quality objectives, provides recreational access, and reflects long-term funding expectations (Forest Plan page 4-4). The Forest Plan directs retention of roads on the system that will be needed for future activities (page 4-17).

- Maintenance Levels Assignment: The Forest Plan (page 4-17) directs assignment of road maintenance levels based on traffic management and use objectives and all roads need to be maintained at least to Maintenance Level 1.

- Transportation System Maintenance: The Forest Plan directs road maintenance activities be prioritized to provide for user safety, meet contractual and legal obligations, protect natural resources, and to provide for an efficient transportation system (Forest Plan, page 4-17). Road surfacing should be upgraded as necessary to protect the road and other resource values (Forest Plan, page 4-17).

- Road Closures: The Forest Plan (page 4-17) directs road closures to assist in management of the Forest's resources to protect the road surface during the wet season so that maintenance and erosion are reduced, and for safety among other administrative reasons.

- Trail Maintenance: Trails will be maintained as needed for specific management objectives. Erosion control and primary access will receive priority (Forest Plan, page 4-17).

- Trail Design and Location: Trails and trail bridges will be located, designed, constructed, and maintained so that they are suitable for the type of travel being served (Forest Plan, page 4-17).

- Rights-of-Way Acquisition: Acquire rights-of-way needed to manage for Forest resources efficiently (Forest Plan, page 4-19).

[8] Cultural Resource: is an object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence. Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, places, or objects and traditional cultural properties. Cultural resources include the entire spectrum of resources for which the Forest Heritage Program is responsible from artifacts to cultural landscapes, without regard to eligibility for listing on the National Register of Historic Places (FSM 2360.5).

3) **Recreation Existing Condition**

Moderate amounts of dispersed recreation occur within the watershed. Recreation activities include hiking, fishing, biking, horseback riding, hunting, camping, sightseeing, skiing, snowmobiling and OHV driving. The watersheds contain no developed recreation facilities for the public (e.g. campgrounds, restrooms). Users park along roadways to access popular destinations.

- Unmanaged Use: Lack of interpretive signs to educate visitors about resource issues combined with a minimal management presence have resulted in unmanaged recreation and resource damage in some areas of the watershed.

- Parks Creek Road – Road 42N17: As a national scenic byway, a connecting route to California State Highway 3, and the primary access to the Parks Creek Trailhead, Parks Creek Road receives a notable amount of annual use. The road is part of the annual Mt. Shasta Summit Century bike route, a popular multi-distance recreation event that draws riders from all parts of the country. Continued deterioration of the road will lead to safety hazards that could adversely affect public use. The area has a very high scenic quality, but lacks areas to view scenery.

- Parks Creek Trailhead: Serving the Pacific Crest Trail, Mt. Eddy and the popular Deadfall Lakes basin, the Parks Creek Trailhead receives heavy visitor use in the summer months. Inadequate parking, sanitation facilities and visitor information leads to degraded conditions and potential health, safety, and water quality problems. Multiple routes leading from the trailhead create visitor confusion. Vehicles park on both sides of the roadway; in and adjacent to the borrow site and in the relatively flat open area at the summit.

- West Parks Lakes Access: Access is via Road 41N73 which has erosion issues along the first ½ mile and is washed out at approximately mile 2.5. Although there is a designated NFS trail (6W23) to the lakes, it has not been maintained and therefore there is no clear trail to the lakes; however, OHV users have placed a rudimentary wooden crossing at the creek and maintained an open path to the lower lake along an existing route. There is no designated parking so visitors park along the edges of the Parks Creek Road or at the washout for higher clearance vehicles.

- Caldwell Lakes Access: There is no developed trailhead, parking or turn-around space. The lower end of the Caldwell Lakes Trail (NFS trail 6W01) is located on an old road prism and the road/trail has drainage problems that negatively affect the meadow habitat. Higher, the steep alignment increases erosion problems and impacts to sensitive habitats. Visitors park along the Parks Creek Road or in wide spots along the lower portion of Road 41N74.

- Dispersed Recreation Areas: Sixteen dispersed recreation locations concentrated around roads, streams and lakes were inventoried in June 2012. Many of these areas have not been used in several seasons while others appear to be frequently used. Some dispersed recreation locations are inconsistent with the MVUM that requires vehicles to park no more than one vehicle length off the NFS road. Dispersed locations vary in size and condition and some impact sensitive habitats and hydrologic processes. Tamarack Flat has multiple dispersed areas located immediately adjacent to Parks Creek. The close proximity of these may affect soil, vegetation and water quality including destabilization of the streambanks. Vehicle intrusions into the stream have been observed.

- Trail Maintenance: Designated NFS trails and user-created trails in the watersheds are not regularly maintained and impact hydrologic processes and water quality. Poorly located and/or maintained trails and associated dispersed locations indirectly increase trampling of plants, compaction of soils and damage to streambanks. Lack of designated trailheads have resulted in user created routes from dispersed parking to the trails.

- Off Highway Vehicles: There is illegal OHV use (both trucks and quads) within the project area. OHV use off of Forest transportation system roads impacts some meadows through rutting and compaction. Wet areas receive the most severe damage. Poor road access may be influencing unauthorized OHV access in the watershed which in turn can have negative impacts to aquatic and riparian habitats. Illegal OHV use has created some illegal roads and trails which have destroyed habitat for sensitive and watch list plant species as well as other open habitat species. Eddy Creek Trail (NFS trail 6W02) in particular serves as an access point for illegal motorized access into meadows. The original trail has been rerouted through the Eddy Creek Meadows by OHV tracks.

- Cultural Resources: Some OHV activity is affecting known archaeological sites. In addition, two recorded sites are located within the NFS road prism and could be affected by road maintenance.

3) **Recreation Desired Condition**

- Developed Facilities: Recreation opportunities will provide for a high quality recreation experience including access to developed facilities by the physically challenged (Forest Plan page 4-5).

- Accessibility: Provide barrier free recreation facilities that are accessible to physically challenged individuals. Emphasize these facilities at developed recreation locations (Forest Plan page 4-24).

- Interpretive Services: Provide interpretive services to direct visitors to their recreation destinations, to facilitate understanding of resource management activities, and to acquaint them with unique or special features on the Forests and the function of forest ecosystems (Forest Plan, page 4-24).

- Scenic Opportunities: The Forest Plan directs development or expansion of opportunities for scenic drives and vista points and maintenance of a diversity of scenic quality, particularly on major travel corridors (Forest Plan, page 4-5). The Parks Creek Road provides opportunity for a scenic drive with vista points consistent with its designation as a scenic byway (Forest Plan page 4-5).

- Recreation Access: Continue to improve access to rivers, streams, and lakes for water-oriented recreation activities consistent with the Aquatic Conservation Strategy. Continue to provide access to hunting, fishing, and wildlife viewing areas. (Forest Plan pages 4-24 to 4-25).

- Trail Access: Alpine lake fisheries recreation is enhanced through increased trail access (Forest Plan page 4-101).

- Dispersed Recreation: Access to dispersed recreation areas is maintained and improved (Forest Plan page 4-101). [in Riparian Reserves] Mitigate the physical impacts of increased,

dispersed recreation use. [in Riparian Reserves] Rehabilitation efforts should respond to resource damage to soils, water, and vegetation (Forest Plan pages 4-24 through 4-25).

Decision Framework

After reviewing this EA and the supporting documents and considering all public input on the project, the Forest Supervisor of the Shasta-Trinity National Forest will decide whether to implement the Proposed Action as described, select another action alternative that meets the purpose and need, or take no action. The decision will be in accordance with Forest Plan goals, objectives, and desired future conditions. If an action alternative is selected, the decision will specify:

- When proposed activities could begin and whether there are any time restrictions,
- How roads in the assessment area would be managed,
- What project design features and resource protection measures would be needed,
- What monitoring requirements would take place.

Public Involvement and Tribal Consultation

This project was published on the Schedule of Proposed Action (SOPA) prior to January 2011 and remains on the schedule.

Letters were sent to six potentially affected federally recognized Native American Tribes on November 6, 2013, offering to initiate formal consultation for the project. The District Ranger and Project Manager also presented the project to the Pit River Tribe at the November 2013 quarterly meeting in Burney, CA. Additional notification letters were sent to the Siskiyou County Sheriff and the Siskiyou County Board of Supervisors on November 19, 2013, followed by a short presentation to the Board on January 21, 2014. A meeting with residents on Eddy Creek Road was held on June 6, 2013. On June 11, 2013 a field trip was held with nine state and federal agencies.

A legal notice describing the Proposed Action and the opportunity for public comment was published in the Record Searchlight (Redding, California) on December 30, 2013, which began a 30-day scoping period that ended on January 29, 2014. Scoping documents were posted on the Forest's website, and notices were mailed to individuals, non-federally recognized Native American Tribes, adjacent landowners, permit holders, organizations, and government agencies that had expressed interest in this project. A scoping notice was also published in the Mount Shasta Herald on January 16, 2014.

The Forest received 14 discrete responses to the scoping notice in the form of letters, emails, and telephone calls from a number of individuals and organizations. One of these responses was a form letter sent by more than 700 individuals.

The letters, emails and telephone calls resulted in 77 comments regarding the project. The public comments and project interdisciplinary team responses to them can be found in Appendix D. The comments were considered in the development of alternatives to the proposed action and in the environmental analysis presented in the preliminary EA.

A legal notice for comment on the preliminary EA was published in the Redding Record Searchlight on June 18, 2014, with a 30-day comment period that ended on July 18, 2014. Letters were mailed and emails were sent to over 708 individuals, non-federally recognized Native American Tribes, adjacent landowners, permit holders, organizations, and government agencies that had expressed interest in the project or provided comments during the public scoping period. The preliminary EA and resource specialist reports were published on the Forest's website. A notice was also published in the Mount Shasta Herald on June 25, 2014. The public comments from this comment period and project interdisciplinary team responses to them can be found in this final EA in Appendix H.

Issues

Issues are comments stated as cause-effect relationships that highlight effects, unresolved conflicts, or unintended consequences that may occur from the Proposed Action. Issues provide opportunities during the analysis to explore alternative ways to meet the purpose and need for the proposal while reducing adverse effects (FSH 1909.15 Ch. 12.42). The process of refining issues associated with an EA includes identifying key issues to be analyzed in depth in the EA (FSH 1909.15 Ch. 12.4).

From the cause-effect (issue) statements developed from the concerns of resource specialists and scoping comments, the following two issues were determined to be key issues for consideration when developing alternatives to the Proposed Action, and in analyzing the alternatives in the Preliminary EA.

1. **Roads and Motorized Trails**: Road and motorized trail construction and maintenance would allow for continued resource impacts, result in continued soil erosion, result in negative impacts to sensitive plant populations, wetlands, meadows, wildlife and habitat, and fisheries, and cost more than budgets typically can accommodate.
2. **Trailheads and recreation facilities:** Designated trailhead/information boards/trailhead signs/inclusion on maps for Caldwell Lakes will increase new users and have negative impacts on the recreational experience within the area. Trailhead facility construction and improvements will have negative impacts to wildlife and fisheries.

Measurable Indicators

Measurement indicators are measures of change that are directly linked to cause-effect relationships. The indicators were developed by specifying measures that will be useful in judging differences among the actions, and were developed to be understandable, quantifiable, and responsive enough to environmental influences and activities to show the changes.

Roads and Motorized Trails Indicators:

- Number and miles of roads and motorized trails decommissioned,
- Open road density changes (note that discussing the spatial relationships and distributions will make this indicator more meaningful than simply stating density changes over the entire project area),
- Reduced erosion potential before and after implementation,
- Number and miles of roads and motorized trails improved and maintained,
- Acres of riparian reserves, wetlands, fens, sensitive plant populations protected from OHV damage,
- Number and acres of archaeological sites protected from damage,
- Changes in noise levels due to motorized use near northern spotted owl activity centers, and in sensitive wildlife species habitats.

Trailheads and Recreational Facilities:

- Number of user-created roads to dispersed locations closed,
- Number of dispersed recreation locations provided with legal motorized access,
- Number of new, and improved trailheads, including number of new parking spots, ADA access improvements,
- Miles of improved hiking trails,
- Number of new signs, information boards, kiosks for public information, safety, and education.

Alternatives, Including the Proposed Action

Alternative 1 – No Action

With Alternative 1, no road, trail, or trailhead watershed restoration actions would be implemented on the approximately 103 miles of roads and trails identified in the Parks Eddy project. Current and ongoing activities, such as road maintenance, hazard tree felling, wood-cutting, OHV use, dispersed recreation (e.g., hiking, camping, sightseeing, hunting, skiing), forest products collection and other permitted special uses would continue at their current level. The no action alternative forms a basis for comparisons of the effects of the action alternatives.

Alternative 2 – Proposed Action

The following activities in the Proposed Action draw from management direction and recommendations, which set the purpose and need for action and identified desired conditions for watershed, transportation and recreation. The Proposed Action focuses on the transportation and recreation existing impacts and identified needs for action. All road and trail distance figures are approximate values based on the best available data including the Forest transportation atlas and internal Forest Service database ("INFRA Database"). They are limited to the accuracy of those sources which includes measurements from geographic information systems (GIS), global positioning systems (GPS), field instruments and aerial photography. Mileages were updated throughout the planning process as better information was made available. At the draft and final EA, mileages were finalized for the purposes of a meaningful comparison between alternatives; however actual miles may again change slightly during project implementation as additional field verification is made and corrections are made to the databases.

Transportation System

The Motorized Travel Management ROD (USDA Forest Service, 2010)[9] allows for considering Forest transportation system road maintenance level changes, additions, and decommissioning. The ROD noted that the Forest would continue to analyze the existing Forest transportation system to look for opportunities for improvement; particularly to identify route decommissioning and new road and trail opportunities to enhance the recreation experience while protecting Forest resources (USDA Forest Service, 2010). The Willow-Parks WA (USDA Forest Service, 2014) and TAP (USDA Forest Service, 2014)[10] provided specific recommendations for the road system.

A complete list of roads, current conditions, and proposed actions can be found in Appendix B.

[9] Travel Management (36 CFR Part 212, Subparts A, B, and C). Subpart A establishes requirements for administration of the forest transportation system, including roads and trails, It also requires identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of Forest lands. Subpart B describes the requirements for designating roads, trails, and areas for motor vehicle use and for identifying them on a motor vehicle use map (MVUM). The Motorized Travel Management ROD amended the Forest Plan pertaining to the transportation system.

[10] The TAP identified the road and trail system needed for safe and efficient travel and for administration, recreational use, health and safety on roads, and protection of Forest lands. It also suggested changes to existing routes and recommends improvements to roads as well as offers recommendations for decommissioning.

Roads

Road Decommissioning

Close and decommission approximately 21.5 miles of roads through hydrologic stabilization with waterbars, restored drainage patterns, tilling and seeding where needed to alleviate compaction and prevent erosion, and/or blocking motorized vehicles at the entrance. Remove decommissioned roads from the Forest transportation system.

Road Storage[11]

Close and store approximately 3.3 miles of roads through hydrologic stabilization with waterbars, restored drainage patterns and/or blocking motorized vehicles at the entrance. Till and seed where needed to alleviate compaction and prevent erosion.

Road Maintenance

Clean, repair and reestablish road drainage structures including rolling dips, culverts and ditches on approximately 43.8 miles of roads. Clear roadside brush, resurface the traveled way, grade and remove danger trees. Provide adequate signage for orientation and safety.

Road Reconstruction

Improve road drainage (cross drain installation, ditch improvements) and spot rock road segments that are negatively impacting aquatic/riparian habitats on approximately 27 miles of roads. Repair and replace culverts and crossings to accommodate predicted flows based on drainage area and assure they could allow for fish passage in potential anadromous fisheries habitat. Repair erosion sites along the cut and fill banks. Add turnouts on main roads for safer and more efficient use. Restore meadow and riparian areas where the road alignment has encroached or road condition has resulted in damage. Reconstruction also includes the work described under maintenance. Additional types of reconstruction options are listed below.

Storm Proofing[12]

Storm proof the drainage system on roads by replacing existing culverts with larger ones, creating rolling dips[13] and armoring (adding rock to) existing dips, to break up water flow and dissipate energy off-slope, outsloping the road surface so that water drains toward the outside slope, treating crossings for aquatic passage and large flow events. Storm proofing generally occurs on spots or sections of the road, not on the entire length.

Realignment

Relocate roads and trail facilities outside of active areas such as debris flow channels, stream channels, landslides, rock slides, and also to avoid cultural resources. Specific locations proposed for road and trail realignment are discussed below.

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[11] Some roads are needed only intermittently for administrative access, and are closed to vehicle use the rest of the time. The term “storage” refers to the period of time a road is closed to vehicular use. When referring to a Forest transportation system road, storage is synonymous with Maintenance Level 1.

[12] Storm proofing is a term that refers to a host of activities that prepare a road to better withstand storm events and to be less dependent on recurrent road maintenance.

[13] A rolling dip is a dip installed in the road surface that channels cutbank and/or road surface flow off of the roadway. It is used in conjunction with outsloped roads/segments of road that do not have a ditch, reducing the need for culverts and other infrastructure.

Stabilization

Stabilize stream banks and roads associated with the erosion of cultural resources. Locations where road and stream bank stabilization are proposed are discussed below.

Road System Management

Change Maintenance Level (ML) 2 system roads to ML 1 or decommission if they are naturally closed. Stabilize and storm proof as needed to assure resource protection. Where needed and resource objectives can be met incorporate existing unauthorized routes into the Forest Transportation System (FTS) for motorized and non-motorized access and dispersed camping needs. Establish trailheads and relocate dispersed parking to suitable locations to minimize erosion. Install signage for trailer use.

Parks Creek Road Reconstruction (Road 42N17)

Repair, replace and install new drainage features to reduce concentrated flows leading to erosion and sedimentation. Create more turnouts (approximately 26 potential locations) in existing wide areas for safe traffic flow and viewing scenery except where there are factors that would deter development, such as bedrock that would require blasting, unstable geology, etc. Clear roadside brush, including removal outside the road prism on NFS lands where sight distance is a safety concern. Repair and stabilize eroding cut and fill slopes, including the grade climbing above the Parks Creek crossing and at the intersection with Road 41N72. Armor ditches[14] and install energy dissipaters[15] at drainage outlets.

Eddy Creek Road Reconstruction (Road 42N26)

Based on long-term access and utilization needs for NFS lands, changing the Maintenance Level from ML 3 for passenger vehicles, to a high clearance vehicle standard (ML 2) is appropriate for this road. Establish a more consistent surface through the first 1.5 miles across private lands by pulverizing paved patches where surface is heavily damaged. Storm proof to address resource concerns and prevent further resource degradation. Cooperate with private land owners to address long-term access needs across the private segment. Add short user-created segments along the lower portion to the FTS to access popular dispersed recreation areas. Realign short segments (<200') to avoid sensitive areas, stream channels, and slumps. Repair or replace drainage crossings to stabilize and reduce erosion. Decommission user created segments in the upper portion that access meadow areas and restore the Eddy Creek Trail for non-motorized access. (see below).

Dewey Mine Road Right-of-Way and Rerouting (Road 42N19)

Reconstruct and improve drainage on the lower segment across the West Fork Parks Creek. Realign a poorly located section of the road by decommissioning the existing section within a hydrologic feature and rerouting onto two existing roads over private land. This requires the addition of approximately 0.6 miles of road to the FTS and a right of way agreement with a private party. Confirm right of way on existing roads across private land. Seek right of way on private land for new alignment prior to implementation. If an agreement with the private landowner cannot be made, reconstruct the existing road section within the hydrologic feature. If right if way is acquired, decommission the section with the hydrologic feature to restore hydrologic connectivity, block motorized access and restore the road prism to a more natural state by using a combination of recontouring, obliterating the road prism, seeding, planting and other methods specific to the needs of the site. Clean, repair and reestablish road drainage structures including rolling dips, culverts and ditches on remaining alignment to the Project boundary.

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[14] Application of rock rip-rap, may include application of fabric lining beneath placed rock. The size and shape of materials is adjusted for channel size and expected discharge,

[15] Energy dissipaters and aprons at culvert inlets and outlets reduce water velocity and prevent erosion. Dissipaters include riprap, vegetated ditches, and concrete or steel baffles.

Trails

Eddy Creek Trail Reconstruction

Reestablish original historic trail alignment and realign portions that are located within wet riparian areas. Physically restrict motorized access to the meadows. Revegetate OHV created routes.

Caldwell Lakes Trail Reconstruction and Realignment

Maintain the first 0.2 miles of NFS road 41N74 to parking area (and trailhead); decommission approximately 0.75 miles of Road 41N74 (after the intersection with Road 41N74A). Revegetate the old road prism and restore hydrologic connectivity. Construct approximately one mile of non-motorized trail beginning at the new parking area and parallel with the decommissioned road. Relocate a short portion of the upper trail with steep grades and accelerated erosion and decrease the trail grade to reduce erosion and create a more conducive trail for the public. Connect new trail segments to the existing trail above and the new parking area on Road 41N74 below. Maintain remaining trail portions and provide appropriate signage.

West Parks Lakes Trail Reconstruction

Reconstruct the first 1.45 miles of NFS road 41N73, and maintain the following 1.05 miles to creek crossing. At the end of the road and before the creek crossing, redesign and grade existing road spur for new parking area and trailhead. Design and install safe crossing of the stream for motorized trail (50” wide or less) to reduce sediment delivery and accommodate design traffic. Past the creek crossing, convert 0.33 miles of 41N73, 0.29 miles of 41N73A, 0.28 miles of U41N73A, 0.35 miles of 06W23, and 0.38 miles of 06W23A to motorized trail (1.6 miles total length). At upper terminus, reconstruct existing turnaround to prevent erosion and provide OHV parking and non-motorized trailhead. Beyond turnaround, re-construct 0.28 miles of non-motorized trail to lower Lake. Decommission 41N73 beyond junction with “A” spur, and all associated roads spurs beyond. Motorized trails would be managed and designated as open to motor vehicles less than or equal to 50 inches wide. Motorized trails may also accommodate non-motorized use.

Decommission all other existing roads and routes leading up the drainage. Where unauthorized OHV routes have passed through meadows and streams, restore vegetation and eliminate tracks to allow the re-establishment of subsurface flow through the meadow.

Parks Creek Trail Reconstruction

Reconstruct the trail (on NFS lands only) that runs parallel to Parks Creek Road, connecting Stewart Springs with Road 41N72. Add to the Forest transportation system as a non-motorized trail.

This alternative would add approximately 0.21 miles of unauthorized but existing roads to the FTS; 0.13 miles of existing unauthorized road as motorized trail (50” wide or less); and 3.12 miles of existing unauthorized roads as non-motorized trails for a total of 3.46 additional miles of additional NFTS routes.

Recreation Actions

(Trail actions are listed under Transportation above)

Recreation Facilities

Parks Creek Trailhead Improvement

Install a trailhead information board, interpretive signs and add signs along Parks Creek Road to improve visibility of the trailhead. Install a vault restroom (of concrete cast construction) to resolve health and

safety issues and protect natural resources. Redesign and improve the parking area to maximize parking space and provide accessibility to the restroom, trailhead and information boards. The parking area would be developed with a hardened surface to comply with applicable accessibility standards in accordance with the Forest Service Outdoor Recreation Accessibility Guidelines (USDA Forest Service, 2014) appropriate for the setting based on the recreation site development scale.

Eddy Creek Trailhead

Restrict motorized access past the end of Eddy Creek Road into Eddy Creek meadow. Design and construct a parking area (3-5 vehicles or less than 1000 sq. feet) to meet accessibility standards and Forest Service policy on the existing road near the end where existing topography and vegetation will help prevent illegal motorized use beyond. Decommission remaining road. Install an information board to provide Forest and trail information. Restrict motorized access to the designated NFS non-motorized trail (6W02) and meadows by blocking routes with natural barriers. Decommission OHV created routes.

Caldwell Lakes Trailhead

Decommission Road 41N74 near the intersection of Road 41N74A. Construct a parking area (3-5 vehicles or less than 1000 sq. ft.) to meet ABA accessibility standards and Forest Service Policy at the existing intersection. Install an information board to provide Forest and trail information. Install non-motorized trailhead signs on Road 42N17 to increase site safety, visibility and identify the trailhead and connect to new trail segment.

West Parks Lakes Trailhead

At mile 2.5 on Road 41N73 before creek crossing, construct a trailhead including parking (3-5 vehicles, less than 1000 sq. ft.) and vehicle turnaround on existing spur road. Install an information board to provide Forest and trail information. Install motorized trailhead signs and connect to motorized trail (50” wide or less) and creek crossing.

Dispersed Recreation

Tamarack Flat Dispersed Recreation Riparian Restoration

Reduce impacts to the adjacent Parks Creek at dispersed recreation areas in Tamarack Flat through restricting vehicle access within the riparian area and stabilizing streambanks. Install rock or other natural barriers along Parks Creek at the Tamarack Flat dispersed recreation area. The barriers would restrict vehicles from entering the riparian area, reducing resource damage. Place barriers to allow for continued non-motorized use of recreation sites without causing detriment to soil and water.

Riparian OHV Protection

Restrict vehicle access to aquatic and riparian habitats near dispersed recreation areas by blocking with natural barriers. Implement restoration actions (re-vegetate with native plants, plug ruts, etc.) in wet meadows, seeps and springs impacted by vehicles.

Dispersed Recreation

Where known dispersed recreation areas do not pose a threat to resources such as meadows, streams, or wetlands, existing spur-road access (routes U40N46B, U41N26G, and U41N26H for a total of approximately 0.21 miles) will be incorporated into the Forest transportation system and included on the Motor Vehicle Use Maps (MVUM). Elsewhere, access to dispersed recreation areas where vehicles are being parked more than one car length from FS roads will be blocked and the routes will be decommissioned.

Viewing Opportunities (Vistas)

Provide scenic overlook opportunities at newly constructed pullouts that are suitable on Parks Creek Road and install Trinity Heritage Scenic Byway interpretation signs. (see Parks Creek Road reconstruction description for details on how pullouts will be constructed). Approximately one to five trees may be removed for each vista location.

Cross-Country Hiking

Provide parking pullouts along Parks Creek Road at approximately 4-5 points to access anticipated cross-country non-motorized travel opportunities. Combine with Vistas and passing lanes where space is available.

Signage

Provide interpretive and directional signing where needed for resource protection.

Alternative 3

This alternative was developed in response to Issue #1:

- *Road and motorized trail construction and maintenance would allow for continued resource impacts, result in continued soil erosion, result in negative impacts to sensitive plant populations, wetlands, meadows, wildlife and habitat, and fisheries, and cost more than budgets typically can accommodate.*

Alternative 3 also responds to public scoping comments regarding the current road density in the project area, the belief that road densities within the Scott Mountain and Eddy LSRs should be reduced and that the Forest needs to reduce the miles of roads to reduce maintenance costs.

The public comments regarding road closure/decommissioning include:

> "…close all the roads in the LSRs RC-341 and RC-340. An alternative should be developed that analyzes permanently closing these roads."
>
> "…why the Forest isn't proposing to decommission more roads…?"
>
> "It is clear that more roads need to be decommissioned."

In addition, there were comments that made suggestions for specific road closures, including seasonal closures and conversions of motorized roads to non-motorized trails.

Transportation System

Roads

Road actions with Alternative 3 would be similar to those with Alternative 2 except that Alternative 3 would close or decommission all roads (approximately 38 miles) in LSRs that are not 1) primary connector roads, 2) active cost share roads, or 3) roads that access private property. Outside of LSR, road actions with Alternative 3 would be the same as with Alternative 2.

Alternative 3 would decommission a total of approximately 38.1 miles of roads, maintain approximately 31.8 miles of road, close approximately 3.3 miles of road, and reconstruct approximately 25.6 miles of roads. The methods for road decommissioning, maintenance, and closure would be the same as with

Alternative 2 (see pages 18-20 for descriptions of the actions). Pullouts would still be constructed on Parks Creek Road.

Road actions with under Alternative 3 would be similar to those with under Alternative 2 except that Alternative 3 would close or decommission all roads in LSRs that are not primary connector roads, active cost share roads, or roads that access private property. Primary connector roads include Parks Creek Road (a scenic by-way), Dewey Mine Road and Eddy Creek Road, which provide primary access for either land management activities or for public access. Cost share roads provide right-of-way to other interspersed timberland owners for access and management of their lands and resources. The Alaska National Interest Lands Conservation Act of 1980[16] guarantees adequate access (via right-of-way in a Private Road Permit or Easement) for the reasonable use and enjoyment of private land surrounded by public land. Remaining road actions with Alternative 3 would be the same as with Alternative 2. See Appendix B for complete details on proposed road and trail actions under Alternative 3.

Recreation

Trails

Alternative 3 would not construct or reconstruct motorized trails in the LSRs (non-motorized only). However, trail actions outside of LSR would be the same as those in Alternative 2.

Trailheads

As with Alternative 2, existing parking would be improved at the Parks Creek trailhead by providing adequate surfacing for vehicles and increasing pullout and turnaround areas. Restroom and information facilities would also be constructed.

The Eddy Creek trailhead would be constructed the same as with Alternative 2.

The new trailheads for West Parks Lakes and Caldwell Lakes would not be constructed in the locations proposed by Alternative 2. Both trailheads would be located at the intersections with Parks Creek Road, and would be limited to the space available at those intersections, and combined with proposed turnout and vista points. This would limit parking space to 1-2 vehicles and provide limited signage. Decommissioned roads would transition to non-motorized routes to connect the trail.

Dispersed Recreation

With Alternative 3, no user created routes leading to dispersed recreation areas in LSR would be added to the Forest transportation system or MVUM. Outside of the LSRs, the actions for user created routes to dispersed recreation areas would be the same as with Alternative 2.

Alternative 4

This alternative was developed in response to Issue #2:

- *Designated trailhead/information board/trailhead signs/inclusion on maps for Caldwell Lakes will increase new users and have negative impacts on area. Trailhead facilities will have negative impacts to wildlife and fisheries.*

[16] Act of December 2, 1980 (P.L. 96-487, Title XIII; 94 Stat. 2457; 16 U.S.C. 3210).

Alternative 4 also responds to scoping comments concerned with potential resource damage from visitor use of the West Parks Lakes and Caldwell Lakes areas and the question of whether dispersed recreation areas not being used will be closed with this project. The public comments include:

> "The recreation areas proposed for a parking lot and turnaround areas need to have the management areas disclosed. If they are in LSR they should not be built."
>
> "I can't support a full trailhead information board, trailhead signs and possible reference of such on USFS maps (at Caldwell Lakes)… a great deal of new users...not stand up well to impacts brought about by further development of trailheads"
>
> "…foresight to not allow (by way of design), for more people and motorized traffic to access so close to the fragile & unique ecosystems of Caldwell and West Parks Lakes."

Transportation System

Roads

The road actions with Alternative 4 would be the same as with Alternative 2. Approximatley twenty-seven miles of roads would be reconstructed, 21.7 miles of roads would be decommissioned, 3.3 would be closed, and 43.6 miles of roads would be kept and maintained. The complete list of roads and trails actions for Alternative 4 can be found in Appendix B.

Trails

The trail actions and miles with Alternative 4 would also be the same as with Alternative 2.

Recreation

Trailheads

With Alternative 4, no improvements would be done to the Parks Creek trailhead. No trailheads for West Parks Lakes, Caldwell Lakes or Eddy Creek Meadow would be constructed.

Dispersed Recreation

With this alternative, all user created unauthorized vehicular routes to dispersed recreation areas greater than 30 feet from a NFS road would be decommissioned.

Table 2: Summary of Activities for the Action Alternatives

Activity	Alternative 2 (Proposed Action)	Alternative 3	Alternative 4
Road reconstruction	27	25.6	27
Road decommissioning	21.5	38.1	21.7
Road closure and storage	3.3	3.3	3.3
Roads kept or added to the system (maintenance only)[17]	43.8	31.8	43.6
Non-motorized trails, Add,	6	4.3	6

[17] Alternative 2 includes adding 0.21 miles of existing unauthorized roads to the FTS. No new road construction is included.

Activity	Alternative 2 (Proposed Action)	Alternative 3	Alternative 4
convert or maintain[18]			
Motorized trails, Add, convert or maintain[19]	1.5	0	1.5
Road reconstruction, or decommissioned post-project[20]	1.7	1.7	1.7
Trailheads improved (number)	1	1	0
Trailheads constructed (number)	3	3	0

Activities Common to all Alternatives

Road and trail (motorized and non-motorized) work may also include equipment staging and material stockpiling adjacent to work sites. Staging and stockpile areas will be located utilizing existing space when available to minimize additional disturbance and resource impacts. They will be consistent with Resource Protection Measures (RPMs, see below) and approved by the Forest resource specialists prior to use. When conditions are dry, road, trailhead, and trail work areas will be watered to minimize airborne dust. Water will be drafted from pre-approved locations on Parks Creek and Eddy Creek, or water will be sourced from locations outside the project area.

Resource Protection Measures (RPMs)

The action alternatives are designed to retain important ecological components for this area, such as stream shading, snags (standing dead trees), logs, and potential fish habitat, etc. The project will include RPMs such as best management practices (BMPs) to maintain water quality.

The following list of RPMs defines Forest Plan standards and guidelines and other relevant management direction. The RPMs would be implemented during project activities.

Table 4: Resource Protection Measures

RPM #	Resource Protection Measure
Botany – Sensitive, Endemic, Watch List Plants, and Survey and Manage	
Botany S-1	Exclusion areas for known populations of special status plants will be marked on construction maps. When populations are located within 100 feet of proposed ground disturbing activities, exclusion areas will be flagged on the ground prior to implementation with red and white striped flagging. Measurements would be made on the ground using a measuring tape greater than 100 feet long.
Botany S-2	Operations will follow BMPs for use of equipment in riparian reserves and for erosion control. See GHS-14 and Appendix C – BMPs for storm proofing and

[18] Note that some decommissioned roads are converted to non-motorized trails in Alternative 3 (e.g. West Parks Lake and Caldwell Lake region) and are shown on the project maps as non-motorized trais. For the purposes of comparison between alternatives, they are include here as decommissioned roads. Alternatives 2 and 4 add 3.12 miles of existing unauthorized road as non-motorized trail to the FTS. Alternative 3 adds 2.97 new miles.
[19] Alternatives 2 and 4 add 0.13 miles of existing unauthorized road to the FTS as motorized trail.
[20] Dewey Mine Road switchback section.

RPM #	Resource Protection Measure
	Erosion Control Plan.
Botany S-3	Avoid flagged exclusion areas for all vehicle parking, equipment staging, locating fill or spoils stockpiles.
Botany S-4	If new occurrences of any plant species needing special protection are discovered during project implementation, an agency botanist will be notified to flag the site and develop protection measures to maintain viability as needed. Protection measures may include: modifying the proposed activity, flag and avoid or establishing a limited operating period (LOP) in a specific area. An LOP would depend on the species and phenology at the time of discovery, and could last four to six months to allow for seed to set.
Botany – Invasive Species	
Botany I-1	Surveys for noxious weeds will be ongoing as phases of the project are completed.
Botany I-2	Ensure appropriate equipment cleaning to help prevent the introduction and spread of weed species into and out of the project area with the following: • Prior to implementation, locations within the project area that are known to be infested with invasive species will be shown on a project map. • Prior to moving "off-road" equipment[21] onto the project area, the operator will identify the location of the equipment's most recent operation. Any off-road equipment that last operated in an area infested with one or more invasive species will be cleaned of seeds, soil, vegetative matter, and other debris that could contain or hold seeds, will be cleaned prior to being moved into the project area. • If the location of prior operation cannot be identified, then the operator will assume that the prior location was infested with invasive species and clean the equipment accordingly.
Botany I-3	Exclusion areas for known populations of high priority weeds[22] will be marked on construction maps. When these populations are located within 100 feet of proposed ground disturbing activities, exclusion areas will be flagged on the ground prior to implementation with orange and black "noxious weed" flagging.
Botany I-4	Equipment operating in areas known to be infested with noxious weeds will be washed prior to leaving the infested area. If new occurrences of noxious weeds are identified during treatment implementation, an agency botanist will be notified to flag the site and any equipment used at the site will be washed prior to leaving the infested area.
Botany I-5	During implementation, maintain as much ground cover (duff and understory vegetation) and tree overstory as possible and keep soil disturbance to the

[21] "Off-road" equipment includes all construction machinery except service vehicles, water trucks, pickup trucks, cars, and similar vehicles.

[22] High priority weed species are those that create increased local concern because of their limited distribution on the Shasta-Trinity National Forest; highly invasive nature; and demonstrated potential to displace large geographic areas of native plant communities. Management emphasis is primarily given to high priority weed species.

RPM #	Resource Protection Measure
	minimum needed in order to discourage weed growth.
Botany I-6	When seeding decommissioned roads and restored sites, use native grass or non-persistent cereal grains at a rate of 15 to 20 pounds per acre and mulch with certified weed-free straw, or other approved fine vegetative matter/debris to reduce seed predation, retain moisture, reduce the potential for wind erosion and, if necessary, to reduce overland flow erosion during rainfall events and snow melt.
Botany I-7	If project implementation calls for mulches or fill, use certified weed free as these products become available. Use washed gravel as available. See RPM GHS-15.
Botany I-8	If new occurrences of noxious weeds are found, treatment will be implemented in accordance with priorities set by the Shasta-Trinity National Forest noxious weed program. Other weed infestations will be treated using Early Detection/Rapid Response methods according to District and Forest priorities.
Botany I-9	Forest Service personnel and/or contractors will report any new un-mapped invasive weed populations by notifying the project manager or calling the Range Department or the District botanist.
Cultural Resources – Areas with <u>previously identified</u> cultural resources	
Cultural PI-1	Cultural resources may be marked on the ground for avoidance by all project activities.
Cultural PI-2	Cultural resources bisected by or adjacent to roads or other project features where sub-surface materials are present or may likely be present, may be protected by flagging the road through the site and lifting the blade when the equipment is passing through the site. The remainder of the cultural resource outside the Area of Potential Effect will be avoided. The resource will be monitored by heritage personnel during implementation.
Cultural PI-3	Where cultural resources sites are bisected by or adjacent to roads, those roads may be brushed by hand. Hazard trees along roads within cultural resource boundaries may be felled within the site and left in place or bucked and hand-carried out and placed outside the boundaries.
Cultural PI-4	Existing road drainage features within cultural resource boundaries may be cleaned out by use of hand tools or excavators.
Cultural PI-5	Ground disturbance from the replacement of existing culverts located within or adjacent to cultural resources will be confined to the existing disturbed areas (existing road prism).
Cultural PI-6	Rock or other barriers may be placed across unauthorized access routes into cultural resource sites.
Cultural PI-7	All project activities within or adjacent to cultural resources will be monitored by a qualified archaeologist.

RPM #	Resource Protection Measure
Cultural Resources – Areas where cultural resources have <u>not been previously identified</u>	
Cultural NPI-1	Should inadvertent effects to or unanticipated discoveries of human remains be made on Forest Service lands, the County Coroner [California Health and Safety Code 7050.5(b)] shall be notified immediately. If the remains are determined to be Native American or if Native American (Indian) cultural items pursuant to the Native American Graves Protection and Repatriation Act (NAGPRA) are uncovered, the provisions of NAGPRA and its regulations at 43 CFR 10 and the Archaeological Resources Protection Act at 43 CFR 7 shall be followed on federal lands [Stipulation 7.9 (a)].
Cultural NPI-2	If previously undocumented cultural resources are encountered during project implementation, all work in that area (100 meters) must stop and the District Archaeologist and Heritage Program Manager shall be notified immediately. Procedures laid out in the Region 5 Programmatic Agreement Section 7.10 will be implemented.
Geology, Hydrology, Soils	
GHS-1	Potential geologic hazards, such as landslides and slumps, at designated recreation sites (e.g. parking areas, trails, trailheads) will be evaluated by geology personnel prior to implementation.
GHS-2	Road/trail reconstruction designs across active landslides will be reviewed by geology personnel prior to implementation.
GHS-3	A conceptual design and cost estimate for repairing the slumps in the fills in the lower part of the Parks Creek Road will be developed by personnel from engineering, geotechnical engineering, geology and hydrology (as appropriate) prior to implementation. Additional resource personnel including botany, heritage and wildlife may be included where there are resources of concern.
GHS-4	Existing wide spots on Parks Creek Road, as identified on the final project map, will be used where available for road widening, pullouts and vistas.
GHS-5	For stockpile and disposal sites, existing landings and disturbed road beds will be used when at all possible. Where not available, geology, heritage, botany, wildlife and engineering personnel will determine locations prior to implementation. Establishment of stockpiles or disposal sites will comply with all RPMs.
GHS-6	Road and trail re-alignments will be reviewed by engineering, geology, wildlife, heritage, botany and hydrology personnel (as necessary) prior to implementation.
GHS-7	Repair, maintenance and upgrade activities for all existing drainage features such as culverts, inlet basins, trash racks, energy dissipaters, overside drains and surface features (fords, ditches, berms, water bars, dips)[23] are limited to the road prism (top of the cut bank to the bottom of the fill) and the portion of channel bed

[23] Drainage features are defined in USDA Forest Service. 2005. Riparian Restoration: Roads Field Guide. 0577 1801—SDTDC.

RPM #	Resource Protection Measure
	affected by the crossing.
GHS-8	Implementation of treatments at stream crossings and natural springs will be limited to periods when channels are dry or flow will be directed around the work site with a clean water bypass. No flow will be diverted from the stream or spring; the clean water bypass culvert/flexible pipe will isolate surface flow from construction activities and protect water quality.
GHS-9	Minor amounts of brush and vegetation adjacent the road and or/drainage features may need to be trimmed or removed to complete project activities. Any vegetation that is removed or trimmed to conduct project activities will be masticated or hand trimmed and lopped and scattered off of the roadway consistent with the RPMs for other resources (e.g. cultural, botanical).
GHS-10	New trails, trail alignments, and trailheads within Riparian Reserves will be designed consistent with ACS objectives. Construction of these facilities should not prevent future attainment of these objectives.
GHS-11	Adjust dispersed and developed recreation practices that retard or prevent attainment of ACS objectives. Where adjustment measures such as public education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.
GHS-12	Storm proofing of roads will consist of maintaining and/or creating rolling dips to break up water flow and dissipate energy off-slope. At crossings, various treatments could consist of increasing culvert size on main perennial streams for aquatic passage, creating low-water crossings, or critical dips to reduce diversion potential for large flow events. Storm proofing will generally occur on spots or sections of the road and not the entire length (USDA Forest Service, 2011).
GHS-13	When watering roads for dust abatement, apply the following rules: • Allow drafting from fishery streams only where immediate downstream discharge is maintained at 1.5 cubic feet per second or greater. • Allow drafting from ephemeral streams, intermittent streams, wetlands or constructed ponds provided that sufficient water quantity and quality remains to support associated wildlife species and riparian values. Never allow drafting to remove more than 40 percent of any stream discharge or 75 percent of constructed pond water.
GHS-14	Implement BMPs for protection or improvement of water quality, as noted in the Storm Proofing and Erosion Control Plan (see Appendix C) and as described in the Region 5 Soil and Water Conservation Handbook (2011. R5 FSH 2509.22 - Soil and Water Conservation Handbook; Chapter 10 - Water Quality Management Handbook). Determine specific practices or techniques during project level

RPM #	Resource Protection Measure
	planning using information obtained from on-site soil, water, and geology investigations. Implementation of BMPs will be the responsibility of the project manager and resource personnel (e.g. hydrologist, geologist, wildlife, archaeology, etc.).
GHS-15	Where active decommissioning of roads is proposed (e.g. recontouring or obliterating the road), work shall include sub-soiling to 24 inches (or to depth of bedrock), pulling culverts, pulling fill back at crossings, out-sloping roads, relieving inboard ditches and mulching with weed-free rice straw, woodchips, or locally generated vegetative debris approved by the District botanist to achieve 2 tons/acre of cover (USDA Forest Service, 2011).
Geology, Hydrology, Soils – Naturally Occurring Asbestos (NOA)	
NOA-1	All field personnel who will be working near earth-moving, or other dust-producing activities in areas underlain by ultramafic rock will be informed that naturally occurring asbestos (NOA) commonly occurs in that rock, and they will be provided with a map showing such areas.
NOA-2	Dust production will be prevented/minimized by applying effective dust abatement measures, such as applying water or other dust inhibitors to materials being worked; operating when soil conditions are moist enough to limit dust, but not be so wet as to result in rutting or sedimentation into streams; reducing vehicle speed; and avoiding dust-producing activities on excessively windy days. Ensure road surfaces are wet. Where needed, wet road surfaces with water trucks using sprinklers to reduce dust.
NOA-3	Where dust prevention in ultramafic areas is not possible, appropriate protection and mitigation measures will be applied so that field personnel will not inhale such dust. These include closing windows on vehicles and turning on positive ventilation systems, or use of appropriate air filtration masks if other measures are not adequate.
NOA-4	If rock/soil waste is generated from ultramafic areas, such waste will be disposed of only where the underlying rock is also ultramafic, and it will not be mixed with other waste from non-ultramafic areas. When transporting NOA-containing material, avoid overloading trucks and cover with tarps to reduce dust. Ensure that piles of excavated material are wet and cover with tarps to reduce dust.
Visual Quality	
VQ-1	Visual Quality RPMs only pertain to the foreground views along the of the Trinity Heritage Scenic Byway (Parks Creek Road) and the Parks Creek Trailhead: • Any trees along the roadway that are marked for removal with paint, (hazard trees, turnouts or vistas) will be marked on the backside of the tree (facing away from the roadway.

RPM #	Resource Protection Measure
	• Tree stumps shall be no more than 6” high. • Fall trees out of view of the roadway, or, if less than 20” diameter at breast height, remove them from the site. • Remove all slash (limbs) from the site or from view of the roadway. • If rock material is needed to stabilize any cut banks on Parks Creek Road, use rock that is the same or similar in type and color as found naturally on the site.
Wildlife and Fisheries	
WF-1	Brief equipment operators of the need to minimize disturbance to existing vegetation within the road clearing limits, at stream crossings, and approved disposal sites to the extent necessary to restore hydrologic function (e.g., minimize turning of equipment, maintain trees, shrubs and existing coarse woody debris as safely feasible).
WF-2	Equipment used shall be in good working order with standard noise abatement devices attached.
WF-3	Rock and fill material sources (if located within the project area, though at this time all rock is proposed from existing developed sources outside the project area) and water drafting sources will be identified with the assistance from the local district wildlife biologist and fish biologists. These areas will be selected with consideration for proximity and potential effects to wildlife species and their habitat.
WF-4	Disposal of fill material may occasionally be needed and will be done according to BMPs. Disposal will not degrade suitable habitat. Such developments would involve the local District biologists (and other resource specialists) so that mitigations are implemented to minimize impacts to species and habitats of concern.
WF-5	As safely feasible, retain any felled hazard trees larger than 20 inches diameter at breast height on site and retain all snags felled on site to provide for coarse woody debris. Any felled tree/snag should be left in a position where it will not be a potential hazard to roads, trails, turnouts, or recreation use areas from rolling. Trees that are felled along Parks Creek Road would be located off the road/out of sight to meet RPM VQ-1 for the Trinity Heritage Scenic Byway. Also as safely feasible, trees would be directionally felled away from stream channels to reduce the potential for direct effects to individual aquatic species and the streambank, reducing the potential for crushing of individuals and subsequent streambank erosion. If trees are felled into stream channels either for safety reasons, or as a need is determined by a biologist or hydrologist, they would be left in place as safely feasible (e.g. so as not to potentially block a downstream culvert) to contribute to instream large woody debris, cover, bank stability, pool formation and nutrients.

RPM #	Resource Protection Measure
WF-6	Hazard tree identification and felling along roads, trails, and near facilities will follow the 2012 Regional Hazard Tree Guidelines. Roads/routes will be reviewed prior to implementation to determine if potential nest trees for northern spotted owl (NSO) (or northern goshawk, or rest/den sites for fisher/marten) are occupied or will be affected. If occupied, implement the NSO nesting LOP until the nesting period ends. If unoccupied and felled, follow the measure to leave the felled tree/snag on site as described in RPM WF-5.
WF-7	For all activities described, no suitable terrestrial or aquatic habitat shall be downgraded or removed, as the majority of the work proposed will be within the road prism. Hazard tree felling and tree felling to improve sighting distance/enhance views may degrade suitable habitat for NSO (and sensitive wildlife species), depending on the stand structure and location of the trees/snags, though is not quantifiable in terms of acreage degraded.
WF-7a	The minor amounts of brush and vegetation adjacent to the roads and/or drainage features that may need to be trimmed or removed to complete project activities are not considered suitable habitat for NSO. Trees cut or limbed to improve sight distance will be generally less than 10 inches diameter at breast height, though may be larger depending on the specified action (e.g., improving scenery vistas at established turnouts on Parks Creek Road).
WF-7b	Small groups of trees may be felled during trail reconstruction/re-alignment; borrow pit development (if needed within the project area, though at this time all rock sources are located outside the project area at developed sites); blasting; turnout expansion; road reconstruction and road decommissioning.
WF-7c	When falling hazard trees trees >16 inches diameter at breast height to enhance sight distance, turnout safety and/or vistas within NSO suitable and/or designated critical habitat, emphasis shall be given to maintaining primary constituent elements (canopy closure, snags, and coarse woody debris) while mitigating the hazard (e.g., fall trees in a manner that reduces damage to the surrounding stand structure as safely feasible and retains them on the landscape as coarse wood).
WF-7d	Reduce to the extent feasible the felling of trees >16 inch diameter at breast height with cavities and decadence,[24] hardwoods that NSOs or sensitive species (e.g., fisher) may utilize for nesting/denning/resting.
WF-8	An LOP for noise generating and suitable habitat altering activities will extend from February 1 to July 10 within a 0.25-mile of suitable NSO habitat.[25] See Appendix 3 of the Wildlife Biological Assessment (BA)[26] for a list of road and trail actions subject to the LOP.

[24] Decadent trees have deformities such as large cavities, dead limbs, broken tops and dwarf mistletoe infection.
[25] Refer to the Wildlife Biological Assessment in the project record for a list of actions that will require the LOP.
[26] The Wildlife Biological Assessment can also be found in Appendix A of this EA.

RPM #	Resource Protection Measure
WF-8a	This LOP may be lifted if year-of-action surveys and stand searches are current and negative (e.g. owls are not nesting within 0.25-mile of the proposed work).[27]
WF-8b	This LOP will be extended to September 15 if nesting NSOs are detected during any survey and/or stand search effort and noise-generating activities, and activities that modify suitable habitat, are proposed within 0.25-mile of the nest.
WF-9	An LOP for noise generating and suitable habitat altering activities will extend from February 1 to August 15 within a 0.25-mile of northern goshawk nesting habitat, and/or northern goshawk nest cores.[28] The LOP may be lifted if year-of-action surveys are current and negative (there are no nesting northern goshawks within 0.25-mile of the proposed work).
WF-10	In suitable habitats for Forest Service sensitive and/or Survey and Manage salamander and mollusk species, limit to the extent feasible the compaction of soil, disturbance to herbaceous vegetation, down woody debris, canopy cover and/or ground cover.[29]
WF-11	Implementation of treatments at stream crossings and springs will be limited to periods when channels are dry or flow will be diverted around the work site with a clean water bypass to reduce the potential for direct and indirect effects to Forest Service sensitive Cascades and foothill yellow-legged frogs, aquatic mollusks, and water quality in general. No flow shall be diverted from the stream or spring; the clean water bypass culvert/flexible pipe shall isolate surface flow from construction activities and protect water quality.
WF-12	Water drafting is not permitted from Parks Creek at the intersection of the Stewart Springs Road and Parks Creek Road.
WF-13	Water drafting may occur in project area creeks for project activities following the Forest Plan standards and guidelines (Forest Plan, p. 4-25).
WF-13a	Allow drafting from ephemeral streams, intermittent streams, wetlands or constructed ponds provided that sufficient water quantity and quality remains to support associated wildlife species and riparian values.
WF-13b	Never allow drafting to remove more than 50 percent of any stream discharge or 75 percent of constructed pond water.
WF-13c	Allow drafting from fishery streams (e.g., upper portions of Parks Creek, Eddy Creek) only where immediate downstream discharge is maintained at 1.5 cubic feet per second (CFS) or greater.

[27] As described in Section 9 of the 2012 Revision to the Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls; January 9, 2012. USFWS.
[28] Refer to the Wildlife Biological Evaluation in the project record for a list of actions that require the LOP.
[29] Refer to the Wildlife Biological Evaluation and Survey and Manage reports in the project record for a list of actions.

RPM #	Resource Protection Measure
WF-14	Cutbank stabilization and road reconstruction activities within a 0.25-mile of the Parks Creek stream crossing at the intersection of the Stewart Springs Road and Parks Creek Road shall be limited to periods of low-flow (July 15 to October 15) and will be in accordance with the BMPs for reducing sediment delivery to the stream.
WF-15	A project-specific water pollution control program that addresses fuel storage, soil stabilization, sediment delivery, etc. (e.g., the 2000 Water Quality BMPs) shall be developed and approved prior to project implementation.
WF-16	Any hazardous spills will be immediately cleaned up and reported to the District Ranger and project fisheries biologist immediately. The Forest fisheries biologist and NOAA National Marine Fisheries Service will also be notified.
WF-17	In the event that any newly listed, or additional Threatened, Endangered, or Sensitive species are discovered within the project area during planning or implementation, the appropriate Forest Service resource specialist(s) will be notified and protective measures will be developed and implemented.
WF-18	Implementation monitoring will be conducted by the project biologist as appropriate.

Monitoring

Where proposed, monitoring is included in the RPMs specific to each resource.

Alternatives Considered but not Studied 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). Reasonable alternatives to the proposed action should fulfill the purpose and need and address unresolved conflicts related to the proposed action (FSH 1909.15_10). Public comments received in response to the Proposed Action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope of project, duplicative of the alternatives considered in detail, or determined to be components that would cause unnecessary environmental harm. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

The following alternatives were developed from public comments that constituted cause-effect statements, but are not considered key issues, and therefore do not warrant detailed study.

Alternative 5 – No Road or Trail Construction in LSRs

An alternative to the proposed action that does not construct roads or trails in the LSR was considered. This alternative was developed in response to the scoping comment that road and motorized trail construction will not meet the LSRA requirements.

Maintaining, repairing, stabilizing road cuts and fills, and decommissioning roads are allowed under LSRA Miscellaneous Activity #10. Constructing, reconstructing, re-routing, and maintaining trails are allowed under LSRA Miscellaneous Activity #11. This alternative would not meet the project purpose

and need for recreation facilities and opportunity enhancement or to provide an improved motorized and nonmotorized transportation system that would provide for safe and efficient administrative and public access. Because the proposed road and motorized trail activities meet LSRA requirements, this alternative is not considered in detail.

Alternative 6 – No Parking or Turnaround Areas in LSRs

An alternative to the proposed action that does not construct new parking lots or turnaround areas in LSR's was considered. This alternative was developed in response to the scoping comment that new parking lot and turnaround areas will not meet management requirements in LSRs.

The Forest Plan (page 4-43) permits trail construction and reconstruction in LSRs. Dispersed recreational use is considered consistent with the objectives of LSRs and the Forest Plan suggests using adjustment measures such as education, limiting some uses, and increased maintenance (page 4-40). This alternative would not meet the project purpose and need for recreation facilities and opportunity enhancement or to provide an improved motorized and nonmotorized transportation system that would provide for safe and efficient administrative and public access.

Because the trailhead construction, improvements, and trails are consistent with the objectives and management requirements of LSRs, and would not meet the project purpose and need, this alternative is not considered in detail.

Alternative 7 – Close and/or Decommission All Roads and Trails, and no new activities in Late Successional Reserves, Northern Spotted Owl Core Areas, and Home Ranges

An alternative to the proposed action that closes all roads in LSR and does not include any activities in NSO core and home range areas, except closure or decommissioning of all roads was considered. This alternative was developed in response to a comment that "This is a perfect opportunity to close all the roads in the LSRs RC-341 and RC-340. An alternative should be developed that analyzes permanently closing these roads…" and another comment that no activities should be undertaken within the NSO core and home range areas, and that all roads within those areas should be closed or decommissioned.

This alternative was not considered in detail because it would not meet the project purpose and need for recreation facilities and opportunity enhancement. Under Alternative 7 the Eddy Creek Trailhead, a portion of the Eddy Creek trail that would connect to the Parks Creek Trailhead, and portions of the Parks Creek trail (as well as vehicle access to the trail) would not be built. In addition, Road 40N46 (Tamarack Flat area) would be decommissioned, eliminating vehicle access to numerous popular dispersed recreation locations. The alternative would also not meet the purpose and need to provide an improved motorized and nonmotorized transportation system that would provide for safe and efficient administrative and public access. It would decommission numerous roads that are primary connector roads, access private land, or are included in cost share agreements with property owners adjacent to NFS lands.

Environmental Impacts of the Proposed Action and Alternatives

This section summarizes the potential impacts of the Proposed Action and alternatives for each impacted resource. Table 5 is a summary and comparison of the effects by alternative. The table is followed by a complete discussion of effects for each resource.

Table 5: Summary and Comparison of Environmental Effects by Alternative

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
SENSITIVE PLANTS			
No direct, indirect, or cumulative effects to sensitive plants.	Possible damage to above or below ground plant parts, loss of reproductive potential for a short (seed production) or extended (loss of reproductive roots) time, and possible death of individuals.	No known sites for sensitive plant species occur in the additional areas proposed for decommissioning by Alternative 3. The effects of the other proposed activities are the same as Alternative 2.	There are no sensitive plants in the areas of the trailhead improvements.
No direct, indirect, or cumulative effects to Pickering's ivesia.	Habitat for Pickering's ivesia will be improved by rerouting Dewey Mine Road.	Same effects as Alternative 2.	Same effects as Alternative 2.
No direct, indirect, or cumulative effects to showy raillardella.	Habitat for showy raillardella may be improved by reducing vehicle access to Eddy Creek Meadow.	Same effects as Alternative 2.	Same effects as Alternative 2.
INVASIVE WEEDS			
One known population of (high priority weed). Mapped in 2003, treated in 2003-2004. Not found in 2013 weed surveys.	Very low probability of spreading known high priority weed species within or outside the project area with equipment cleaning RPMs.	Same effects as Alternative 2.	Same effects as Alternative 2.
No disturbance of roadside habitat.	Roadside habitat exposed to alteration with road decommissioning activities.	Greater length of roadside habitat exposed to alteration with the additional miles of road decommissioning activities than with Alternative 2.	Same effects to roadside habitat as Alternative 2 with addition of decommissioning user created routes to dispersed recreation areas. But no habitat alteration at trailhead

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
			locations.
CULTURAL RESOURCES			
No direct, indirect, or cumulative effects.	Through the use of the standard RPMs, and the additional measures, no direct, indirect, or cumulative effects to known cultural resources.	Same effects as Alternative 2.	Same effects as Alternative 2.
GEOLOGY			
Continued elevated landslide potential associated with existing road drainage issues.	Road maintenance activities will reduce the potential for culvert blockage and associated failure of road fills at stream crossings, concentrated runoff on the road surface, and gullying below the road. Reduced potential for road related landslides with realignment of Dewey Mine Road.	Greater reduced landslide potential due to greater miles of decommissioned roads compared to Alternatives 2 and 4.	Same effects as Alternative 2.
Miles of roads in ultramafic rock formations remains the same.	Reduced miles of roads in ultramafic rock formations.	Reduced miles of roads in ultramafic rock formations greater than Alternatives 2 and 4.	Same effects as Alternative 2.
No dust (including NOA) generation above existing levels.	Potential dust (including NOA) generation during ground disturbing activities. Increased dust from faster traveling vehicles due to road surface improvements. Reduced dust generation with road and trail closures (no ground disturbance).	Similar effects as Alternative 2. Possibly more dust generated with active decommissioning of more road miles than Alternative 2. But greater reduction of dust generation, long-term, with greater mileage of roads decommissioned.	Same effects as Alternative 2.
HYDROLOGY			
No direct or indirect effects. Water quality and sedimentation issues associated with lack of maintenance on	**Roads Direct Effects** – Short term increases of turbidity and sedimentation, extending downstream	Additional miles of road decommissioned and fewer miles of road maintained.	**Direct and indirect effects** to water resources will be same as Alternative 2.

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
roads and trails would continue. Hillslope gullying from poor drainage would continue. Open road densities would remain the same. Sanitation issues would remain the same at the Parks Creek Trailhead. OHV impacts to wet meadows would continue.	for no more than 0.25 mile below the work zone. Sedimentation and turbidity will diminish rapidly with distance downstream and not persist for more than one week. Road reconstruction could have more intensive turbidity effects. **Indirect effects -** increased turbidity and sedimentation during the first winter storms, diminishing over time. Positive effects to water quality over time with reduced erosion and gradual recovery of vegetation. Increased infiltration on tilled road segments.	**Direct Effects**-Impacts to water quality from decommissioning will be greater than would have occurred if only maintenance activities were performed. On the other hand, 1.5 fewer miles road reconstruction than with Alternative 2. **Indirect effects** to water resources will be identical to Alternative 2 with respect to the types of indirect effects described for each activity (e.g. effects from decommissioning, closures, etc.).	
OHV impacts to wet meadows would continue. No trail realignments or maintenance would occur. Erosion, sedimentation, and turbidity due to poorly aligned and maintained trails would continue.	**Trails -** Ground disturbance impacts to water resources from realignment and maintenance minor and of short to no duration. Short term increases in turbidity and sedimentation. **Indirect effects**- Redirecting trails outside of sensitive habitats such as meadows, wetlands.	**Direct Effects**-Less trail mileage added to the system. 4.25 miles of non-motorized trails converted from previous uses and/or added to the trail system compared to 6 miles for Alternative 2. No motorized trails converted or added to the system. **Indirect effects** for all other proposed activities same as Alternative 2.	**Direct and Indirect effects** to water resources will be identical to Alternative 2, except no decommissioning of user created OHV trails would occur.
Sanitation issues would remain the same at the Parks Creek Trailhead.	**Trailheads** – Ground disturbance impacts to water resources. Localized benefits to water quality by	Same effects as Alternative 2.	**Direct effects** - to water resources slightly less than Alternative 2 because no ground disturbance associated

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
	reducing the potential for water contamination from human waste at Parks Creek Trailhead. **Indirect effects** - Restoration of riparian plant communities and improved water quality resulting from blocking OHV access to wet meadows, relocating trailheads out of sensitive habitats.		with trailhead improvements or the decommissioning of user created OHV trails would occur.
Post-Project Open Road Densities by HUC 5 Watershed (miles/square mile)			
Willow Creek: 0.99 Parks-Shasta: 1.84 Upper Shasta R: 1.10	Willow Creek: 0.64 Parks-Shasta: 1.44 Upper Shasta R: 0.83	Willow Creek: 0.55 Parks-Shasta: 0.93 Upper Shasta R: 0.75	Willow Creek: 0.64 Parks-Shasta: 1.44 Upper Shasta R: 0.83
Riparian Reserves Benefited by HUC 5 Watershed (acres)			
Willow Creek:0 Parks-Shasta: 0 Upper Shasta R: 0	Willow Creek: 122.2 Parks-Shasta: 527.5 Upper Shasta R: 278.4	Willow Creek: 122.2 Parks-Shasta: 658.0 Upper Shasta R: 386.1	Willow Creek: 122.2 Parks-Shasta: 527.5 Upper Shasta R: 278.4
Equivalent Roaded Area (ERA) by HUC 5 Watershed (Alternatives 2, 3, and 4)			
HUC 5	*% ERA*	*% of TOC*	*Risk Level/Class*
Willow Creek	4.1	29.3	Low/1
Parks Creek-Shasta R	3.6	22.6	Low/1
Upper Shasta R	3.5	22.1	Low/1
Aquatic Conservation Strategy (ACS) Objectives			
Will not prevent attainment of all ACS objectives.	Will meet all ACS objectives at the project level and not prevent attainment at the watershed scale.	Will meet all ACS objectives at the project level and not prevent attainment at the watershed scale. Alternative 3 would result in the greatest benefits to water resources at the project scale because more roads would be decommissioned and more areas in the watershed would be restored.	Will meet all ACS objectives at the project level and not prevent attainment at the watershed scale.
RECREATION			

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
No improvement to existing recreational opportunities within the project. Road access to some dispersed recreation areas would remain limited. OHV use likely to continue in meadows.	Increased opportunities for safe public recreation access and for the collection of forest products (e.g. hunting, fishing) from road maintenance, reconstruction, trail work, trailhead construction. Improved public health and safety with improvements at Parks Creek Trailhead. Improved public safety (motorized and nonmotorized) use. Decreased motorized recreation from road decommissioning.	Reduced motorized recreation opportunities with road decommissioning, greater than Alternative 2. Non-motorized access only to Caldwell and West Parks Lakes. Reduced motorized access to dispersed recreation areas over Alternative 2. Reduced safe trailhead parking opportunities at West Parks Lakes and Caldwell Lakes than Alt. 2.	Same as Alternative 2 except reduced motorized access to dispersed recreation areas and reduced safe trailhead parking opportunities. No improvement in public health and safety at Parks Creek Trailhead.
SOCIO-ECONOMIC			
No contributions to local economy above existing conditions.	Contributions to local economy through purchasing of materials and supplies to implement. Estimated cost to implement Alternative 2: ~$450,000. Motorized visitor spending reduced based on reduction of roads and motorized trails available.	Contributions to local economy slightly lower than Alternative 2 based on cost to implement. Estimated cost to implement Alternative 3: ~$440,000. Motorized visitor spending less than Alternative 2 based on greater reduction of roads and motorized trails available.	Contributions to local economy less than Alternatives 2 and 3. Estimated cost to implement Alternative 4: ~$390,000. Motorized visitor spending similar to Alternative 2.
SOILS			
Poorly functioning roads would continue to produce significant amounts of sediments (542 tons/year untreated) to key watersheds. Roads that could contain NOA would remain open.	Short-term erosion during decommissioning and reconstruction activities. Significant beneficial effects of reduced erosion, sediment delivery, reduced compaction, increased soil	Similar effects as Alternative 2, but 60% reduction in road sediment from Alt. 1. With more road decommissioning, long-term result would be less erosion, and more roads will recover to become productive	Road effects same as with Alternative 2. No trailhead construction or improvements and decommissioning of routes to dispersed recreation areas would reduce sediments in the short term and some in the long term.

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
	productivity, and reduced roaded acres in NOA areas. 52% reduction in sediment from Alt. 1. Some localized minimal erosion with trail and trailhead improvements and creation.	sites for vegetative growth.	
TRANSPORTATION			
Existing Forest transportation system in project area would remain unchanged. Roads and trails would continue to deteriorate from traffic use and weather, and vegetation would slowly continue to encroach the travelled ways.	Improved public safety and reduced negative watershed impacts. Forest transportation system would be better maintained, safer for public use and more efficient. Reduced motor vehicle opportunities within the project area could be offset by improved maintenance on open road system. Increase in non-motorized recreation opportunities due to the increase in non-motorized trails.	Forest transportation system, smaller than Alternative 2, would be better maintained safer for public use and more efficient than Alt. 1, but less efficient than Alternative 2, with less management access in LSRs. Reduced roads in WUI. Reduced motor vehicle access within the project area could be partially offset by improved maintenance on open road system. Increase in non-motorized recreation opportunities due to increase in non-motorized trails.	Effects from road and trail actions same as Alternative 2. Some reduced safety along Parks Creek Road over Alt. 2 where trailhead parking remains along the roadway.
OPEN ROAD DENSITIES (MVUM mileages only)			
Open Roads 76.2 miles	Open Roads 70.8 miles	Open Roads 56.8 miles	Open Roads 70.8 miles
Open Road Density 2.1 miles/sq mi	Open Road Density 2.0 miles/sq mi	Open Road Density 1.6 miles/sq mi	Open Road Density 2.0 miles/sq mi
Open Roads in LSR 45.8 miles	Open Roads in LSR 40.4 miles	Open Roads in LSR 25.0 miles	Open Roads in LSR 40.4 miles
Open Road Density-LSR 2.2 miles/sq mi	Open Road Density-LSR 1.9 miles/sq mi	Open Road Density-LSR 1.2 miles/sq mi	Open Road Density-LSR 1.9 miles/sq mi
VISUAL/SCENERY			
No increased opportunity to see the distant views from Parks Creek Road. VQOs	More opportunities for the public to view scenery on Parks Creek Road. Project would	Same effects as Alternative 2.	Same effects as Alternative 2 for Parks Creek Road. No work would be done at Parks

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
would remain the same at Parks Creek Trailhead.	meet Retention to Modification upon project completion. VQOs would meet Modification for Parks Creek Trailhead (same as the existing VQO).		Creek Trailhead, so VQOs would remain the same.
THREATENED AND ENDANGERED WILDLIFE (NORTHERN SPOTTED OWL)			
No changes in noise levels (short or long term).	Long term moderate reduction in noise levels.	Long term high reduction in noise levels due to increased decommissioning in the ST-014 core and ST-016 home range	Long term moderate reduction in noise levels.
0 miles of roads closed or decommissioned in NSO home ranges and cores.	2.45 miles of roads closed or decommissioned in cores. 15 miles in home ranges (includes cores).	4.55 miles of roads closed or decommissioned in cores. 22.85 miles in home ranges (includes cores).	2.45 miles of roads closed or decommissioned in cores. 15 miles in home ranges (includes cores).
0 acres of all terrestrial NSO habitat benefitted by road decommissioning and closure.	102 acres of terrestrial NSO habitat benefitted.	176 acres of terrestrial NSO habitat benefitted.	102 acres of terrestrial NSO habitat benefitted.
0 acres of NSO suitable habitat benefitted by road decommissioning and closure.	~16 acres of NSO suitable habitat benefitted.	~22 acres of NSO suitable habitat benefitted.	~16 acres of NSO suitable habitat benefitted.
0 acres of NSO dispersal habitat benefitted by road decommissioning and closure.	~29 acres of NSO dispersal habitat benefitted.	~47 acres of NSO dispersal habitat benefitted.	~29 acres of NSO dispersal habitat benefitted.
0 acres NSO habitat degraded, downgraded or removed.	No reduction in quantity or quality of suitable or dispersal habitat, though habitat elements may be removed or reduced in isolated locations along narrow, linear extents of existing roads, routes and trails.	Same effects as Alternative 2.	Same effects as Alternative 2.
SENSITIVE WILDLIFE SPECIES			
No affect to **bald eagle**	Alternatives 2, 3, and 4 may affect individual bald eagles but would not cause		

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
and would not cause a trend towards federal re-listing or a loss of viability.	a trend toward federal re-listing or a loss of viability.		
No effect on **willow flycatcher** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual willow flycatchers but would not cause a trend towards federal listing or a loss of viability.		
No effect on **northern goshawk** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual northern goshawks but would not cause a trend towards federal listing or a loss of viability.		
No effect on **Pacific fisher** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual Pacific fishers but would not cause a trend towards federal listing (by increasing the current priority listing) or loss of viability.		
No effect on **California wolverine** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual California wolverines but would not cause a trend towards federal listing (by increasing the current priority listing) or loss of viability.		
No effect on **American marten** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual American martens but would not cause a trend towards federal listing or loss of viability.		
No effect on **pallid bats**, as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual pallid bats, but would not cause a trend towards federal listing or a loss of viability.		
No effect on **Townsend's big-eared bat** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual Townsend's big-eared bats but would not cause a trend towards federal listing or a loss of viability.		
No effect on **fringed myotis** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual fringed myotis but would not cause a trend towards federal listing or a loss of viability for the species.		
No effect on **the western bumble bee** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual western bumble bees but would not cause a trend towards federal listing or a loss of viability.		
No effect on the **southern torrent salamander**, as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual southern torrent salamanders, but would not cause a trend towards federal listing or a loss of viability.		
No effect on the **foothill yellow-legged frog** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual foothill yellow-legged frogs, but would not cause a trend towards federal listing or a loss of viability.		
No effect on the **Cascades frog** as no project activities would	Alternatives 2, 3, and 4 may affect individual Cascades frogs, but would not cause a trend towards federal listing or a loss of viability.		

Alternative 1 (no action)	Alternative 2 (proposed action)	Alternative 3	Alternative 4
occur.			
No effect **on western pond turtle** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual western pond turtles, but would not cause a trend towards federal listing or a loss of viability for the species.		
No effect on the **Shasta hesperian** as no project activities would occur.	Alternatives 2, 3, and 4 may affect individual Shasta hesperian snails, but would not cause a trend toward listing or loss of viability.		

Sensitive Plants

A Biological Assessment/Evaluation for sensitive plants (Posey, 2014) was completed for the project and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

The indicator used for the effects analysis is whether or not there are any threatened, endangered or sensitive plant species in the treatment areas that could be affected by the action alternatives.

Boundaries

Spatial and temporal boundaries set the limits for selecting those actions that are most likely to contribute to cumulative effects. The effects of those actions must overlap in space and time for there to be potential cumulative effects. This is determined by how long, and how far reaching, direct and indirect effects of a project are felt on a given resource area. Analysis will be restricted to areas within 100 feet radius from areas of activities where sensitive plants occur. This distance will include populations that are just beyond the work areas and protect them from mechanical injury, being crushed by vehicles or equipment and piling of construction materials including fill or spoils.

The temporal boundary is the five year implementation period plus another four years after implementation is completed. This is because wetland plant species generally take two to four years to recover from disturbance due to the wet nature of their environment and their regeneration strategies.

Methodology

The areas analyzed are those within the assessment boundary with sensitive and endemic plant populations within or near (≤100 feet) areas where disturbance activities will occur. Sensitive species habitat was evaluated through review of:

- Geographic Information System (GIS) layers for known sites of sensitive plants for the Shasta-McCloud Management Unit,
- Mt. Shasta District files,
- Soil Survey of Shasta-Trinity National Forest Area, California,
- California Natural Diversity Data Base (CNDDB).

Species listed in Table 5, below, were checked in the Jepson (Baldwin, 2012) Herbaria Exchange to see if there were additional populations that were not listed in either the Forest Service database or CNDDB.

This was true for four species; Mt. Eddy buckwheat, Siskiyou buckwheat, crested potentilla and Siskiyou fireweed. Floristic surveys were conducted in areas having habitat for species found in Table 6. Habitats in areas receiving treatment were surveyed more intensely than other habitats. The species identified in the assessment process were targeted during surveys.

Plant surveys for this project were conducted on July 12th, 16th, and September 5th, 2013. On July 12th, the meadows going into West Parks Lakes were surveyed. On July 16th, the Eddy Creek drainage was surveyed and on September 5th, areas along Parks Creek Road were surveyed. Other surveys completed in the area include fen mapping surveys completed by the California Native Plant Society in the meadows near Caldwell Lakes and Tamarack Flat in September 2011. The meadows near Caldwell Lakes were found to have well-developed fens within them and one had a large population of Cascade grass-of-parnassus, a sensitive species.

In 2012, surveys were conducted for the Willow-Parks Watershed Analysis (USDA Forest Service, 2014). On June 6th, 2012, the lower part of Road Dewey Mine Road (42N19) was surveyed. On June 15th and 26th, 2012 Eddy Creek Road was surveyed. On June 21st, the north end of Road Dewey Mine Road was surveyed and one population of mountain lady's slipper was found in the area east of Dewey Mine. Additional surveys are on-going. Wet areas and rocky, serpentine areas where road and trail work will be done will be resurveyed prior to work being started.

Existing Condition

Sensitive and endemic plants found within the project boundary are generally associated with serpentine soils. Some plants such as Trinity buckwheat and Siskiyou buckwheat are associated with serpentine barrens. Others are associated with fens, meadows, seeps and streambanks. The project area is mountainous with interspersed meadows, fens, seeps and several perennial streams and lakes.

Existing conditions for sensitive species are related to historic use since the 1850s and past Forest Service management since 1907. Settlers began to move into the Shasta Valley and Mt. Shasta area in the 1850s. Natural disturbance has also been a factor. Livestock grazing occurred from the 1850s through 1997. There is no data on how many or what type of livestock used the area prior to Forest Service management beginning in 1907. Peak years for grazing, according to Forest Service records, were during World War 1. Mining (beginning in the 1850s), road building for logging from the 1960s through the 1980s, and 100 years of fire suppression all played a part in creating the landscape we see in the project area today relative to sensitive plants.

The following species were known to occur or determined to have potential to occur in the project area.

Table 6: Sensitive Species with Potential to Occur in the Parks-Eddy Project Area

Name	Habitat	Known Sites in Project Area
Botrychium crenulatum Scalloped moonwort BOCR G3/S2.2	Saturated hard water seeps and streams margins. Bogs, fens; lower montane coniferous forest and upper montane coniferous forest. Elevation 4,160 – 7,540 feet.	No Known sites within assessment area. Known to occur approximately 12 air miles south of the project area.
Chaenactis suffrutescens Shasta Chaenactis CHSU S3/G3	Unstable, sandy to rocky, generally serpentine soils, scree, drainages. Elevation 2300-7540 ft. eKR, n CaRH.	No known sites within assessment area. Nearest population upper end of Lake Siskiyou approx. 7 air miles SE of the project.

Name	Habitat	Known Sites in Project Area
Cypripedium fasciculatum Clustered lady's slipper CYFA G4/S3.2	Usually serpentine seeps and streambanks; lower montane coniferous forest and North Coast coniferous forest. Elevation 328 to 7,990 feet. NW, CaR, n SN, sw SnFrB; to WA, MT,CO.	There are no known sites within this watershed.
Cypripedium montanum Mountain lady's slipper CYMO	Moist areas, dry slopes, mixed –evergreen or coniferous forest. Elevation 760-7200 feet. NW, CaR, n&c SN, sw SnFrB, MP; to AK, MT, WY.	One known site within assessment area. Dewey Mine area along road proposed for passive decommissioning. Will be flagged and avoided.
Draba carnosula Mt. Eddy draba DRCA6 S2.2/G2	Serpentine, rocky; upper and subalpine coniferous forest. Elevation 6,347 – 9,840. KR (Mt. Eddy area).	No known sites within the assessment boundary. One known site just S of the SW boundary. There are also populations near Little Crater Lake and Upper Deadfall Lake.
Eriogonum alpinum Trinity buckwheat ERAL6 S3.3/G3	Serpentine, rocky; alpine boulder and rock fields; subalpine coniferous forest and upper montane coniferous forest. Elevation 7,165 to 9,500 feet. e KR (Mt. Eddy area).	One site on N slopes of Mt. Eddy. Elevation approximately 7,600 feet. Will not be affected by activities from this project.
Ivesia pickeringii Pickering's ivesia IVPI S2.2/G2	Wet, rocky meadows, generally on serpentine clay; elevation 2600-4900 feet; Scott Mtns.-Shasta Valley. e KR.	Two known sites within the N end of the assessment area. No road or trail actions occurring at one site. Road reconstruction and then decommissioning is proposed for the other site (Dewey Mine Rd.).
Parnassia cirrata var. intermedia Cascade grass-of-Parnassus PACII'S2/G5T2T3	Rocky, often serpentine bogs, fens meadows and seeps. Elevation: 2,300 – 9,500 feet. KR, CaRH; WA, ID, NV.	One known site within the assessment area; in the Caldwell Lakes area. Meadow near trail to lakes. No actions occurring in this area.
Pinus albicaulis Whitebark pine PIAL G3G4 (no state ranking)	Upper red fir forest to timberline, esp. subalpine forest above 6,500. KR, CaR, SN, Wrn, SNE; to BC, WY.	Known to occur of N. face of Mt. Eddy, May be small amounts at higher elevations of Caldwell Lakes Basin and West. Parks Lake Basin. No actions occurring in Whitebark pine habitat.
Raillardella pringlei Showy raillardella RAPR S2.2/G2	Wet ultramafic meadows, seeps & streambanks; elevation 4200-7220. KR.	Four known sites within assessment area, 3 sites along Parks Ck. Rd. near activity sites. One site in upper 1.5 to

Name	Habitat	Known Sites in Project Area
		2.0 miles of Eddy Ck. Trail work and road decommissioning proposed.

CaR = Cascade Range
CaRH = High Cascade Range
e KR = eastern Klamath Ranges
KR = Klamath Ranges
MP = Modoc Plateau
n CaRH = north High Cascade Range
n KR = north Klamath Ranges
n SN = north Sierra Nevada
n&c SN north-central Sierra Nevada
nw = northwestern California
sw SnFrB = southwest San Francisco Bay area
Wrn = Warner Mountains

Three populations of *Cordylanthus tenuis* var. *pallescens* (Pallid bird's beak) appear on Forest Service and CNDDB maps within the project area. New studies by the Carex Working Group (http://www.carexworkinggroup.com/) found these populations to be the more common subspecies '*tenuis'* and '*viscidus*'. They discovered that pallid bird's beak was only found on excessively well drained volcanic soils in the area of Black Butte and the town of Weed. A report to this effect was published in the April edition of Madrono (Identification and Taxonomic Status of Cordylanthus tenuis subsp. pallescens (Orbanchaeae), 2014).

Environmental Consequences

The Forest accessed the list of threatened, endangered and proposed species for the 7.5-minute USGS quadrangles that comprise the project's Action Area[30] from the FWS Arcata Field Office website species portal on March 17, 2014 (http://arcata.fws.gov). None of the federally listed endangered, threatened or candidate plant species from the list is known to occur in the project area.

There are ten sensitive plants known to occur within the project boundary. Two species occur in or near areas where they may be affected by proposed activities. These two species are discussed below. The other eight species are not expected to be affected by the project due to their distance away from or position relative to proposed project activities. As such, those species were excluded from detailed analysis.

Table 7: Two Sensitive Species Known to Occur In or Near Disturbance Areas

Species	Type of Disturbance	Number of Sites possibly affected by the project
Ivesia pickeringii Pickering's ivesia	Reconstructing and then decommissioning.	One site (switchbacks along Dewey Mine Road).
Raillardella pringlei Showy raillardella	Road decommissioning and trail reconstruction, Eddy Ck. Parks Ck. Rd. reconstruction of exiting pullouts.	One (upper Eddy Ck. Drainage and decommissioning of spur road along Eddy Ck. Rd. Three approximately 1.0 miles NW of Parks Creek Trailhead.

[30] See the Wildlife Threatened and Endangered Species section, below, for a description of "Action Area."

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects

There will be no direct, indirect or cumulative effects from the no action alternative to any sensitive or endemic plant analyzed in this report. Although there would be no effects under Alternative 1, ongoing trends would continue. Any change in conditions would occur as a natural progression of botanical changes over time and would occur regardless of this decision.

Riparian and meadow habitats will continue to see damage from unauthorized motorized use and hydrology problems from plugged or undersized culverts and poorly designed roads and trails. Tracks from motorized use and poorly placed roads and trails can capture water flow directing water out of riparian systems drying them out. Poorly placed roads and trails can also capture water flow drying out seeps, wet meadows and streams. Future mass wasting events such as flooding or landslides caused by saturated soils could destroy individuals of Pickering's ivesia and showy raillardella.

This alternative may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for Pickering's ivesia or showy raillardella if these species are present at stream crossings or seeps because of the likelihood of mass wasting events in the future if stream crossings and/or culverts are not restored. Since no culvert replacement, road or trail work or meadow restoration would occur under this alternative, there may be a loss of individuals from continued motorized disturbance through wet meadows, poor drainage or erosion from plugged culverts, and poorly placed roads and trails.

Alternative 2 (Proposed Action)

Direct Effects

The direct effects to sensitive plant species may include damage to above or below ground plant parts, loss of reproductive potential for a short (seed production) or extended (loss of reproductive roots) time, and possible death of individuals. With RPMs in place to protect and restore sensitive plant sites, direct effects will be minimal for Pickering's ivesia and showy raillardella.

Indirect Effects

Habitat for Pickering's ivesia will be improved in the long run if the switchback section of Dewey Mine Road is rerouted out of the wetland where the ivesia is found and then this section is decommissioned. At the present time, this population is located in a seep at the lower end of the switchback along the road. Drainage in this area will be improved and this will improve habitat for the ivesia.

Habitat for showy raillardella may be improved by moving the trail out of Eddy Creek Meadow, making the trail for foot traffic only and decommissioning side roads on the upper portion of Eddy Creek Road. Removing vehicles from Eddy Creek Meadow and closing side roads which provide access to Eddy Creek Meadow is expected to improve meadow and stream habitat. Restoration of vehicle damage (replanting devegetated areas, eliminating ruts) in the meadow will also improve habitat for showy raillardella by improving hydrologic processes within the meadow. Blocking off the upper end of Eddy Creek Road will make it more obvious that vehicles are not allowed in the meadow.

Cumulative Effects

Implementing road actions to reduce erosion, sediment delivery and the potential for mass wasting will reduce the likelihood of significantly greater soil disturbance (especially via fill failures) to sensitive plant habitat and populations into the future. The process of habitat recovery and stabilization begins with recruitment of conifers, shrubs and perennial native grasses and forbs once roads and trails are actively or

passively decommissioned and road and trail activities are completed. In many serpentine areas, the natural condition is non-forested and these roads and trails will recruit the appropriate native shrubs, perennial and annual native grasses and forbs. Seeding with native grass and forb seed and mulching with native mulch or weed-free straw would further accelerate plant community recovery. Overall, the additional short-term impacts from the proposed treatments are minor in comparison to all of the past impacts, and no significant cumulative impacts to sensitive plant species are expected from Alternative 2. Implementation of the RPMs will further limit impacts to sensitive plant species.

The number of individuals that could be affected by proposed activities is small and no loss of viability for the species or resident populations is expected. Within all documented populations of sensitive plants species, individuals are very unlikely to be found on the road or trail bed, but some individuals may be adjacent and could be within the zone of activities and impacts. Unidentified and unmapped populations of any of these species are likely to resemble documented populations in character relative to road and trail location. Incorporation of RPMs will insure any potential impacts are minimal or non-existent.

Alternative 2 of the Parks-Eddy Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for Pickering's ivesia or showy raillardella.

Alternative 3

Direct and Indirect Effects

No known sites for sensitive plant species occur in the additional areas proposed for decommissioning by Alternative 3. The direct and indirect effects of the other proposed activities are essentially the same as Alternative 2. Since no additional sites or species will be affected by Alternative 3; there will be no additional direct or indirect effects to sensitive species (effects would be the same as with Alternative 2).

Cumulative Effects

Cumulative effects of Alternative 3 would be essentially the same as those discussed in Alternative 2.

Alternative 4

Direct and Indirect Effects

Alternative 4 is similar to Alternative 2, except that no trailheads would be constructed for trails to Eddy Creek Meadow, West Parks Lakes or Caldwell Lakes, and no trailhead improvements would be constructed at the Parks Creek Trailhead. In addition, user created vehicle routes to access dispersed recreation areas greater than one car length from the road would be decommissioned. Alternative 4 would have the same effects on Pickering's ivesia or showy raillardella as Alternative 2. There are no sensitive plants in the areas of the trailhead improvements at the Parks Creek Trailhead or proposed trailheads for Eddy Creek Meadow, West Parks Lakes and Caldwell Lakes trails.

Cumulative Effects

Cumulative effects of Alternative 4 would be the same as those discussed for Alternative 2.

Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Sensitive Plants

Threatened, endangered and sensitive plants were not part of the purpose and need for action.

Effects Relative to Key Issues as They Pertain to Sensitive Plants

The issue was raised that road and motorized trail construction and maintenance would have negative impacts to sensitive plant populations. RPMs to protect and restore sensitive plant sites have been developed to minimize impacts to sensitive plants for all action alternatives. It is possible that a few individuals of Pickering's ivesia and showy raillardella may be affected, but the populations as a whole will be left intact. Any effects to sensitive plants are anticipated to be essentially the same with all of the action alternatives. All proposed actions are also consistent with Executive Order 11990 which was established to avoid adverse impacts to wetlands. There will be a net gain in wetlands improved and restored by this project.

Weed Risk Assessment

A compliance and weed risk assessment was completed for the project (Posey, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

The indicator used for the effects analysis is whether or not there are any weed populations in the treatment areas that could be spread by the action alternatives.

Boundaries

Past and present actions

Over 100 years of timber sale activities and intensive livestock grazing introduced the first weed species, probably bull thistle and common mullein, to the project area. Scotch broom may have been brought in on equipment used to build and maintain Parks Creek Road. Bull thistle and mullein have a healthy seed bank waiting for ground disturbance so they can germinate. They tend to be present after any kind of disturbance. Overall, the area within the project boundary is free of moderate or high priority weed species. They tend to be along roads and within disturbed sites.

There have not been any Forest Service timber harvest projects in the area since the 1980s. Private timber companies have continued to harvest timber from their lands and this is expected to continue into the future.

Foreseeable future actions

Timber harvest continues on private lands. No timber projects are being planned by the Forest Service for anytime in the foreseeable future.

The Motorized Travel Management ROD prohibits cross-country travel except in designated areas of the forest, and also restricts vehicles to the roads designated on the MVUM. This may reduce the spread of new or known invasive weeds by reducing travel on user-created routes that are not part of the Forest transportation system; reducing the creation of new user created routes, and closing NFS roads. All motorized vehicles are required to stay on designated roads and trails.

Climate change may affect invasive weed species. Increasing temperatures could create more habitats for invasive weeds, as could changes in the amount and type of precipitation. The specific effects are not known. More or less precipitation and increasing temperatures could stress native plants, making it easier for weed species to become established. Weed species currently found at lower elevations may move up

in elevation. Continued monitoring of the area will locate new species brought into the project area and control measures will contain these species while their populations are small.

Methodology

The National Resource Information System (NRIS) is the database of record for non-native invasive weed populations, and the Forest is implementing the protocol along with the maintenance of the Forest GIS invasive weed layer. The Forest Invasive species GIS Database was used for information on invasive weed sites that are currently mapped within or adjacent to the project area.

Information collected for each invasive weed population includes:

- Location;
- Infestation size (acres) [both infested area, and gross area (individual plants are considered to be 1/10 acre)]; and
- Canopy cover of the infestation area.

Analysis was conducted based on the current distribution of weed species within and/or near the Parks Eddy project area. Estimates of the risk for weed spread and/or introduction of new weeds as a result of the proposed activities is based on peer-reviewed literature, experience in the project area and on similar sites in the Forest, and professional judgment.

The probability of action alternatives introducing or spreading invasive weed species is based on the amount of canopy removal, on the predicted amount of soil and/or understory vegetation disturbance, and on the predicted effectiveness of the RPMs in each alternative. Proposed actions with greater disturbance of existing vegetation and with greater soil disturbance would have a higher risk of weed spread.

Road systems and lands to the north and east of the project area have more and different invasive weed infestations than those in the project area, so transport of weed seeds from these regions to the project area could have a dramatic effect. Since few weeds occur in the project area, and these are common outside of the project area (except for the Scotch broom), the expected effect of the project on areas outside of the project area is minimal.

The probability of introducing or spreading invasive weeds from proposed activities are generally described as very low, low, moderate or high, with the following definitions:

- **very low**: no measurable effect on existing weed infestations or susceptible habitat,
- **low**: existing weed infestations and/or susceptible habitat not likely affected,
- **moderate**: existing weed infestations or susceptible habitat affected, with the potential for expansion into uninfested areas and/or establishment of new invaders,
- **high**: weed infestations and/or susceptible habitat affected, with a high likelihood of expansion into uninfested areas and/or establishment of new invaders.

Existing Condition

The Shasta-Trinity National Forest has a list of invasive species that are tracked and managed. High priority weed species are those that create increased local concern because of their limited distribution on the Forest; highly invasive nature; and demonstrated potential to displace large geographic areas of native plant communities. Management emphasis is primarily given to high priority weed species. Low and moderate priority species are of lesser concern and may be addressed in projects if those species are a problem locally.

There is one known population of Scotch broom (*Cytisus scoparius*) mapped at the lower elevations along Parks Creek Road. Scotch broom is a high priority weed species that was mapped in 2003 and treated in 2003 and 2004. When weed surveys were completed in 2013, this population was not found, however, seeds can last many years in the soil so areas with ground disturbance in the vicinity will be watched carefully.

Non-priority weeds found in the project area are common mullein (*Verbascum thapsis*) and bull thistle (*Cirsium vulgare*). Other weed species such as yellow starthistle (*Centaurea solstitialis*) and Dyer's woad (*Isatis tinctoria*) are known to occur on private lands at lower elevations just outside the project boundary, and a second population occurs just southeast of the Parks Creek Trailhead on private land below the Pacific Crest Trail. The Shasta Valley (outside the project area) has numerous weed species associated with ranching and small communities. The cities of Weed and Mt. Shasta also have numerous weed species. The most significant concern for this project is monitoring for new weed species introduced into the project area during implementation.

Environmental Consequences

Alternatives 2, 3, and 4 Direct and Indirect Effects

Increased Vectors as a Result of Project Implementation

Project traffic will include vehicles such as pickup trucks (including Forest Service), water trucks and flatbed trucks for hauling equipment. Off-road equipment includes whatever equipment is needed to complete the work and may include backhoes, dozers and excavators. Since the equipment washing RPM is only for off-road equipment, there is still a moderate probability for weed species to be brought in from outside of the project area.

The probability that new species will be introduced into the project area by commercial off-road equipment (e.g. backhoes or dozers) is low, as these must be cleaned prior to entry into the project area. They may be introduced by other vehicles used for the project such as water trucks and passenger vehicles as these vehicles are not covered under the RPMs requiring cleaning (e.g. travel only on roadways. There is a very low probability of spreading known high priority weed species within or outside the project area.

Habitat Alteration Expected as a Result of Project Implementation

Most road activities for all three alternatives will be restricted to the road prism or areas immediately adjacent to the road. Habitat alteration (primarily along roadsides) will differ to some degree for each action alternative as the mileages for each activity are different with each alternative. Alternatives 2 and 4 are similar, but Alternative 4 would not improve Parks Creek Trailhead or create the three additional trailheads, hence fewer areas where habitat could be altered by trailhead work. But Alternative 4 would decommission existing user created roads leading to dispersed recreation areas that are more than one car length from the road, which would expose more roadside habitat to alteration during decommissioning activities.

Alternative 3 would close or decommission all non-essential roads and motorized trails within the LSR, which would also lead to greater length of roadside habitat exposed to alteration with the additional miles of road decommissioning activities. However, in the long-term, decommissioning roads will reduce the spread of weeds because most weeds are introduced or spread by vehicles. Alternative 3 closes and decommissions the most road miles and so would provide the best weed control over time by presenting the fewest roads available for vehicle weed vectors.

Habitat Vulnerability

At the present time, most of the project area has a high percentage of either overstory or understory vegetative cover. After 100 years of logging and grazing in the area, there is a large seed bank of low priority invasive species such as bull thistle and common mullein. Elevation in parts of the project area is high enough to retard some weed species and serpentine soils that cover much of the area will also make establishment more difficult. Habitat vulnerability at the present time has a low probability of spreading high priority weed species within or outside the project area. With a number of weed species occurring on private lands outside of the project area and the amount of vehicle traffic some roads see during the year, there is a moderate risk of bringing in new high priority weed species.

Non-Project Dependent Vectors

In addition to the possibility of project implementation activities as vectors for introducing new weed populations to the project area, there are other vectors for weed introduction.

Parks Creek Road is a major travel corridor. It is paved and maintained. The overall open road density in the project area is 1.9 miles/square mile. Most roads were created from the 1960s through the 1980s as logging roads. New roads have been created on private lands.

West Parks Creek and Eddy Creek grazing allotments have been vacant since 1993 and 1997 respectively, which reduces the potential for spread of weeds by livestock. However, wildlife can spread weeds to disturbed areas in their fur, hooves (feet) and digestive tracts.

This area is a popular destination point for thousands of visitors from all over the world every year. They hike, backpack, camp, fish, botanize and hunt. They could, unknowingly, bring high priority weed species with them on their vehicles, clothing and gear.

Overall, the probability of high or moderate priority weeds being brought into the project area by non-project vectors is moderate.

Overall level of risk from all action alternatives for the project

When project RPMs are applied, the overall level of risk of introduction of new weed species for the project is moderate. Monitoring for new weed populations post treatment and treating those populations while they are small will reduce the overall risk of establishment of new species to low.

Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Weeds

Weeds were not identified as a part of the purpose and need for action.

Effects Relative to key Issues as they Pertain to Weeds

Weeds were not identified relative to key issues.

Cultural

A Cultural Resources Report was completed for the project (Morgan, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Boundaries and Analysis Methodology

The Area of Potential Effect (APE) identified for cultural resources include those areas potentially disturbed either directly by ground disturbing route and recreation construction or maintenance activities

and those areas impacted indirectly by sediment or runoff due to the proposed road and recreation actions and subsequent recreational use. All proposed project activities that are ground disturbing have the potential to adversely impact cultural resources. This analysis is designed to identify all cultural resources within the APE, and to determine appropriate RPMs for all *eligible* and *unevaluated* cultural resources to prevent damage during project implementation and subsequent land use.

The cultural resource inventory was completed in the summer of 2014. [31] Field survey needs were determined by examining historic aerial photos and maps and assessing previous inventory reports for adequacy to identify cultural resources. The pre-field research was initiated in November 2012. Field survey of the APE was initiated in November of 2013. Field survey methods included walking parallel transects to identify, record, and map cultural resources. In addition, all of the known historic and prehistoric sites will be revisited to verify site conditions and mapped locations. Roads or segments of roads that have grown in naturally and will be closed administratively or are proposed for routine maintenance will not be surveyed.

The Parks Eddy Watershed Restoration Archaeological Reconnaissance Report (R2014051400015) is complete and a summary of findings is included.

Existing Condition

Historical background for the general area can be found in the Willow-Parks WA (USDA Forest Service, 2014). Archaeological evidence for Native American use of the area includes seasonal camps and resource procurement and workshop areas associated with the *Ahotire 'itsu Okwanuchu*. These sites consist primarily of scatters of obsidian flakes and tools. Ground stone artifacts for plant material processing are also present at some of these sites. Evidence of Euro-American use includes gold, chromite and asbestos mines and prospects, and historic mining claim markers. Also present are early roads, trails, bridges and bridge abutments, historic structural remains, pastures, logging camps, and logging chutes, as well as some associated work camps and refuse deposits. Most of these historic sites date from the 1880s to 1940s.

There are 18 known cultural sites within the project area; seven prehistoric sites and 11 historic sites. Appropriate RPMs for each site will be determined through a combination of pre-field research and field visits.

Of the 18 known sites within the project area, one site has been determined *eligible* for the National Register of Historic Places (NRHP). This site is also a Prescription XI site identified in the Forest Plan (USDA Forest Service, 1995) however, it is located outside the APE and requires no protection measures. Seventeen sites are currently *unevaluated* for the NRHP. Any new sites found during inventory will be *unevaluated* but will be treated as *eligible* for the NRHP. *Eligible* and *unevaluated* sites require protection measures in accordance with the Region 5 Programmatic Agreement (USDA Forest Service, 2013).

[31] A Cultural Resource Report, including necessary inventory and determination of effect by an undertaking, does not have to be completed prior to the release of a draft NEPA document, but must be completed prior to the signing of a Decision Memo or Finding of No Significant Impact. See Section 106 of the Historic Preservation Act (36 CFR 800.8, 16 USC 470f), FSM 2362.2(5) and FSH 1909.15(17.1a) for additional information.

Environmental Consequences

Alternatives 2, 3, and 4

Direct, Indirect, and Cumulative Effects

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings[32] on cultural resources. Cultural resources identified within the APE would not be adversely affected by proposed activities related to the Parks Eddy project. Cultural resources will be avoided during all project activities or will have RPMs applied to eliminate project impacts. RPMs will be identified in all contracts, plans or other documents associated with ground disturbances located within or in the immediate vicinity of sites.

Cultural resource exclusion areas will be marked on the ground prior to implementation. Cultural resources may be either avoided entirely by project activities in accordance with Appendix E Class I, 1.1-1.5 of the Region 5 Programmatic Agreement, or may undergo one or more of the following on-site treatments:

1. Cultural resources bisected by or adjacent to roads will be flagged for avoidance. Where a NFS road crosses through a site where sub-surface materials are present or may likely be present, the site may be protected by flagging the road through the site and lifting the blade when the equipment is passing through the site. The remainder of the cultural resource outside the road prism will be avoided [Programmatic Agreement, Appendix E, Class I, 1.3(1)]. The resource will be monitored by heritage personnel during implementation [Programmatic Agreement, Appendix E, Class I, 1.5].

2. Barriers for road closures may be placed within or adjacent to site boundaries when such barriers do not disturb surface and subsurface deposits or lead to other effects to the site [Programmatic Agreement, Appendix E Class II, 2.1(d)].

3. Existing road drainage features within cultural resource boundaries may be cleaned out by use of hand tools or excavators. Ground-disturbance from the replacement of existing culverts located within or adjacent to Cultural Resources will be confined to the existing disturbed areas [existing road prism, Programmatic Agreement, Appendix E, Class II, 2.1(f)].

4. Historic roads and trails also require protection measures. These historic features will be marked on the ground, along their lengths with an appropriate buffer. Identified breaches may be crossed in accordance with the Programmatic Agreement, Appendix E Class II, 2.1(a), and these breaches will be identified on contract maps, plans, and other documents.

Through the use of the standard RPMs, and the additional measures above, no direct, indirect, or cumulative effects to known cultural resources are anticipated. If previously unidentified cultural resources are discovered during project implementation, work will be suspended, Heritage Department personnel will be notified, and standard cultural RPMs will be implemented.

[32] An "undertaking" is defined as "…a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including – (A) those carried out on behalf of the agency; (B) those carried out with Federal financial assistance; (C) those requiring a Federal permit, license or approval; and (D) those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency." (NHPA of 1966, Section 201 Title III, 16 USC 470w).

Geology

A Geology Report was completed for the project (de la Fuente, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

The miles of roads decommissioned, maintained or reconstructed are tracked as indicators of the reduction in erosion which would result. The length of road decommissioned in ultramafic rock is used as the indicator for changes in potential human exposure to naturally occurring asbestos (NOA) dust.

Boundaries

Spatial boundaries for the cumulative watershed effects assessment are HUC5 and HUC8 watersheds.[33] Temporal boundaries are 20-30 years for ground disturbing activities. These spatial and temporal boundaries are the same as those used in the project Hydrology section, below.

Revegetation of decommissioned roads is assumed to occur after a variable period of time (dependent on soil conditions), but on the order of 10 years, though areas underlain by ultramafic rock could take considerably longer.

Methodology

The information used in this assessment included the Forest bedrock and geomorphology GIS coverages, proposed action coverages, and information in in the Willow-Parks WA. It also included findings from geologic field work, and aerial photo interpretations made from 2012 through 2014, as part of the Willow Parks WA and also for the Parks Eddy project.

Potential effects were analyzed by tracking the amount (length) of various proposed project activities on roads. Miles of decommissioning, storm proofing, and maintenance were used to track reductions in road-related landslides. Miles of decommissioned roads in ultramafic rock were used to track potential reductions in human exposure to asbestos-bearing dust. In general, proposed actions have some very small short term adverse effects, such as localized erosion on disturbed areas, and generally much larger positive effects in the long term, such as reduced potential for landslides at road stream crossings. RPMs for geology will address site specific requirements.

Potential effects were also analyzed by tracking the amount of the various proposed actions against sensitive geomorphic landforms, and presence or type of underlying bedrock. Observations from field and air photo work were also considered.

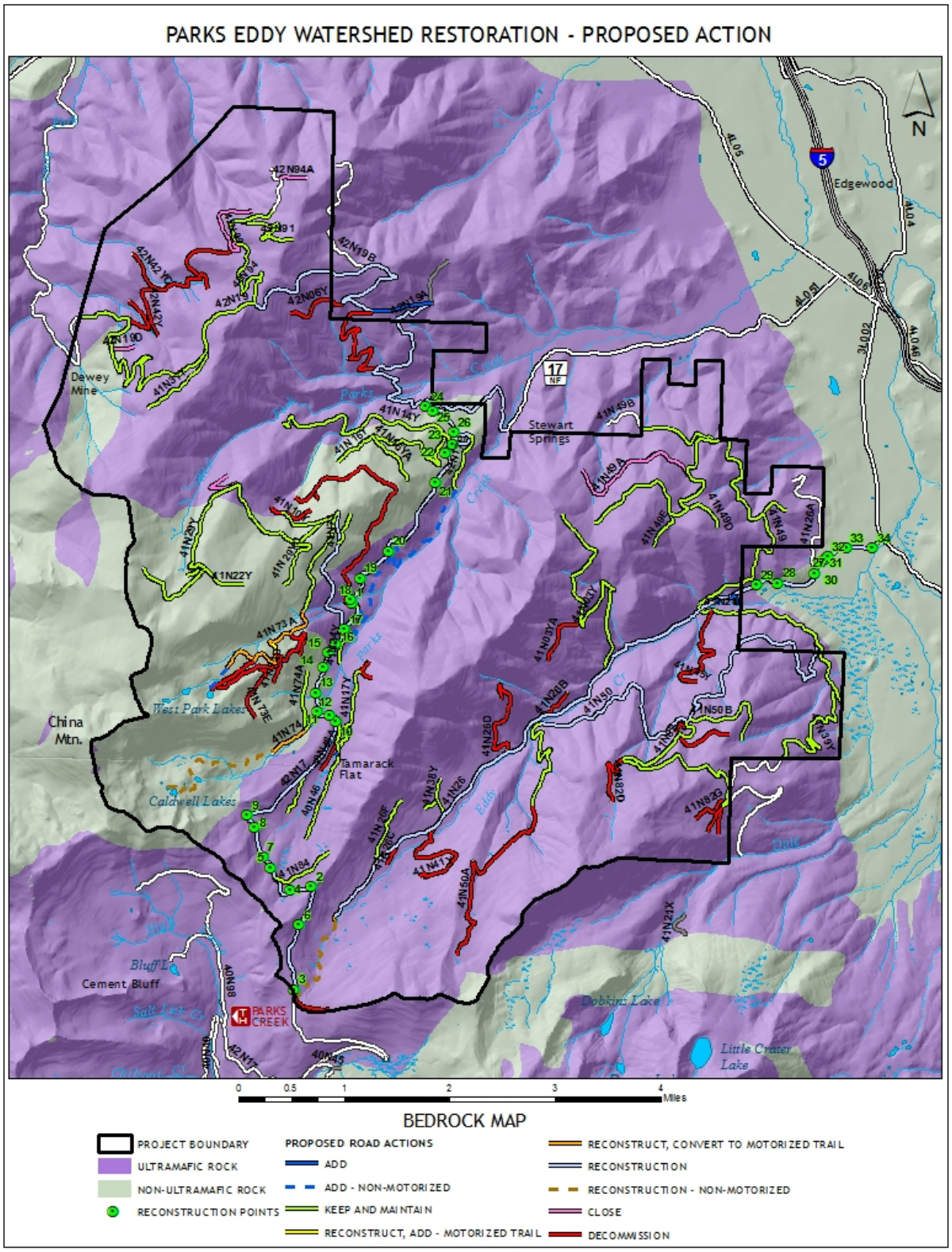
Existing Condition

The project area incorporates several northeast flowing tributaries to the Shasta River, and the headwaters of these watersheds were shaped by glacial erosion. Key geologic hazards in the project area include landsliding, NOA, and in localized areas, snow avalanches. These watersheds are rather unique in the Klamath Mountains, in that approximately ¾ of the project area is underlain by ultramafic rock (see Figure 2). Typical geomorphic features include inner gorges, dormant deep seated landslides, and unconsolidated deposits (alluvial, terrace, and glacial deposits) along with steep debris basins, as shown on the geomorphic map in the Geology Report (page 22).

[33] HUC = Hydrologic Unit Code. See the Hydrology section (page 55) below for an explanation of watershed levels.

The Willow-Parks WA includes additional information on geologic factors, including a general geologic characterization of the area (pages 9-12), geomorphic processes (pages 63-69), and geologic reference conditions (pages 94-96).

Figure 2. Geology (Bedrock) Map of the Project Area



Environmental Consequences

Alternative 1 – No Action

Direct, Indirect, and Cumulative Effects

Alternative 1 (no actions implemented on roads, trails, recreation facilities or dispersed recreation access) would result in continued currently elevated landslide potential associated with existing road drainage issues, and greater length of roads in ultramafic rock respectively. This alternative forms a basis for comparison with the action alternatives discussed below.

Alternative 2 – Proposed Action

Direct Effects

Road and trail activities that involve ground disturbance, including decommissioning, maintenance, reconstruction and realignment have the potential to generate dust when implemented during dry conditions. Trailhead and parking area construction/improvements, sign installation, and some meadow restoration activities also have the potential to generate dust when ground disturbance is implemented under dry conditions.

RPMs that serve to minimize dust will reduce effects from airborne dust, including NOA exposure.

Road and trail closures will reduce dust generation as these activities include minimal ground disturbance.

Indirect Effects

Indirect effects involve those effects which occur later in time and farther removed in distance from the direct effects, but in the reasonably foreseeable future. These include things like an increase or decrease in the potential for culvert blockage or landsliding, and increase or decrease in potential for generating dust after implementation is complete.

Road Actions

Road decommissioning may result in a short term (1-3 years) increase in surface erosion associated with ground disturbance, and a long term (3+ years) reduction in the potential for landsliding associated with road fill failures, concentrated road surface runoff, and diverted stream flow. Once decommissioned, there will be no dust exposure to people in vehicles from these roads.

Road closure will reduce erosion on road surfaces associated with ruts formed by vehicular traffic. Human exposure to dust will also be eliminated during the closure period.

Road maintenance activities will greatly reduce the potential for culvert blockage and associated failure of road fills at stream crossings. It will also reduce the potential for concentrated runoff on the road surface and gullying below the road. Some maintenance activities such as blading could increase the potential for dust generation by allowing vehicles to travel at higher speeds.

Road storm proofing will be even more effective than road maintenance at reducing the potential for culvert blockage and associated failure of road fills at stream crossings, stream diversions at crossings, and landslides. Storm proofing is similar to road maintenance in terms of potential for dust generation during implementation.

Realignment of Dewey Mine Road would be designed to greatly reduce the potential for road related landslides, and in effect would involve decommissioning the existing alignment. The new alignment may

be on different rock than the original alignment and as a result, may have different potential for introducing dust containing NOA to the air.

Trail Actions

Trail reconstruction will reduce the potential for stream flow diversion and concentration, along with associated erosion. The potential for dust generation from reconstructed non-motorized trails, post-project, is expected to be minimal.

Recreation Facilities

New trailhead parking areas will result in minimal increased runoff from the compacted surfaces of the areas. Additional vehicle traffic within the trailhead areas may lead to increased potential for dust generation, depending on type of surfacing used.

Closing OHV tracks in meadows will result in a reduction in potential for concentrated runoff and gullying, allowing for revegetation of existing erosion sites. The potential for dust production in those areas will be reduced.

OHV trails that will be rehabilitated will have lower potential for concentrated runoff and channel diversion at stream crossings.

Dispersed Recreation

Barriers placed to keep OHVs out of meadows will help to reduce the potential for gullying and concentrated runoff associated with wheel rutting caused by motorized use. Meadow restoration of OHV tracks will also work to reduce gullying and facilitate re-vegetation of eroding sites, while placing signs in the area will facilitate protection of meadows from OHV damage.

Cumulative Effects

Cumulative effects are those which result from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions, regardless of who is taking the other actions. Cumulative effects overlap in time and space.

Actions with the largest potential for cumulative effects related to landslides include decommissioning, storm proofing, realignment, and trailhead construction. These cumulative effects will be positive.

All other activities will have very subtle, difficult to measure cumulative effects, both positive and negative. In the section below, these are described as small positive, or small negative cumulative watershed effects.

Road Actions

Road decommissioning greatly reduces the potential for road-related landslides such as fill failures and debris slides caused by concentrated road runoff in the short and long term. It also eliminates the potential for fill failures at stream crossings. As such, these actions can have a very large beneficial cumulative effect on a given watershed. This is particularly true where multiple roads cross a given hillslope, one above the other, and effects between roads are clearly cumulative.

Road closures would have a small positive cumulative effect at the watershed scale. Closures would also eliminate dust generation and public exposure to dust on those roads.

Road maintenance would have a very large positive cumulative effect by reducing the potential for culvert blockage and runoff-related issues. While difficult to quantify, preventing a single culvert from clogging can keep thousands of cubic yards of sediment out of streams.

Storm proofing would have an even greater positive cumulative effective than maintenance because improvements would be made in drainage conveyances such as culverts and rolling dips. Realignment is larger still, since it typically involves decommissioning the problematic segment and replacing it with a much better road location in terms of watershed protection. However, realignment can either increase or decrease the potential for dust generation and exposure to natural asbestos, depending on the type of rock underlying the old and new alignments.

Trail Actions

Trail reconstruction actions will place trail alignments in better locations and repair drainage issues, resulting in small positive cumulative watershed effects. But due to the small area involved, effects will be much smaller than for road actions on a per-mile basis.

Recreation Facilities

Any new ground compaction could have a small negative cumulative watershed effect, but correcting drainage issues would have a small positive effect.

The trailhead construction consists of small areas that will provide parking for a few cars and would have similar effects to a section of new road the same size. These effects are overshadowed by the larger total area of the road decommissioning.

Closing OHV routes in meadows will have a small positive cumulative watershed effect that will be roughly proportional to the length of trail treated in each analysis watershed.

Rehabilitating former OHV tracks will also have a small positive cumulative watershed effect, roughly proportional to the length of track treated in each analysis watershed.

Converting an OHV track to a foot trail will have a small positive cumulative watershed effect, roughly proportional to the length of trail treated in each analysis watershed.

Dispersed Recreation

Constructing barriers to keep OHVs out of the meadows will have a small positive cumulative watershed effect roughly proportional to the number of vehicles kept out of the meadows. Meadow restoration of the user created OHV tracks will also have a small positive cumulative effect on watersheds roughly proportional to the length of track treated in each analysis watershed.

Sign installation will have a small positive cumulative watershed effect, roughly proportional to the number of visitors discouraged from taking vehicles into meadows.

Alternatives 3 and 4

Direct, Indirect, and Cumulative Effects

Alternatives 3 and 4 would have direct and indirect effects similar to those described for Alternative 2. They would reduce landslide potential and also the potential for vehicle-generated dust in ultramafic rock which could contain naturally occurring asbestos. Actions with the greatest positive watershed effect (decreased landslide potential), are road decommissioning, reconstruction, and road maintenance, in order of decreasing magnitude.

When these three actions are considered, Alternative 3 has the greatest positive effect (due to the increased amount of road decommissioning), with Alternatives 2 and 4 being almost identical, and having a slightly smaller positive effect than Alternative 3. When considering hazards posed by naturally occurring asbestos, Alternative 3 has the largest positive effect because it decommissions more roads on ultramafic rock.

Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Geology

The proposed action meets the purpose and need in that it improves trailheads, increases vehicle safety on main roads, and accomplishes the following:

- **Watershed Condition Restoration**- reduces road-related erosion, protects meadows, reduces the length of OHV trails in Riparian Reserves;
- **Transportation System Operation and Management**- Makes the system more self-maintaining, and resilient to storms;
- **Other**- Beyond the elements of the Purpose and Need, it also reduces the length of road in asbestos-bearing ultramafic rock, which reduces human exposure to dust which could contain natural asbestos.

Effects Relative to Key Issues as they Pertain to Geology

Though no key issues were identified directly pertaining to Geology, two important geologic hazards are affected by project activities. These are road-related landslides, and NOA. Road decommissioning, reconstruction, and maintenance will reduce road-related landslide potential, and road decommissioning will reduce human exposure to NOA. Additionally, relocation of OHV routes will avoid rock which could contain natural asbestos wherever possible. This will be accomplished during implementation level surveys as directed in RPM GHS-6.

Hydrology

A Hydrology report was completed for the project (Bachmann, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

Issue indicators for water resources (e.g. water quality and beneficial uses) were developed by specifying measures that will be useful in judging differences among the actions, and were developed to be understandable, quantifiable, and responsive enough to environmental influences and activities to show the changes. Issue indicators addressed in this analysis are:

- Miles of roads and motorized trails decommissioned,
- Miles of road decommissioned and closed within Riparian Reserves,
- Changes in open road density in project area,
- Number and miles of roads and motorized trails improved and maintained,
- Number and miles of roads improved and maintained within Riparian Reserves,
- Acres of Riparian Reserves (e.g. streams, wetlands, fens) benefitting from restoration activities.

Boundaries

The boundary chosen for the hydrologic cumulative effects analysis provides an analysis area where effects from activities within or adjacent to the project boundary can be analyzed to determine if any direct or indirect impacts would result in an incremental effect from the proposed action when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions and regardless of land ownership on which the other actions occur. This analysis evaluates the effects of the proposed action and alternatives at both the Hydrologic Unit Code 5 (HUC5) and Hydrologic Unit Code 8 (HUC8) watershed scales and includes all watersheds that contain proposed activities. The HUC8 scale is more suited for addressing cumulative effects at smaller scales (i.e. project scale) while the HUC5 scale evaluates proposed activities at a larger watershed scale and is needed to address compliance with ACS objectives.

The temporal boundaries for hydrologic cumulative effects consist of 30 years into the past and 6 years into the future. The six years into the future includes the 5-year implementation period and one additional year to account for short term disturbances during runoff events as described under direct and indirect effects for water resources.

Methodology

Cumulative watershed effects are the additive or compound effects of land management activities to water quantity and quality and beneficial uses, occurring away from the site of primary development, which are transmitted to the fluvial system (Haskins, 1983). A cumulative watershed effects analysis for the Parks Eddy hydrology analysis area was accomplished by using the Equivalent Roaded Area (ERA) model to demonstrate that the project will not increase the short and long-term sediment yield to a level that would have negative effects on water quality or aquatic and riparian habitats. Cumulative effects are also discussed qualitatively and in the context of the ACS. Complete descriptions of ERA and ACS methodologies can be found in the Hydrology Report (Bachmann, 2014).

Existing Condition

Hydrology

The Parks Eddy project area is located within the Willow-Parks Watershed. Most of the information on hydrologic resources presented in this section is derived from the recently completed Willow-Parks WA. The entire project area is tributary to the Shasta River. The Shasta River flows northward for a distance of approximately 12 miles before entering Lake Shastina (Dwinnell Reservoir). The Shasta River drains an area of 795 square miles and is one of the larger tributaries to the Klamath River. The Parks Eddy analysis area is located within portions of three HUC5 watersheds. These include Willow Creek (1801020704), Parks Creek – Shasta River (1801020703), and Upper Shasta River (1801020701). The analysis area is located in the headwater reaches of each HUC5 watershed.

The headwaters of the Shasta River originate in the southeastern portion of the watershed below Mount Eddy. The primary tributary drainages include the South Fork of Willow Creek, Parks Creek, Eddy Creek, Dale Creek and the upper Shasta River. The tributaries to the Shasta River drain mountainous terrain that is primarily vegetated by mixed-conifer forests. Elevations in the watershed range from a high of 9,025 feet above sea level on the summit of Mount Eddy to just over 3,000 feet on the valley floor.

Climate

The analysis area is located in the northern end of the Mediterranean Highland Climate Region and is characterized by warm dry summers and cool wet winters. Annual precipitation varies with elevation and can range from anywhere between 10 to 55 inches with the majority of precipitation occurring between

November and April. The headwaters of Dale, Eddy and Parks Creeks receive over 50 inches of annual precipitation but this annual average drops to less than 10 inches on parts of the valley floor near Gazelle, California. High intensity, long duration storms are common during the winter months and the watershed is occasionally subject to intense thunderstorms in the summer months (USDA Forest Service, 2014).

Stream Channels

The Shasta River and its tributaries exhibit a dendritic drainage pattern typical of most watersheds in the Klamath Mountains. The drainage density of the watershed analysis area is approximately 3.1 miles of stream channel per square mile. The watershed contains approximately 86 miles of perennial streams and 110 miles of intermittent and ephemeral streams. Ephemeral streams differ from intermittent streams in that they flow only in response to high intensity precipitation events or rapid snowmelt. The watershed also contains approximately 1,066 acres of lakes, swamp/marsh, fens and reservoirs.

Streams within the project area are primarily fed by winter rainfall and spring snowmelt. Low baseflows are sustained by springs and seeps in most of the tributary drainages during the summer and fall. Streamflow in the headwater reaches of the watershed is mostly not impacted by reservoirs or diversions but this is not the case on the valley floor where the hydrologic routing of flow becomes more complex.

The tributaries to the Shasta River located within the analysis area exhibit similar physical characteristics due to similarities in climatic conditions and the geologic parent materials in which they formed. Stream channels in the watershed can be partitioned into three distinct types: 1) Headwater Channels, 2) Midslope Channels and 3) Valley Channels.

Data from Stream Condition Inventories are available for Parks and Eddy Creeks. Stream Condition Inventory data were collected on selected reaches of Parks Creek in 2003 and on one reach of Eddy Creek in 2012. No resource concerns were noted on the reaches that were surveyed in 2012 outside of concerns with poorly maintained roads as identified in this analysis (USDA Forest Service, 2012).

Water Quality

Water quality in the Willow-Parks Watershed is regulated by the Clean Water Act. The quality of water in the Shasta River and its tributaries is generally very good on public lands in the upper elevations of the watershed. Most of the streamflow generated in the analysis area results from spring snowmelt. Summer base flows provide cool water to support aquatic and riparian habitats. The quality of water generally declines once the runoff reaches the valley floor. Downstream of the watershed analysis area cold water beneficial uses have been affected by dams, diversions, agriculture uses.

The Shasta River was added to California's 303(d) impaired waters list in 1992 because of water quality issues associated with organic enrichment and low dissolved oxygen. In 1994 the river was also listed for elevated temperature. Elevated temperature and low dissolved oxygen levels have impaired beneficial uses of water and resulted in non-attainment of water quality objectives. The primary affected beneficial use is the cold water salmonid fishery. Low dissolved oxygen levels and high water temperatures have also been identified as factors that are contributing to the decline of the coho salmon population and other salmonids in the river (North Coast Regional Water Quality Control Board, 2006).

The Forest Service is committed to working with the State to improve the condition of all impaired waters on the NFS. Effective management to restore impaired water bodies involves minimizing adverse effects of current activities and repairing damage caused by past activities (USDA Forest Service, 2011). Resolution R1-2006-0052 identifies actions that can be taken to improve water quality in the Shasta River (NCRWQCB, 2006). Some of the Total Maximum Daily Load (TMDL) implementation actions identified

in R1-2006-0052 for addressing dissolved oxygen and water temperature impairment have been incorporated into the action alternatives for the Parks Eddy project.

The Shasta River TMDL information represents a partial summary of TMDL implementation actions. Refer to Resolution No. R1-2006-0052 for a complete description of TMDL implementation actions.

Some localized problems with water quality may be occurring at the Parks Creek Trailhead due to poor sanitation practices. There are no Riparian Reserves present at the trailhead which is located on a ridgetop but the lack of a public restroom creates sanitation issues which have the potential to affect downstream water quality.

Riparian Reserves

Riparian Reserves in the Willow-Parks Watershed account for approximately 22 percent of public lands. The majority of the Riparian Reserve acreage is composed of stream channels. Riparian Reserves associated with stream channels, springs, lakes and wet meadows account for 73 percent of the Riparian Reserve acreage and Riparian Reserves associated with unstable or potentially unstable areas account for approximately 27 percent of Riparian Reserve acreage.

Riparian Reserve types and widths found in the Parks Eddy analysis area are:

- **Fish-Bearing Streams**-300 feet from the water's edge on each side of the stream,
- **Permanently Flowing Nonfish-Bearing Streams**-150 feet from the water's edge on each side of the stream,
- **Intermittent or Ephemeral Channels**-100 feet from the water's edge on each side of the stream,
- **Seasonally Wet Meadows greater than one acre**-150 feet from the water's edge on each side of the stream,
- **Seasonally Wet Meadows or Wetlands less than one acre**-100 feet (meadow or wetland and distance equal to the height of one site-potential tree extending from the feature, or 150 feet slope distance from the edge of the feature),
- **Lakes and Natural Ponds**-the body of water plus 300 feet from the water's edge,
- **Unstable Areas**-None (includes the extent of the unstable and potentially unstable areas including earthflows).

Site potential tree heights for the project area average about 130 feet (estimate derived from site index yield tables).

Roads, Sediment and Influence on Stream Channels and Water Quality

Past and present land use activities have influenced hydrology, stream channels and water quality in the watershed. Surface and groundwater hydrology within the watershed has been altered by roads, diversions and impoundments. Roads have the greatest influence on surface and groundwater flow in the upper elevations of the watershed while impoundments and diversions play a larger role in altering surface flow in the lower watershed outside of the analysis area.

Sediment source inventories completed in the watershed in 2002, 2011, and more recent road condition surveys completed in 2012 provide insights into the current condition of roads in the watershed (North State Resources, 2011), (Resource Management, 2002), (USDA Forest Service, 2012). Problems with the road system that affect channel morphology include plugged and undersized culverts, interception of sub-surface flows (from roadcuts), rilling, gullying, and undercutting of unstable areas due to poor road location. While some of these problems are caused by poor design, the majority of problems with stream crossings can be attributed to lack of maintenance.

Data from the 2002 and 2010 sediment source inventories indicate that about 39 miles of roads within the watershed are hydrologically connected to the stream network. Most of the connected road segments occur in the Parks Creek and Eddy Creek drainages, with a lesser amount (4 miles) within the South Fork Willow Creek drainage. The sediment source inventory data also indicate that fluvial erosion, in the form of gullies, is the dominant erosion mechanism delivering sediment to the stream network.

Data from the sediment source inventories also indicate that many stream crossings have contributed sediment to aquatic habitats in the past. Many crossings have failed and have stabilized and are no longer sources of sediment to aquatic habitats. The sediment source inventories also determined that low water fords were more common in the Willow-Parks Watershed when compared to other watersheds on the Shasta side of the Forest. Poorly maintained low water fords have the potential to introduce fine sediments to streams.

In addition to stream channels, the transportation system has also affected hydrologic conditions in meadow, wetland and stream habitats. These habitats are relatively common, particularly at higher elevations and often are traversed by roads. The road system tends to intercept sub-surface flow in areas where road cuts pass through wet areas. Oftentimes intercepted runoff is diverted down the roads which degrades the road surface and drains aquatic habitats located downslope of the diversion points.

Wetlands and meadows have also been affected by motirized use. Evidence of motorized use occurring in wet meadow habitats was observed during field reconnaissance of the watershed in 2012. Motorized use in wet meadows is unauthorized and can have negative impacts to meadow hydrology, soils and vegetation. Meadows and wetlands experiencing motorized use are located in the upper reaches of the Dale, Eddy and Parks Creek drainages.

Water quality problems in the upper elevations of the watershed are almost exclusively related to those arising from poorly drained and hydrologically connected roads. These roads have and in some cases continued to serve as a sediment source to streams and other aquatic habitats. Fine sediment inputs can impact habitat (e.g. spawning gravels) and elevate turbidity levels during periods of high runoff. Excessively high inputs of fine sediments can also impact water quality by reducing the amount of dissolved oxygen in streams and lakes. Dissolved oxygen levels are of particular concern in the watershed due to the Shasta River TMDL.

Water quality and stream channel conditions have and continue to be influenced by legacy mines. There are several mines located within the analysis area such as the Dewey Mine in the South Fork Willow Creek drainage.

The potential for continued sedimentation of aquatic and riparian habitats and impacts to water quality is the primary limiting factor for the analysis area. By reducing sources of fine and coarse sediments in the analysis area the Forest will also help achieve the goals of the Shasta River TMDL by reducing a source of chronic sediment to the Shasta River.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

With Alternative 1, no direct or indirect effects would occur because no actions would be implemented. No roads would be decommissioned, closed, reconstructed or maintained. Water quality and sedimentation issues associated with lack of maintenance on roads and trails would continue. Hillslope

gullying from poor drainage would continue. Open road densities would remain the same. Sanitation issues would remain the same at the Parks Creek Trailhead. OHV impacts to wet meadows would continue. No trail realignments or maintenance would occur.

Alternative 2 (Proposed Action)

Direct Effects

Road Actions

Decommissioning

Approximately 21.5 miles of roads will be decommissioned and an additional 1.7 miles of road will be reconstructed and decommissioned post-project pending potential right-of-way acquisition for alternative access. Of this total, 9.4 miles of road will be decommissioned, or converted to foot trails within Riparian Reserves. All direct effects will be associated with blocking access to the decommissioned roads, and the restoration of channel and hillslope drainage during road decommissioning activities. Information collected during field reconnaissance, sediment source inventories and road condition surveys indicates that ground disturbance associated with decommissioning will occur on no more than 25% of the road length for which active decommissioning activities have been proposed. Based on this assumption active decommissioning activities will occur on approximately 5.5 miles of road.

Treatments that will be used in decommissioning will vary in intensity and include hydrologic stabilization with waterbars, restoration of natural drainage patterns, blocking of roads, tilling of road surfaces and seeding. Direct effects will include disturbance of road prisms from tilling, culvert removal, and restoration of drainage (outsloping, recontouring, fill removal/excavation). Excavation of fills at wet crossings will have short term direct effects on water quality during installation of flow diversion RPMs and from excavation activities contributing small amounts of sediment to the waterways.

Direct effects associated with active decommissioning will be limited to segments of the road system where actual ground disturbance occurs and, in the case of short term increases of turbidity and sedimentation, may extend downstream for variable distances but no more than 0.25 mile below the work zone. Impacts from sedimentation and turbidity will diminish rapidly with distance downstream and should not persist for more than one week following completion of ground disturbing activities.

The majority of roads will be decommissioned by passive means (i.e. berm and no other treatment). Passive decommissioning was chosen for roads that were either overgrown, lacked drainage infrastructure (e.g. culverts), or did not require earth work to restore natural drainage. About 16 miles of road will be decommissioned passively (75% of all linear road length proposed for decommissioning). There will be no direct effects to water resources associated with passive decommissioning.

Closure

A little over three miles of roads will be closed and put into storage (Maintenance Level 1). All roads will be closed with earth berms. Waterbars will be needed on about 0.5 miles of Road 41N29YA to restore drainage and prevent concentration of runoff and gullying. No activities will be needed on the remaining 2.5 miles of road proposed for closure. Direct effects will be limited to ground disturbance in the existing road prisms of Road 41N29YA during water bar installation with no anticipated effects to water resources with proper implementation of RPMs.

Maintenance

Approximately 44 miles of road are proposed for maintenance activities designed to reduce erosion and sedimentation of aquatic and riparian habitats. Direct effects will include ground disturbance in the existing road prisms associated with re-establishment of drainage structures (e.g. rolling dips, culverts and ditches). Some short term turbidity could occur when re-establishing wet ditches. Some loss to riparian vegetation and other vegetation could occur when cleaning out ditches and culvert inlets. Impacts will be greatest during implementation and will diminish rapidly following the completion of drainage work (elevated turbidity levels should continue for no more than one week post-project completion). As with the decommissioning activities, any short term increases of turbidity and sedimentation will extend downstream for variable distances but no more than 0.25 mile below the work zone. The determination of no effects 0.25 miles below stream crossings is based on professional judgment and field reviews of existing conditions and proposed activities. Impacts from sedimentation and turbidity will diminish rapidly with distance downstream and should not persist for more than several days following completion of ground disturbing activities.

Reconstruction

Reconstruction activities are proposed on approximately 27 miles of roads. Reconstruction activities are grouped into 2 categories: storm proofing and realignment.

Storm proofing activities will include replacing existing culverts with larger ones, armoring/rocking dips, creating rolling dips, outsloping road surfaces and treating crossings to accommodate aquatic passage and large flow events. Storm proofing activities will also include installing cross drains, ditch improvements and rocking short segments of road that are contributing sediment to riparian and aquatic habitats.

Road realignment activities will relocate road segments and trail facilities outside of active areas such as debris flow channels, stream channels, landslides, rock slides and sensitive areas such as cultural resources. Direct effects will be similar to maintenance activities discussed previously; however they will also be more intensive due to increased ground disturbance associated with relocation of roads outside of sensitive aquatic and riparian habitats and activities at wet crossings.

Direct effects will include improved flow capacity for crossings that are cleaned or upsized, disturbance to vegetation associated with replacing culverts and realigning roads and temporary sedimentation and increased turbidity levels associated with implementing flow diversion RPMs and in-channel excavation activities. Direct effects will be mostly limited to the actual footprint of disturbance and will be greatest during implementation and diminish rapidly following completion of reconstruction activities (turbidity levels should return to pre-project conditions within 1 week following activities). Elevated turbidity levels may extend downstream for variable distances but no more than 0.25 miles below the area where work is occurring. The determination of no effects 0.25 miles below stream crossings is based on professional judgment and field reviews of existing conditions and proposed activities.

Reconstruction activities are proposed for three of the primary Forest roads in the analysis area. Direct effects that could occur on these three roads include those discussed previously along with the additional effects described below.

Parks Creek Road (42N17)

Drainage features will be repaired and augmented in order to improve road drainage and prevent concentration of flow on hillslopes below the road. The addition of up to 26 turnouts will result in some disturbance from excavation; however 24 of these potential locations are existing wide areas with little

need of excavation. Eroding cut and fill slopes will be stabilized (including the large road cut located at the lower end of Parks Creek Road). Ditches will be armored and energy dissipaters will be installed at drainage outlets where channels or nearby hillslopes are eroding. Direct effects will be similar to reconstruction [e.g. ground disturbance, short term increases in sedimentation and turbidity of limited duration (less than one week) with the majority of disturbance occurring during implementation activities].

Eddy Creek Road (42N26)

Up to 8 turnouts will be created in existing wide sections of road. Short segments of road (less than 200 feet) will be realigned out of stream channels and unstable areas. Short segments of user created roads impacting wet meadows will be decommissioned. Direct effects from these activities will be limited to the area of ground disturbance and may include localized increases in turbidity resulting from the removal of road fills from wet meadows.

Dewey Mine Road Right of Way and Realignment (42N19)

Alternative 2 includes the proposed decommissioning (or reconstructing) of 1.7 miles of a segment of Dewey Mine Road. The segment proposed for decommissioning switchbacks up a wet hillslope meadow and former slide deposit and is chronically eroding. Implementation of decommissioning or reconstruction activities will occur during dry conditions and direct effects will be limited to the road prism with small localized temporary increases in turbidity, and sedimentation to adjacent wet meadow habitats resulting from restoration activities. The segment proposed for right-of-way acquisition already exists and is located on a much dryer hillslope with limited drainages. There are no direct effects associated with this right-of-way acquisition.

Some ground disturbance will occur during activities that stabilize streambanks associated with protection of cultural resources. These activities will be very limited in scope and will have short term direct effects to water resources similar to those described for road decommissioning.

Trail Actions

Eddy Creek Meadow Trail Reconstruction

Direct effects will be associated with ground disturbance from realigning the trail outside of sensitive habitats (e.g. wet meadows). Impacts to water resources resulting from realignment and maintenance activities will be minor and of short to no duration due to the focus of relocating the trail to dry sites and limited prism work associated with trail construction activities.

Caldwell Lakes Trail Reconstruction and Realignment

In addition to allowing for the decommissioning and restoration of drainage on 0.39 miles of Road 41N74 (see decommissioning direct effects) this project will also realign one mile of trail that currently channels water and is chronically eroding. Direct effects will include ground disturbing activities associated with new trail construction and installation of flow deflectors on the former trail prism designed to disperse flow. Impacts to water resources resulting from realignment and maintenance activities will be minor and of short to no duration due to the focus of relocating trail to dry sites and limited prism work associated with trail construction activities. This work will also be conducted when runoff conditions are absent.

West Park Lakes Trail Reconstruction

West Park Lakes Trail reconstruction involves conversion of a road to a motorized and non-motorized trail. This involves many activities including road to trail conversion, trail reconstruction,

decommissioning of side roads, new trail construction, stream crossing and drainage improvements and restoration of subsurface drainage. Direct effects are similar to those described previously for the Eddy and Caldwell Lakes Trails. A low water ford will be improved over a perennial stream at the start of the new trail which will result in similar direct effects to other stream crossing work discussed previously. Impacts to water resources resulting from improvement of the low water crossing will be minor and of short to no duration due to limited in-channel work needed to improve the existing ford. Improvements to the crossing may result in short term increases in turbidity and sedimentation that may extend downstream for no more than 0.25 mile below the work zone. The determination of no effects 0.25 mile below stream crossings is based on professional judgment and field reviews of existing conditions and proposed activities.

Parks Creek Trail Reconstruction

This project will reconstruct the Parks Creek Trail on lower Parks Creek. The trail crosses several small channels (both perennial and intermittent) before dropping down adjacent to Parks Creek. Direct effects to water resources will be negligible because the trail prism is already constructed and only minor improvements are needed at stream crossings to complete reconstruction activities.

Stockpile sites and staging areas will have no direct effects to water resources provided that RPMs are implemented properly.

Recreational Facilities

Parks Creek Trailhead Improvement

Improvements to the Parks Creek Trailhead will have no direct effect to water features (e.g. channels, wet meadows) due to the location of this facility on top of the ridge away from water resources. The addition of a vault toilet will greatly reduce problems with current sanitation and human health risks and will have localized benefits to water quality by reducing the potential for water contamination.

Eddy Creek Meadow Trailhead

There will be few to no negative direct effects to water resources from construction of a small parking area and restricting motorized access to meadows. Activities that rehabilitate the existing, user created OHV trails in meadows will directly benefit the meadows. Direct effects from OHV trail rehabilitation will include removal and revegetation of ruts and restoration of surface and groundwater flows (obtained by eliminating ruts as preferential flow pathways).

Caldwell Lakes Trailhead

There will be little to no negative direct effects to water resources from construction of a small parking area and closure of motorized access to the meadow. Proper adherence to RPMs will prevent impacts to water quality during trailhead construction activities. RPMs that mitigate the potential for surface runoff and erosion from the site will be emphasized at this location due to the close proximity of the trailhead to a perennial tributary to Parks Creek. Activities that rehabilitate OHV user created trails in meadows will directly benefit the meadows.

West Parks Lake Road Access and Trailhead

Direct effects from road access and conversion of the road to OHV trail will be limited to the potential for short term impacts to water quality as discussed previously for these activities. Proper adherence to RPMs will prevent impacts to water quality during trailhead construction activities.

Indirect Effects

Road Actions

Decommissioning

Active decommissioning activities will occur on approximately 5.5 miles of the 21.5 miles of road proposed for decommissioning (see direct effects discussion for information on how the active decommissioning number was derived). Indirect effects will include temporary localized increases in turbidity and some small amounts of sediment introduction to streams in areas where active decommissioning activities include restoration of hillslope drainage and stream crossings. Impacts will extend downstream for variable distances but no more than 0.25 miles below the work zone and will diminish rapidly with distance downstream. The determination of no effects 0.25 miles below stream crossings is based on professional judgment and field reviews of existing conditions and proposed activities. The intensity of impacts with respect to increased turbidity and sedimentation will be greatest during the first winter storms following work and will steadily diminish over the winter and not persist past the first winter following treatments. Positive effects to water quality will occur over time as the result of reduced erosion and gradual recovery of vegetation.

Indirect effects to water quality will be positive at longer time frames than one winter season. Restoration of natural drainage and the elimination of road fills, ditches, gullies and other sediment sources will result in decreased turbidity and sedimentation in aquatic systems located adjacent to and downstream of road decommissioning activities.

Infiltration will increase on road segments that are tilled to break up compaction. Increased infiltration will occur immediately following implementation with the onset of winter rains.

There will be no indirect effects to water resources associated with passive decommissioning because no ground disturbing activities will occur. Positive effects to water quality will occur over time as the result of reduced erosion and the gradual recovery of vegetation.

Decommissioning and closure activities will enable attainment of ACS objectives on approximately 928 acres of Riparian Reserves within and downstream of where these activities occur (Table 8).

Closure

Indirect effects to water resources associated with the 3.3 miles of road closures will be limited to the 0.5 miles of Road 41N29YA where waterbars will be installed to effectively drain the road. Actions should result in immediate improvements to water quality (i.e. less erosion, turbidity and sedimentation from runoff) because the waterbars will effectively break up the flow of water on the road prism and reduce gullying potential.

Maintenance

Indirect effects from proposed maintenance activities on 43.8 miles of road will be limited in duration, extent and intensity. Small increases in turbidity and sediment introduction may occur in response to the first winter storms, however any increases will likely be less than would have occurred under the no action alternative if roads were not maintained and chronic problems with road drainage were allowed to persist. Short term increases of turbidity and sedimentation from maintenance activities will extend downstream for variable distances but no more than 0.25 mile below the implementation areas and will diminish over the first winter. The determination of no effects 0.25 mile below stream crossings is based

on professional judgment and field reviews of existing conditions and proposed activities. Positive effects to water quality will occur over time as the result of reduced erosion and improved drainage.

Reconstruction

Indirect effects associated with reconstruction activities on 27 miles of roads will be similar to those described for decommissioning activities. Indirect effects will include localized increases in turbidity and small increases in sediment delivery to streams in areas where reconstruction activities occurred in close proximity to drainages. Impacts will extend downstream for variable distances but no more than 0.25 mile below the work zone and will diminish rapidly with distance downstream. The determination of no effects 0.25 mile below stream crossings is based on professional judgment and field reviews of existing conditions and proposed activities. The intensity of impacts with respect to increased turbidity and sedimentation will be greatest during the first winter storms following work and will steadily diminish over the winter and not persist past the first winter following treatments. It is also likely that following the first winter water quality will improve as a result of improved drainage on the roads that were reconstructed.

Indirect effects to water resources from activities proposed for Parks Creek, Eddy Creek and Dewey Mine Roads include:

- Parks Creek Road (42N17): Small increases in turbidity and sedimentation will be likely in areas where ground disturbance is occurring in close proximity to streams. Impacts will be of limited duration lasting only for the first several storms and not persisting past the first winter. Long term effects from stabilizing eroding cut and fill slopes, armoring ditches and maintaining and upgrading crossings will include improved water quality (decreased turbidity and sedimentation) on-site and downstream of where work is performed.
- Eddy Creek Road (42N26): Indirect effects will be similar to those described for the Parks Creek Road, however long term improvements for water quality and aquatic and riparian habitats will be more pronounced due to actions that realign roads outside of these areas and restoration of user created OHV impacts in wet meadows. Indirect effects include restoration of riparian plant communities in wet meadows and riparian areas, improved water quality (reduced turbidity and sedimentation).
- Dewey Mine Road Right-of-Way and Realignment (42N19): Indirect effects from decommissioning 1.7 miles of Dewey Mine Road will include small increases in turbidity and sediment movement from decommissioned road segments over the first winter following implementation. Long term indirect effects will include restoration of plant communities on a hillslope wet meadow and improved water quality as a result of decommissioning activities. No indirect effects are anticipated on the new right-of-way acquisition because this road is located outside of riparian and aquatic habitats.

Stabilizing Streambanks

Indirect effects from stabilizing streambanks to protect cultural resources will have very limited effects on water quality. Very small amounts of sediment and turbidity could be introduced following the first winter storms after which indirect effects will be improved water quality associated with stabilization of eroding banks where cultural sites are located.

Trail Actions

Eddy Creek MeadowTrail Reconstruction

Indirect effects associated with realigning the trail outside of sensitive habitats (e.g. wet meadows) will include restoration of wet meadow riparian plant communities and reduced turbidity and sedimentation. No indirect effects are anticipated from trail construction activities because this work will occur outside of wet meadow habitats.

Caldwell Lakes Trail Reconstruction and Realignment

Indirect effects will include reduced turbidity and sedimentation to streams as a result of restoration of natural drainage patterns and improved water flow (both ground and surface) in wet meadows that were partially dewatered by interception of flow in the road system.

West Park Lakes Trail Reconstruction

Small increases in sedimentation and turbidity are likely during the first winter storms following trail conversion, trail reconstruction, spur road decommissioning and new trail construction. Long term improvements to water quality will result from improved drainage and road and motorized trail conversion activities.

Parks Creek Trail Reconstruction

Indirect effects to water quality and riparian and aquatic habitats will be small to non-existent. The lack of effects is due to the existing trail being very wide and rocky. Reconstruction activities will have little to no effect on water resources because they will be occurring in the footprint of the existing trail.

Stockpile sites and staging areas will have no indirect effects to water resources provided that RPMs are implemented properly.

Recreation Facilities

Parks Creek Trailhead Improvement

Indirect effects will include improved sanitation and less potential for contamination of water as a result of the installation of a vault toilet at this trailhead.

Eddy Creek MeadowTrailhead

Indirect effects will include restoration of wet meadow plant communities and decreased sedimentation and turbidity in wet meadows. Groundwater flow paths in rutted portions of wet meadows will also be restored.

Caldwell Lakes Trailhead

Indirect effects will include reduced sedimentation and turbidity as result of correcting problems with road gullying above the proposed trailhead location. Indirect effects will also include restoration of riparian plant communities and improved water quality resulting from blocking OHV access to wet meadows.

West Parks Lake Road Access and Trailhead

Short term increases in turbidity and sedimentation may occur during the first winter following implementation. Long term indirect effects will include reduced turbidity and sedimentation and improved drainage as a result of restoration activities.

Alternative 3

Direct Effects

Direct effects to water resources will be identical to Alternative 2 with respect to the types of direct effects described for each activity (e.g. effects from decommissioning, closures, etc.).

The primary difference between the Alternatives 2 and 3 is that approximately 16.6 additional miles of road will be decommissioned and 12 fewer miles of road will be maintained. Impacts to water quality from decommissioning activities will be greater than would have occurred if only maintenance activities were performed. On the other hand, less road reconstruction (25.6 miles) would occur under Alternative 3 than for Alternative 2 (27 miles).

Less trail mileage would be added to the Forest transportation system. 4.3 miles of non-motorized trails would be converted from previous uses and/or added to the trail system for Alternative 3 (compared to 6 miles for Alternative 2). No motorized trails would be converted or added to the system for Alternative 3.

Direct effects for all other proposed activities in Alternative 3 would be the same for as Alternative 2.

Indirect Effects

Indirect effects to water resources will be identical to Alternative 2 with respect to the types of indirect effects described for each activity (e.g. effects from decommissioning, closures, etc.).

The primary difference between the Alternatives 2 and 3 is that 16.6 additional miles of road will be decommissioned and 12 fewer miles of road will be maintained. Impacts to water quality from decommissioning activities will be greater than would have occurred if only maintenance activities were performed. Less road reconstruction (25.6 miles) would occur under Alternative 3 than for Alternative 2 (27 miles).

Less trail mileage would be added to the system. 4.3 miles of non-motorized trails would be converted from previous uses and/or added to the trail system for Alternative 3 (compared to 6 miles for Alternative 2). No motorized trails would be converted or added to the system for Alternative 3.

Decommissioning and closure activities will enable attainment of ACS objectives on approximately 1,166 acres of Riparian Reserves within and downstream of where these activities which would be more than the 928 acres planned under Alternative 2 (see Table 9: Riparian Reserve Benefits, and Aquatic Conservation Strategy discussion)

Indirect effects for all other proposed activities in Alternative 3 would be the same as Alternative 2.

Alternative 4

Direct Effects

Direct effects to water resources will be identical to Alternative 2 with respect to roads and trail actions (e.g. reconstruction, decommissioning, closures, etc.).

No trailheads would be improved or constructed and no user created access routes to dispersed recreation areas would be decommissioned. Direct effects to water resources at proposed trailhead locations would be slightly less than Alternative 2 because less ground disturbance would occur because no ground disturbance associated with trailhead improvements or the decommissioning of user created OHV trails would occur.

Indirect Effects

Indirect effects to water resources will be identical to Alternative 2 with respect to roads and trail actions (e.g. reconstruction, decommissioning, closures, etc.).

No trailheads would be improved or constructed and no user created access routes to dispersed recreation areas would be decommissioned. Indirect effects to water resources at proposed trailhead locations would be slightly less than Alternative 2 because less ground disturbance would occur due to no work occurring at trailheads and no decommissioning of user created access route.

Table 8: Post-Project Open Road Densities by Alternative (mi/mi^2)

HUC5 Watersheds	Alternative 1 (no action – existing condition)	Alternative 2	Alternative 3	Alternative 4
Willow Creek	0.99	0.64	0.55	0.64
Parks Creek – Shasta River	1.84	1.44	0.93	1.44
Upper Shasta River	1.10	0.83	0.75	0.83

Table 8 shows how each alternative would affect open road densities. Alternatives 3 and 4 would result in the greatest decrease in open road densities. Road densities would be reduced from the existing condition for all alternatives. Benefits to water resources from reduced road densities are described under the direct and indirect effects associated with road closure and decommissioning activities.

Table 9: Riparian Reserve Benefits - Comparison by Alternative (acres benefited). Acres benefited was calculated by totaling the Riparian Reserve acres containing road actions and adding the Riparian Reserve downstream area within 0.25 miles of the lower end of treatments.

HUC5 Watersheds	Alternative 1 (no action – existing condition)	Alternative 2	Alternative 3	Alternative 4
Willow Creek	0	122.2	122.2	122.2
Parks Creek – Shasta River	0	527.5	658.0	527.5
Upper Shasta River	0	278.4	386.1	278.4

(Bachmann, 2014)

Cumulative Effects (Alternatives 2, 3, and 4)

Watershed cumulative effects were originally assessed in the Forest Plan. Thresholds of concern (TOC) and watershed condition classes were determined using data from Appendix H of the Final EIS for the Forest Plan (USDA Forest Service, 1994). The TOC's and condition classes provided in Appendix H were determined for 5th order (HUC5) watersheds.

Hydrologic Unit Code 5 (HUC5) Watersheds

The Parks Eddy hydrologic analysis area contains proposed activities that are located within three HUC5 watersheds: Willow Creek (1801020704), Parks Creek – Shasta River (1801020703) and Upper Shasta

River (1801020701). TOCs were identified for each of these watershed areas. According to Appendix H, the TOC for the Willow Creek Watershed is 14% and the TOC for the Parks Creek – Shasta River and Upper Shasta River Watersheds is 16%.

The Forest Plan Final EIS also provides information on the Watershed Condition Class for watersheds within the analysis area. Watershed Conditions Classes are defined as follows:

- Watershed Condition Class I: ERA less than 40 percent TOC;
- Watershed Condition Class II: ERA between 40 and 80 percent TOC; and
- Watershed Condition Class III: ERA greater than 80 percent TOC.

Post-project ERAs for the HUC5 watersheds are shown in Table 9. ERA is a measure of the total amount of disturbance on a specified area resulting from the cumulative set of activities that have occurred over a set interval of time. ERA can be thought of as a measure of the compacted surface existing in a specific area resulting from the cumulative effects of multiple activities over time. Post-project ERAs range from a low of 3.5% in the Upper Shasta River Watershed to a high of 4.1 % in the Willow Creek Watershed. The resultant ERAs are all well below the TOCs for the three HUC5 watersheds.

Table 10: Projected HUC5 ERA

HUC5 Watershed Name	HUC5 #	% TOC	Past ERA Sum	Future ERA	% ERA	% of TOC	Risk Level/Class
Willow Creek	1801020704	14	2,302	1.6	4.1	29.3	Low/I
Parks Creek – Shasta River	1801020703	16	2,065	0.8	3.6	22.6	Low/I
Upper Shasta River	1801020701	16	2,762	88.7	3.5	22.1	Low/I

Hydrologic Unit Code 8 (HUC8) Watersheds

The Parks Eddy analysis area was partitioned into 28 HUC8 watersheds for the HUC8 level cumulative watershed effects analyses. Each HUC8 watershed was screened for past cumulative watershed effects and reasonably foreseeable actions. The effects of all management activities were derived from core data layers. These layers were used to determine the past and future ERAs for each HUC8 watershed.

The aggregated existing ERA for the 28 HUC8 watersheds is 3.5%. The existing ERA ranges from a low of 1% to a high of 16% for the HUC8 watersheds (Table 11). The highest existing ERA of 16% is associated with a HUC8 watershed that was entirely burned during the Mussolini Fire in 2002. Salvage activities on private lands following the fire partly account for the existing ERA; however the majority of the ERA is from the fire itself and not from salvage activities.

Table 11: Projected HUC8 ERAs (Past and Future).

HUC Name	HUC8 #	Acres	Past ERA Sum	Future ERA Sum	Past + Future ERA	% ERA
Willow Creek	1801020704010201	1370	19.3	0	19.3	1.4
Willow Creek	1801020704010202	2245	115.4	0	115.4	5.1
Willow Creek	1801020704010203	1199	34.4	0	34.4	2.9
Willow Creek	1801020704010301	1408	64.2	0	64.2	4.6
Willow Creek	1801020704010302	1496	123.8	0	123.8	8.3
Parks Creek – Shasta River	1801020703010101	1425	13.9	0	13.9	1.0

HUC Name	HUC8 #	Acres	Past ERA Sum	Future ERA Sum	Past + Future ERA	% ERA
Parks Creek – Shasta River	1801020703010102	1247	36.9	0	36.9	3.0
Parks Creek – Shasta River	1801020703010103	2171	43.6	0	43.6	2.0
Parks Creek – Shasta River	1801020703010104	1596	16.4	0	16.4	1.0
Parks Creek – Shasta River	1801020703010201	1541	15.5	0	15.5	1.0
Parks Creek – Shasta River	1801020703010202	1043	20.5	0	20.5	2.0
Parks Creek – Shasta River	1801020703010203	1999	100.0	0	100.0	5.0
Parks Creek – Shasta River	1801020703010301	1413	26.2	0	26.2	1.9
Parks Creek – Shasta River	1801020703010302	2862	107.7	0	107.7	3.8
Parks Creek –Shasta River	1801020703010501	1708	279.0	0	279.0	16.3
Upper Shasta River	1801020701010101	1246	49.3	15.8	65.1	5.2
Upper Shasta River	1801020701010102	2167	49.2	0	49.2	2.3
Upper Shasta River	1801020701010103	985	36.4	0	36.4	3.7
Upper Shasta River	1801020701010201	1826	17.8	11.4	29.2	1.6
Upper Shasta River	1801020701010202	1377	12.2	5	17.2	1.2
Upper Shasta River	1801020701010203	2294	107.3	54.6	161.9	7.1
Upper Shasta River	1801020701010301	2481	60.3	7.5	67.8	2.7
Upper Shasta River	1801020701010302	1087	12.9	0	12.9	1.2
Upper Shasta River	1801020701010303	1703	30.4	0	30.4	1.8
Upper Shasta River	1801020701010304	990	24.8	0	24.8	2.5
Upper Shasta River	1801020701010305	1310	33.0	0	33.0	2.5
Upper Shasta River	1801020701010401	1473	58.6	0	58.6	4.0
Upper Shasta River	1801020701010402	3207	126.2	0	126.2	3.9

Reasonably foreseeable ERA within the HUC8 watersheds is very low to nonexistent. The Forest is not planning any additional vegetation management projects on NFS lands within the watershed or any other projects (e.g. recreation improvements, grazing) outside of the activities being proposed for the action alternatives for the Parks Eddy project. Activities that are being planned for private lands are included in this analysis. The portions of section 5 and section 7 (T.40N., R.5W., M.D.B.M.) that flow into upper Dale Creek and were recently acquired by the Forest Service (July, 2014), were included in the original ERA calculations (HUC's 1801020701010101, 01010102 and 01010202).

Summary

Based on the results of the cumulative watershed effects analysis, the action alternatives for the Parks Eddy project will have positive effects on water quality and aquatic/riparian habitats located downstream and outside of the project area at the local HUC8 and larger HUC5 scales. In addition to the results of the quantitative ERA assessment the following factors support the conclusion drawn in the cumulative watershed effects analysis:

- The proposed action and action alternatives are all designed to reduce impacts to water quality and aquatic and riparian habitats located within Riparian Reserves.
- Road decommissioning activities will reduce road densities in the assessment watersheds and restore natural drainage patterns.
- Road maintenance and reconstruction activities are designed to fix problems with existing infrastructure and reduce maintenance frequency over time which will result in benefits to water quality and aquatic/riparian habitats.
- The action alternatives are restorative in nature and are in alignment with goals, objectives and standards and guidelines for water resources management as found in the Forest Plan.
- Resource protection measures have been identified for the proposed activities in the project area. Best management practices have been considered by the interdisciplinary team and used to develop resource protection measures for water quality and aquatic/riparian habitats.

Aquatic Conservation Strategy Objectives

The Forest Plan contains the components, objectives and standards and guidelines for the Aquatic Conservation Strategy (ACS) (USDA Forest Service, USDI Bureau of Land Managment, 2007). The four components of the ACS are: 1) establishment and management of Riparian Reserves, 2) Key Watersheds, 3) Watershed Analysis and 4) Watershed Restoration (USDA Forest Service-USDI Bureau of Land Managment, 2004). There are also nine objectives that are evaluated to determine that a project or management action “meets” or “does not prevent attainment” of the ACS objectives.

With respect to the components of the ACS noted above, Riparian Reserves have been designated within the Parks Eddy analysis area (component 1); the project is not in a Key Watershed (component 2); activities proposed for all action alternatives are consistent with recommendations in the Willow-Parks WA (component 3); and the Parks Eddy project is a restoration project that seeks to implement restorative actions for roads and trails that will reduce sediment sources to streams, improve water quality, reduce road density through closure and decommissioning, and restore natural drainage features in Riparian Reserves (component 4).

The Parks Eddy alternatives were evaluated to determine whether the project “meets” or “does not prevent attainment” of the ACS objectives at the project and watershed scale. Alternatives 2, 3, and 4 are grouped together because the effects to each ACS objective are similar. Differences between alternatives are discussed where they occur.

ACS Objective 1

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 1 at the project scale and not prevent the attainment of objective 1 at the watershed scale. Nearly all of the actions proposed in each alternative are designed to restore aquatic and riparian habitats through the implementation of road decommissioning and realignment projects or will reduce impacts to these habitats through road maintenance and reconstruction activities. Alternative 3 would have the greatest benefit for objective 1 because more roads would be decommissioned and removed from the transportation system. Alternatives 2 and 4 would have similar effects on objective 1 at the project and watershed scales.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 1 because no actions would occur, however Alternative 1 will also not provide the benefits to objective 1 that would be realized under the action alternatives. Under the no action alternative the distribution, diversity, and complexity of watershed and landscape-scale features will remain static. No roads would be decommissioned and impacts to water quality and riparian and aquatic habitats would persist.

ACS Objective 2

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 2 at the project scale and not prevent the attainment of objective 2 at the watershed scale. Nearly all of the actions proposed in each alternative are designed to restore aquatic and riparian habitats through the implementation of road decommissioning and realignment projects or will reduce impacts to these habitats through road maintenance and reconstruction activities. These projects will in some cases restore spatial connectivity through elimination of ditches and flow diversions on roads and restoration of natural groundwater and surface flow paths where actions are implemented. Alternative 3 would have the greatest benefit for objective 2 because more roads would be decommissioned and removed from the transportation system which would translate into more restoration of natural flow paths and improved connectivity. Alternatives 2 and 4 would have similar effects on objective 2 at the project and watershed scales.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 2 because no actions would occur, however Alternative 1 will also not provide the benefits to objective 2 that would be realized under the action alternatives. Under the no action alternative the spatial and temporal connectivity would remain the same. Surface and ground water flow connectivity would continue to be influenced by roads and trails due to no actions occurring to maintain or correct drainage problems.

ACS Objective 3

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 3 at the project scale and not prevent the attainment of objective 3 at the watershed scale. All action alternatives will have a positive effect on objective 3, particularly at the project scale, due to the decommissioning of roads and drainage improvements. Alternative 3 would yield the greatest benefits because it would decommission the most roads, however it should be noted that all action alternatives would be beneficial.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 3 because no actions would occur, however Alternative 1 will also not provide the benefits to objective 3 that would be realized under the action

alternatives. No benefits to the riparian or aquatic systems would be realized because no activities (decommissioning, maintenance, closure, etc.) would occur.

ACS Objective 4

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 4 at the project scale and not prevent the attainment of objective 4 at the watershed scale. Implementation of road and trail decommissioning, reconstruction and maintenance activities will have small, short term impacts to water quality. Long term improvements to water quality will be realized from decreased turbidity and sedimentation associated with planned activities for all alternatives. Alternative 3 would yield the greatest benefits to water quality but benefits would also be realized from implementations of any of the action alternatives.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 4 because no actions would occur, however no action would also allow for chronic water quality problems associated with poorly maintained roads to persist.

ACS Objective 5

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 5 at the project scale and not prevent the attainment of objective 5 at the watershed scale. Implementation of road and trail decommissioning, reconstruction and maintenance activities will reduce sediment sources to aquatic and riparian systems and benefit objective 5. The potential for road-related landslides will be reduced. Improvements to water quality will be realized from decreased turbidity and sedimentation associated with planned activities for all alternatives. Alternative 3 would yield the greatest benefits to water quality but benefits would also be realized from implementations of any of the action alternatives.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 5 because no actions would occur, however no action would also allow for chronic sedimentation issues associated with poorly maintained roads to persist.

ACS Objective 6

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

Alternative 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 6 at the project scale and not prevent the attainment of objective 6 at the watershed scale. Some benefits to instream flows will be realized where road actions

result in less diversion potential. Road and trail drainage improvements resulting from decommissioning, reconstruction and maintenance activities will restore surface flow inputs to wet meadows and streams resulting in positive benefits to objective 6 at the project scale. Alternative 3 would yield the greatest benefits but benefits would also be realized from the implementation of any of the action alternatives.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 6 because no actions would occur. No benefits to instream flows or wet meadows would occur.

ACS Objective 7

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 7 at the project scale and not prevent the attainment of objective 7 at the watershed scale. Localized restoration of water table elevations in wet meadows and floodplain inundation will occur in areas where stream crossings are decommissioned and fills removed as well as in wet meadows that have partially been dewatered by roads. Alternative 3 would result in the greatest benefits to objective 7 but benefits would be realized from implementation of any of the action alternatives.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 7 because no actions would occur. The timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands would remain unchanged.

ACS Objective 8

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

Alternatives 2, 3, and 4

Alternatives 2, 3 and 4 will meet objective 8 at the project scale and not prevent the attainment of objective 8 at the watershed scale. All action alternatives will benefit wet meadows and riparian and aquatic systems. Alternative 3 would result in the greatest benefits to objective 7 but benefits would be realized from implementation of any of the action alternatives.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 8 because no actions would occur. Wet meadows would continue to be affected by OHV activities and chronic erosion problems associated with lack of road maintenance would continue.

ACS Objective 9

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

Alternatives 2, 3, and 4

Implementation of Alternatives 2, 3 and 4 will meet objective 9 at the project scale and not prevent the attainment of objective 9 at the watershed scale. All action alternatives will restore habitat to support native plant, invertebrate, and vertebrate riparian dependent species. Alternative 3 would have the greatest benefit for objective 9 because more roads would be decommissioned and removed from the transportation system (i.e. more habitats would be restored than the other alternatives). Alternatives 2 and 4 would have similar effects on objective 9at the project and watershed scales.

Alternative 1 (No Action)

Alternative 1 will not prevent the attainment of objective 9 because no actions would occur. No habitats would be restored and no roads would be maintained resulting in continued impacts to water quality and riparian and aquatic habitats.

ACS Summary

Implementation of any of the action alternatives will either meet or not prevent the attainment of each ACS objective at the project scale. Alternative 3 would result in the greatest benefits to water resources at the project scale because more roads would be decommissioned and more areas in the watershed would be restored.

Implementation of an action alternative will not prevent the attainment of the ACS objectives at the 5th field watershed scale (Willow Creek - 1801020704, Parks Creek – Shasta River - 1801020703, Upper Shasta River - 1801020701), however it should be noted that the vast majority of lands in all three 5th field watershed are privately owned and managed, and are located downstream of the areas where activities are proposed.

With respect to water quality, implementation of any of the action alternatives will address water quality problems at their source where they originate and provide a logical first step to addressing water quality issues in the Shasta Valley as described in the Shasta River TMDL. Taking no action will not prevent the attainment of ACS objectives at the project or watershed scales but will allow water quality problems associated with poorly maintained roads to persist.

The Degree to Which the Alternatives Meet the Purpose & Need for Action as it Pertains to Hydrology

All actions alternatives are designed to reduce impacts to, and restore Riparian Reserves. Decommissioning activities will result in the removal of roads from Riparian Reserves and result in direct and indirect benefits to 9.4 miles of Riparian Reserve for Alternative 2 and 4 or 13.5 miles of Riparian Reserve for Alternative 3.

Implementation of the action alternatives will have small impacts to water quality due to the generation of turbidity and sediment from disturbed areas over the first winter following the work. Water quality and onsite and downstream aquatic and riparian habitats will benefit from implementation of all action alternatives following stabilization of restoration sites. Chronic erosion problems will be mitigated by decommissioning, reconstruction, and maintenance of roads and trails.

Wet meadow habitats and associated plant communities will be restored in areas where roads are relocated out of sensitive areas and where unauthorized OHV access is restricted.

Effects Relative to Key Issues as They Pertain to Hydrology

The key issues identified for the Parks Eddy project included concerns that the project would allow for continued soil erosion (resulting in sedimentation and compromised water quality, and continued negative effects to wetlands and meadows.

Some proposed activities, particularly the more intensive ones (e.g. reconstruction resulting from realignment and decommissioning of large fills) will result in short term impacts to water quality. However all of the actions that have been proposed are designed to mitigate for chronic effects to water quality and riparian/aquatic habitats that are currently occurring. Implementation of the proposed action will result in reduced soil erosion, reduced impacts to sensitive plant populations (including restoration of the habitats where these plants occur), restoration of and prevention of impacts to wet meadows and improved water quality. The purpose and need for the project is largely driven by the need to address this issue.

All trailheads and recreation facilities will be designed to accommodate use levels that are within the carrying capacity for the analysis area and will not impact wildlife and fisheries resources at areas such as Caldwell Lakes. RPMs have been developed to mitigate potential impacts to aquatic and riparian resources (see RPMs for geology, hydrology, soils, cultural, wildlife, fisheries, botanical resources on pages 26-35). Properly designed trailheads will serve to define appropriate use levels for each trail/area by specifying the number of vehicles allotted at each site. The establishment of well-defined trailheads will allow for the restoration of chronic road sediment sources where roads are converted to foot trails with properly constructed trail drainage.

Recreation

A recreation report was completed for the project (Nova, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

A measurable indicator for analyzing effects to recreation from roads and motorized trails project work is the number and miles of roads and motorized trails improved and/or maintained.

The measurable indicators for analyzing the effects to recreation from trailheads and recreational facilities work is the number of user created routes (not included in the Forest transportation system) to dispersed recreation areas that are closed, and the number of trailheads that are constructed or improved.

Boundaries

The cumulative effects analysis boundaries include the area within the project boundary over a period of 20 years. Although the recreation facilities proposed at Parks Creek trailhead provide point of access to recreation destinations outside the project area (e.g. Pacific Crest Trail, Mt. Eddy, Deadfall Lakes), the proposed improvements will not expand or increase the amount or intensity of that use (e.g. no increase in capacity) but are designed to limit resource impacts on sites within the project area from the current use levels.

Methodology

The methodology used to complete the analysis was evaluation of Project GIS data, which includes the following: inventoried dispersed recreation camping areas, Recreation Opportunity Spectrum

classification, roads, and trails; the Motor Vehicle Use Map (MVUM); field observations; Forest Service employees; and information received from the public.

In 2012, the Mt. Shasta District conducted a dispersed recreation area inventory of the watershed. Sites located adjacent to Forest transportation system and user created routes were inventoried and mapped. Data was gathered to analyze the capacity in which sites were used and if resource damage was evident. In July of 2012, Forest recreation personnel monitored the recreational activity in the project area and analyzed road and trailhead use.

The effects to recreation were assessed using field observations, past history and observed use patterns.

Existing Condition

For decades Forest visitors have used the Parks and Eddy Creek drainages to enjoy a diversity of outdoor activities including hiking, fishing, horseback riding, hunting, camping, sightseeing, firewood gathering, mining, and OHV travel. Within the last decade, observed recreation use has been changing and increasing. Recent uses include bicycling, snowmobiling, backcountry skiing and increasing use along the Pacific Crest Trail. This trend has been especially noted at the Parks Creek Trailhead where estimated (observed) use may have tripled in the last five years.

Except for the limited NFS trail systems, no developed recreation facilities exist within the project boundary. There are growing sanitation concerns at the Parks Creek Trailhead due to the lack of restroom facilities. Recreation opportunities are limited to dispersed recreation (e.g. no developed facilities). The area lacks adequate directional or informational signage and there is no interpretive information. Use during the summer months has grown along the road systems and along the trails. Some sensitive areas (e.g. meadows, riparian corridors) show damage from unmanaged/unauthorized OHV use. Use in the winter has also grown, although winter use numbers are lower than dry summer season use.

Dispersed Recreation

Dispersed recreation is concentrated around roads, streams and lakes. Sixteen dispersed recreation areas were inventoried along roads in June 2012. These inventoried recreation areas varied in size and condition. Many had not seen use in several seasons while others appeared to be frequently used. Hunting season brings a surge of public use when dispersed recreation is at its highest.

Parks Creek Road

The majority of recreation within the watershed is concentrated along Parks Creek Road. This road is part of the National Trinity Heritage Scenic Byway, which extends from Weed, CA to Weaverville, CA and leads visitors through a driving tour of 17 stops along the byway and serves as a main arterial into the Parks Creek drainage. During the summer season, Parks Creek Road provides access to a variety of recreational destinations, not only in the watershed but throughout the region. The road is frequently used to access the Trinity Alps Wilderness, Russian and Marble Mountain Wilderness Areas, Trinity Lake, and the north coast of California. This through-traffic road access increases recreation traffic within the project area, such as scenic viewing, day hiking, fuelwood gathering, and hunting.

Parks Creek Trailhead (Pacific Crest Trail)

The Parks Creek Trailhead is the most popular recreation destination in the project area. The trailhead serves as a Pacific Crest Trail access point and is commonly used by day hikers destined for Deadfall Lakes and the summit of Mt. Eddy. The parking area typically hosts 20-60 vehicles per day during the summer months with dozens of hikers using the multiple non-motorized trails. Sanitation at the trailhead has been an increasing concern due to the lack of facilities to manage human waste.

Mountain Lakes

There are two mountain lake basins within the project area which receive moderate use by recreationists. Activities such as hiking, fishing, and overnight camping are popular.

Caldwell Lakes (6,835 ft.)

These lakes are located in Section 29, T41N, R6W. Access to the lakes is via Parks Creek Road and Road 41N74. NFS trail 6W01 accesses lower, middle and upper Caldwell Lakes. These lakes receive moderate use during the summer months with lighter use during the shoulder seasons and there are several dispersed recreation areas located near the lakes. The areas are in fair condition with the majority of them located near the water. The current non-motorized trail is in fair condition but has some sections that are steep and eroded or located on the access road. Users currently park on Parks Creek Road, or at a dispersed area located directly adjacent to the Creek.

West Park Lakes (7,435 ft.)

These lakes are located in Section 21 T 41N, R 6W. Access is off of Road 41N73. The first 1/2 mile of the road is degraded and eroding. The last 1.5 miles of the road is not accessible by vehicle due to a washout. There is small but annual use by OHVs on the road past the washout and the lakes are a popular destination for this user group. OHV users have continued to maintain this section of road for access by building a wooden bridge crossing, trimming vegetation and conducting some road maintenance. Hikers and horseback riders also share this route for access to the lakes. The China Mt. USGS Quadrangle map shows NFS trail 6W23 accessing middle and upper lakes, however, a Forest Service inspection on July 22, 2012 did not locate the trail. There are several dispersed locations around the lakes. The areas are in fair to good condition with minimal impacts to other resources.

Winter Recreation

There are a variety of winter recreation opportunities in the area including snowmobiling, Christmas tree cutting, mountain climbing, and backcountry skiing which are common activities enjoyed by visitors. Concentrated winter recreation occurs along Parks Creek Road with many snowmobilers and skiers seeking the slopes of Mt Eddy, the Eddy Creek drainage and its surroundings. A mentionable amount of winter time recreation is accessed through private lands.

There has been an increase in snowmobile use over the last few years with the modernization of snowmobiles. This has allowed riders to get farther into the backcountry. This activity has also led to greater numbers of backcountry skiers, transported by snowmobiles, seeking remote ski locations.

Recreation Opportunity Spectrum

The Recreation Opportunity Spectrum (USDA Forest Service, 1986) (ROS) is a classification system in which components of recreation settings and facilities, such as access, developed sites, activities, and experiences, are organized and arranged along a continuum or spectrum. The continuum ranges from very primitive settings and experiences to highly concentrated, urbanized ones. Each class is defined in terms of its specific combination of activities, setting, facilities, and experience opportunities.

The ROS provides a framework for defining the types of outdoor recreation settings, opportunities, and experiences that exist or could be provided in a given area. It also provides a context and tool for estimating and describing recreation resources as well as effects to those resources from alternative management strategies and actions.

The following is a brief description of the ROS class within the project area.

Roaded Natural areas provide for a wide range of recreation activities that are generally focused along the primary and secondary travel routes in a natural-appearing, roaded, motorized setting. Recreation facilities are provided to facilitate recreation use. There may be a moderate to high degree of user interaction, as well as the sights and sounds of other users, depending upon the facilities provided. Opportunities for isolation, challenge, or risk are generally not very important, although opportunities for practicing outdoor skills may be important. Scenic values are often emphasized. A wide range of management activities and objectives may occur, generally being guided by the adopted visual quality objectives.

This project does not propose any activities that would impact the ROS, therefore the existing ROS would be maintained under all alternatives.

Special Uses

Since 1936, the California Cooperative Snow Survey program has used the Parks Creek drainage to measure snow and provide water data for the Shasta River watershed. The California Department of Water Resources holds a special use authorization for two snow survey sites within the Parks Creek drainage. The sites are measured by Forest Service personnel January-May. Access to the sites is from Parks Creek Road. These sites provide data to the State of California and Bureau of Reclamation for water storage estimates and supply.

Jefferson Public Radio holds a Communication Site Lease for a solar powered repeater site at the Parks Mountain Communications Site.

In addition to the permitted land special uses, the annual 1-day Mt. Shasta Summit Century bike ride uses the Parks Creek Road and Parks Creek summit for a portion of their event and currently has approximately 400-600 participants.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

Under the no action alternative, the road system is expected to continue to degrade, reducing the recreational visitor's opportunity to use the roads safely. There would be no improvement to existing recreational opportunities within the project area. The Parks Creek trailhead would continue to have sanitation problems; human waste would continue to be scattered about reducing visitor experiences and posing a risk to health, safety and the environment.

Erosion and watershed impacts are expected to continue at increasing rates assuming recreational use will continue to increase. Without project actions, unauthorized motorized use would likely continue into meadows causing damage to sensitive meadows and ecosystems. Access routes to dispersed recreation locations would not be added to the Forest transportation system and road access to some areas would remain limited. Current erosion and degradation of existing roads would continue with associated hazards to public access.

With the no action alternative, continued natural decommissioning of roads (by vegetation overgrowth) would decrease recreational access in the project area over time. With no additional signs or information kiosks, the public would continue to have difficulty navigating the project area to locate recreation areas and trails.

Not implementing the project could mean increased environmental impacts over time and space. Recreational use in the project area shows a steady increase (Lee, 2012). Increased recreation use without the project would continue to exacerbate the issue of human sanitation, safety and environmental degradation. Public safety on the road system would continue to be a concern as road conditions deteriorate over time.

Cumulative Effects

There would be no changes to the existing condition with the no action alternative. Direct/indirect effects are likely to be cumulative over time with additional user-created routes, growing sanitation issues at popular destinations, increased de-vegetation where user created parking occurs, and no context under which the alternative would cumulatively affect recreation.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Transportation System

Under this alternative, road maintenance and construction activities will result in increased opportunities for safe and visible public recreation access and for the collection of forest products (e.g. hunting, fishing, fuelwood gathering). The decommissioning of roads will remove some opportunities for motorized vehicle and OHV access to some areas of the Forest for vehicle exploration, game retrieval and forest product collection. It may result in use patterns shifting to other areas of the Forest as fewer roads would be available for motorized recreation and OHV riding. Improvement to NFS roads could result in the establishment of new access to dispersed recreation areas; however, fewer motorized trails and roads may lead to more illegal construction of OHV routes by users.

Alternatively, road closures and decommissioning may increase recreation values enjoyment for some users seeking non-motorized recreation (e.g. hiking, horseback riding).

Road reconstruction and maintenance activities may result in temporary travel delays and could pose inconveniences for the public during implementation. Road maintenance accomplished with the project is expected to create a safer transportation system for the recreating public.

Changes in the condition of the Forest transportation system with the addition of currently unauthorized routes (to dispersed recreation areas) into the system could influence recreation use patterns by affecting which dispersed recreation areas are utilized more frequently.

Trail Actions

Realigning poorly located trails to meet Forest Service trail standards and converting roads to trails will not only reduce trail maintenance costs but improve trail conditions for recreational users. Properly designed trail systems offer better user experiences and are more sustainable for future use. Well-engineered trails will enable recreational users to easily locate routes and improve their experiences and safety.

Along Road 41N73 to West Parks Lakes, the conversion of a portion of road to a motorized trail (50” wide or less) will maintain OHV opportunities and provide motorized access to dispersed recreation areas. During trail construction and maintenance, some trails and surrounding areas and destinations may be temporarily inaccessible to the public.

Changes and improvements to the trail system could indirectly influence recreation use. Existing use could shift over time as some users disperse from more heavily used areas to less crowded areas.

Trailhead Construction and Improvement

Trailheads with parking and information signboards will be developed for West Parks Lakes, Caldwell Lakes, and Eddy Creek Meadow, and the Parks Creek Trailhead will be improved. This will improve vehicle and pedestrian safety by providing designated parking for vehicles and increasing pullout and turnaround areas. Improved facilities and better visibility of the trailheads for these areas may increase use of these trails from below capacity to their current capacity by consolidating the existing scattered parking pullouts into single parking areas.

Visitor health and safety will be improved by constructing a vault restroom at Parks Creek Trailhead, which will reduce the presence of improperly disposed human waste at the trailhead and thus improve the visitor experience. The trailheads will comply with applicable accessibility standards in accordance with the Forest Service Outdoor Recreation and Trail Accessibility Guidelines (USDA Forest Service, 2014) (USDA Forest Service, 2013) appropriate for the setting based on the recreation site development plan[34]. . The parking area at the Parks Creek Trailhead will also be redesigned to accommodate the expected level of use and prevent motorized vehicle use of unauthorized trails and user created tracks in the area.

At the upper terminus of the Eddy Creek Road, the perimeter of the new trailhead parking area will include natural barriers (logs, boulders, etc.) to restrict access into the meadows mitigating resource damage.

Trailhead construction and improvement activities may create temporary travel delays and may pose inconveniences for the public. Some of these areas may be closed or inaccessible during project implementation periods.

Recreational users' experiences will also be enhanced by constructing information facilities at the trailheads.

The improvement and the addition of trailhead facilities may generate a temporary increase in recreation use or a change in the distribution of use of the areas they access. However, capacity increases are not proposed, and any temporary increases in use are expected to taper or stabilize over the long term. Many visitors come to merely see the vistas and interpretive information, while others see added opportunities to recreate at a new location.

Dispersed Recreation Actions

Forest direction encourages dispersed recreation use of the Parks Creek watershed, and the demand for dispersed use on the Mt. Shasta District is high. Dispersed use includes hiking off trail and camping in locations without any designated facilities. Popular locations include areas along creeks and lakes and at

[34] Federal agencies' facilities and the facilities on Federal lands are under the 1968 Architectural Barriers Act (ABA) which requires that any facility that is constructed, altered, purchased, rented or leased by, for, or on behalf of a Federal agency is to comply with the applicable accessibility guidelines that are currently in force under the ABA. The facility is to be appropriate for the setting and comply with the applicable accessibility guidelines. The accessibility standards for buildings currently applicable to the Forest Service are ABA Accessibility Standards of 2006 (ABAAS) which are available at http://www.access-board.gov/ada-aba/aba-standards-gsa.cfin. The legally mandated accessibility standards for outdoor recreation areas that are applicable on the National Forest System (NFS) are the following: Forest Service Outdoor Recreation Accessibility Guidelines (FSORAG) for campground, picnic areas, viewing overlooks and so forth; and the Forest Service Trail Accessibility Guidelines (FSTAG) for new or altered trails with a designed use of hiker/pedestrian. Although both of these use the term guidelines rather than standards they are **mandated** for use in the NFS. All new or altered facilities and constructed features on NFS land are required to comply with the FSORAG and FSTAG. Both are available at http://www.fs.fed.us/recreation/programs/accessibility .

wide spots along roads. Current developed campground capacity on the District does not meet the public demand, therefore a great amount of pressure is placed on dispersed locations.

Access to some of the dispersed locations in the project area will be maintained by adding access routes to the Forest transportation system. Other dispersed locations in sensitive areas will no longer be accessible by motorized vehicles as the access routes will be blocked to mitigate resource damage and will not be added to the Forest transportation system. These sites will see reduced use by recreationists who utilize motorized vehicles. Use by non-motorized recreational users would likely stay the same. Overall, the project will reduce the number of current dispersed recreation areas accessed by motorized vehicles which will have a beneficial effect to sensitive areas (streams, wetlands, meadows) but have a negative effect on the availability of camping in the area.

Placing natural barriers around sensitive areas such as streams, meadows and aquatic resources near some dispersed recreation areas will help prevent vehicle (including OHV) intrusion into those sensitive areas and limit opportunities for unmanaged and illegal recreation use. The natural barriers will not close NFS roads or inhibit foot traffic into dispersed recreation areas.

The development of turnouts and vistas on Parks Creek Road will provide the public with additional opportunities for safe travel as well as parking for scenic viewing, cross country hiking and access points for backcountry exploration. The placement of directional signs, kiosks and interpretive information will increase the ease of navigation, local knowledge and improve the public experience in the project area. Signs will help visitors identify recreation areas and landmarks and reduce confusion as well as provide interpretive information about the unique features of the area.

Cumulative Effects

The cumulative effects of Alternative 2 include a net reduction of NFS roads concurrent with implementation of the Travel Management Rule forest-wide (including the Motor Vehicle Use Map). The actual reduction of accessible routes within the project area would be small as many of the roads proposed for decommissioning or closure are currently impassible due to washouts or encrouchment of trees and shrubs on the road surface. Based on the current trend, public recreation use and enjoyment of the project area is expected to increase.The development of recreation facilities will most likely provide a cumulative reduction in resource impacts on trails and at popular trailheads into the future. This alternative would address public demand for safe quality recreation opportunities and the need to safely access forest products. It provides a small improvement in access to dispersed areas and OHV riding opportunities, now and in the future.

Alternative 3

Direct and Indirect Effects

Transportation System

The decommissioning of 38.1 miles of road in the project area (an additional 16.6 miles of road in LSR over Alternative 2) would further reduce recreational driving opportunities over Alternative 2, especially in the Parks Creek drainages (which are in LSR). Reducing the vehicle access would impact the ease of current recreation opportunities that rely at least in part on motorized vehicles such as: hunting, fishing, hiking, firewood gathering, dispersed recreation use, and OHV travel.

Because they are within LSR, access to popular recreation areas such as West Park Lakes and Caldwell Lakes would be limited to walk-in access only from Parks Creek Road, which would reduce the number

of visitors to those areas and place the parking along the more heavily traveled roadway causing safety concerns.

As with Alternative 2, use patterns may shift to other areas as fewer roads are available for motorized recreation and OHV riding and could lead to the establishment of new dispersed recreation areas along the NFS roads by the public. It is possible that additional road decommissioning could lead to more illegal construction of OHV routes by users.

Trail Actions

The effects of the trail actions with Alternative 3 would be similar to Alternative 2 in that realigning poorly located trails would create improved hiking opportunities for recreational users. Properly designed and maintained trail systems would offer better user experiences, be more sustainable for future use, and users would have less difficulty locating routes. User safety would be improved and both the environment and the people that use the trails would be better protected.

However, along Road 41N73 to West Parks Lakes, the decommissioning of all roads would prevent OHV use and would increase the distance for hikers to reach the lakes. Existing demand for legal OHV use in the project area would not be addressed.

Trailhead Construction and Improvement

As with Alternative 2, existing parking would be improved at Parks Creek trailhead by providing adequate surfacing for vehicles and increasing pullout and turnaround areas. Visitor experience would be enhanced by constructing restroom and information facilities. Health and safety would be improved by reducing improperly disposed human waste.

On Eddy Creek Road, the new trailhead parking area would also act as a vehicle barrier to restrict illegal vehicle access into meadows, preventing resource damage as noted above. Construction of the Caldwell Lakes and West Parks Lakes Trailheads would be limited to the space available near the intersection with Parks Creek Road and combined with the proposed turnout and vista points. Parking space would be reduced (estimate 1-2 vehicles) with limited signs and decreased safety for trail users.

As with Alternative 2, the trailhead construction and improvement activities may result in temporary travel delays and may pose inconveniences for the public. Some areas may be closed or inaccessible during work periods.

Dispersed Recreation Actions

With Alternative 3, no routes leading to dispersed recreation areas in LSR would be added to the Forest transportation system. A minimum of two dispersed recreation areas would no longer be accessible by motorized vehicles (two fewer than with Alternative 2). Eliminating legal vehicle access to these dispersed recreation areas would allow walk-in access only. This alternative would also reduce the opportunities for dispersed recreation access within the project area more than Alternative 2, because of the additional decommissioning of Forest roads in LSR.

Because there is already existing demand for camping opportunities and a shortage of sites, the additional reduction in roaded access to dispersed recreation areas compared to Alternative 2 will fall further short of demand.

Cumulative Effects

The cumulative effects of Alternative 3 include a net reduction of NFS roads concurrent with implementation of the Travel Management Rule forest-wide. This alternative would not meet the current

public demand for quality recreation opportunities and the need to access dispersed recreation areas and OHV riding opportunities even further. Public recreation use and enjoyment of the project area is expected to increase over time based on the current trend, and the development of recreation facilities is expected to provide a cumulative reduction in resource impacts on trails and at Parks Creek Trailhead into the future. Placing the parking and trailheads for West Parks Lakes and Caldwell Lakes along the Parks Creek road may cumulatively reduce safety over time as use of these trailheads and recreation destinations increases. Alternative 3 would reduce opportunities for safe, quality, road-based recreation and reduce opportunities for dispersed use.

Alternative 4

Direct and Indirect Effects

Transportation System

As the road activities for Alternative 4 are the same as Alternative 2, with the exception of the short routes to new dispersed recreation areas, the direct and indirect effects would be the same. Road maintenance and construction activities would result in safer public recreation access including hunting and fishing. The decommissioning of roads would remove some opportunities for motorized vehicle and OHV access to some parts of the project area. Use patterns may shift to other areas of the Forest as fewer roads would be available for motorized recreation and OHV riding. Road closures and decommissioning may increase recreation values for some users seeking non-motorized recreation activities.

Road reconstruction and maintenance activities may result in temporary travel delays and could pose inconveniences for the public during implementation. Changes in the condition of the Forest transportation system with the decommissioning of user created routes (to dispersed recreation areas) could influence recreation use patterns by affecting which dispersed areas are utilized more frequently.

Trail Actions

The trail actions in Alternative 4 are the same as in Alternative 2. Realigning poorly located trails and converting roads to trails will reduce impacts to soil, water and vegetation as well as improve non-motorized opportunities for recreational users. The trail actions will improve user experiences and safety and ultimately protect the environment and the people who use the trails. The conversion of a portion of Road 41N73 (to West Parks Lakes) to OHV trail will maintain OHV opportunities and provide motorized access to dispersed recreation areas.

During trail construction and maintenance, some trails and surrounding areas/destinations may be temporary inaccessible to the public. As with Alternative 2, existing use could shift over time as some users disperse from more heavily used areas to less crowded areas.

Trailhead Improvement

No trailhead construction or improvements are proposed with Alternative 4. As with Alternative 1 (no action), the Parks Creek Trailhead would continue to have sanitation concerns; human waste would continue to reduce visitor experiences and pose a risk to health, safety and the environment. No new trailheads would be constructed for West Parks Lakes, Caldwell Lakes, or Eddy Creek Meadow. Recreational usage in those areas would be expected to change based on the trail actions for Alternative 4 discussed above.

Dispersed Recreation Actions

Under this alternative, no additional access would be provided to dispersed recreation areas that are more than one car length from a NFS road, and all user created vehicle routes for access to dispersed recreation

areas greater than one car length from the road would be decommissioned. Alternative 4 would reduce the use of dispersed recreation areas by eliminating motor vehicle access to sites greater than one car length from the road. This alternative would not meet the need to protect access to dispersed areas. Camping use patterns could shift to other parts of the Forest, or users could illegally construct new camping sites in different locations.

Cumulative Effects

The cumulative effects of Alternative 4 include a net reduction of NFS roads concurrent with implementation of the Travel Management Rule forest-wide. The actual reduction of accessible routes within the project area would be small as many of the roads proposed for decommissioning or closure are currently impassible due to washouts or encroachment of trees and shrubs on the road surface. This alternative would not provide improvements to the parking currently occurring at trail locations. Long term effects could include additional vehicles parking along Parks Creek Road, further restricting the driving lane and decreasing public safety for the hikers and vehicles driving on Parks Creek Road. Public recreation use and enjoyment of the project area is expected to increase over time based on the current trend. The lack of developed recreation facilities at popular trailheads is expected to provide a cumulative increase in resource impacts into the future. Sanitation and water quality impacts are expected to be localized in the project area. This alternative would address public demand for safe quality road-based recreation opportunities and the need to safely access hunting and fishing opportunities; it does not improve the opportunities for motorized dispersed recreation.

The Degree to Which the Alternatives Meet the Purpose and Need as It Pertains to Recreation

Alternative 1 would have no change to the existing condition. Therefore, it would not meet the purpose and need of the project.

Alternative 2 would meet the purpose and need by improving trailhead capacity, parking, information and services to meet demand and standards. Concerns for sanitation would be met. Trail access and scenic opportunities would be improved.

Alternative 3 would also meet the purpose and need by improving trailhead development, parking, information and services at the Parks Creek trailhead and providing moderate improvements at the remaining trails. Current concerns regarding sanitation and water quality would be met. Some trail access and scenic opportunities would be improved. Public safety on the Forest transportation system would be improved. Motorized access to recreation for hunting, fishing, fuelwood cutting, OHV riding, hiking and dispersed areas in LSR would not be improved.

Alternative 4 would meet the purpose and need for improved trail alignment for hiking trails and for additional access for OHVs. Public safety on the Forest transportation system would be improved. It would not meet the purpose and need for improved sanitation and water quality at the Parks Creek Trailhead, or for improved trailhead facilities to safely accommodate parking and to provide information and interpretation of the project area.

Effects Relative to Key Issues as They Pertain to Recreation

A key issue was identified that trailhead construction could have negative impacts to the areas and wildlife and fisheries. Alternatives 1 and 4 do not include trailhead construction and improvements and therefore address this issue. Alternatives 2 and 3 include trailhead construction. There is the possibility that new trailheads will be more visible and provide easier recreational use of the areas. However site

capacity at each location will remain the same. Additional parking will not be created, but existing parking will be relocated to safer and more suitable locations.

Socio-Economics

A socio-economics report was completed for the project (Glubczynski, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

The indicators used for comparing the economic effects of the action alternatives are:

•The cost to implement the alternative (assuming a strong relationship between project costs and money contributed to the local economy through Forest spending),

•Levels of recreation use during and following implementation. Note that due to insufficient quantitative information regarding recreation use (number of visitors, vehicle traffic counts, etc.) this is an indicator that only lends itself to qualitative discussion.

Boundaries

The analysis area for comparing the level of recreational use is Siskiyou County. This is based on the assumption that most recreation users of the project area are County residents. The analysis area for comparing the effects of the alternatives on the economy is the local communities of Weed and Mount Shasta, as it is assumed most project and recreation related spending would occur in these two communities.

A five year planning horizon is used in this analysis; activities would begin in fiscal year 2015 and end in fiscal year 2020.

Methodology

The methodology for analyzing project impacts is a combination of quantitative and qualitative analysis. Quantitative analysis consists of comparing the estimated costs of implementing the action alternatives. Qualitative analysis looks at the effects implementing the alternatives will have on short and long term recreation use.

Cumulative Effects

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

Spatial and temporal boundaries are the two critical elements to consider when deciding which actions to include in a cumulative effects analysis. Spatial and temporal boundaries set the limits for selecting those actions that are most likely to contribute to a cumulative effect. The effects of those actions must overlap in space and time for there to be potential cumulative effects (FSH 1909.15 (15.2)).

The economic cumulative effects analysis area for the Parks Eddy project is the area encompassed by Siskiyou County. The economic effects of this project are likely to be felt primarily in southern Siskiyou County where money spent on materials and supplies for project implementation and recreation/tourism services such as fuel, food and retail goods are most likely to occur.

The temporal boundaries for cumulative effects analysis are the present time and into the foreseeable future. Other present and reasonably foreseeable projects and recreation opportunities in southern Siskiyou County also provide jobs and income, and contribute to the local economy. A list of these projects can be found in the EA.

The activities listed in Table 12 below would occur during the approximately 5-year project timeline. The actual implementation schedule may vary, but using the same schedule for the effects analysis of all action alternatives allows for an appropriate comparison of them. For activities that may occur in multiple years, the costs are split between those years.

Table 12: Preliminary Project Cost Estimates[35]

Activity	Unit Cost	Alternative 2		Alternative 3		Alternative 4	
		Miles	Cost	Miles	Cost	Miles	Cost
Add	$2,000	0.8	$1,580	0.6	$1,240	0.6	$1,200
Add-Motorized Trail	$5,000	0.1	$650	0.0	$0	0.1	$650
Add-Non-motorized Trail	$750	2.9	$2,138	2.6	$1,928	2.9	$2,138
Close	$500	3.3	$1,625	3.3	$1,625	3.3	$1,625
Convert-Motorized Trail	$1,000	1.4	$1,350	0.0	$0	1.4	$1,350
Convert-Non-motorized Trail	$500	3.1	$1,540	1.7	$840	3.1	$1,540
Decommission	$2,000	21.5	$43,060	38.1	$76,140	21.7	$43,400
Keep (Maintain)	$1,500	43.0	$64,455	31.2	$46,815	43.0	$64,455
Reconstruct	$10,000	27.0	$270,400	25.6	$255,900	27.0	$270,400
Trailheads Improved (#)	$5,000	3.0	$15,000	3.0	$15,000	0.0	$0
Install Vault Toilet (#)	$30,000	1.0	$30,000	1.0	$30,000	0.0	$0
Trailheads Constructed (#)	$15,000	1.0	$15,000	1.0	$15,000	0.0	$0
Total		**103.0**	**$446,798**	**103.0**	**$444,488**	**103.0**	**$386,758**

(Bielecki, 2014)

Existing Condition

Fundamental components of the economic environment for this analysis are population, demographics, jobs and income. Understanding the conditions and trends of such variables allows for a more complete assessment of the social and economic dynamic as it pertains to National Forest use. Population, age and racial distributions of Siskiyou County are important socioeconomic indicators for determining possible uses of forest resources by local residents.

Population and Demographics

Siskiyou County has maintained a relatively stable population in recent years. The most noticeable change was negative growth between 2008 and 2010. Several factors can lead to a decrease in population, however most out-migrations occur due to a change in employment conditions. Forest management may influence population growth. Forests offer a wide range of recreational and subsistence opportunities. Access to those opportunities could be a deciding factor in where people choose to live. Also, the production aspects of forest resources could draw labor to the area, and thus influence local populations.

[35] Preliminary cost estimates for the Project were calculated based on generic activity costs. No actual engineering, calculations, or site specific cost considerations have been completed. Actual implementation costs may vary greatly. The cost estimates in this analysis serve to provide figures for a cost comparison between alternatives only.

People moving to an area due to an increase in the demand for labor is referred to as job-led growth. This has not occurred in Siskiyou County in recent years.

Natural amenities can attract people to live nearby forest boundaries in order to have easy access for recreational purposes (amenity led growth), and this is common in communities located nearby NFS lands. In prior years, the analysis area experienced amenity led growth in the form of retires relocating from more metropolitan areas, and people searching for smaller communities to raise their families. However, that trend appears to have subsided due to national economic conditions. When conditions improve, it is likely that Siskiyou County will once again experience new population growth.

Age distributions also influence use on National Forests. Different age groups are likely to participate in different natural resource based activities. The median age in Siskiyou County is higher than the median age of the state. This suggests that residents are older than residents in more metropolitan areas of California.

The vast majority of local residents are Caucasian. As a whole, California is much more ethnically diverse than Siskiyou County. California's population is 59.8 percent Caucasian. Nearly 36 percent of California's population comes from a Hispanic origin; whereas in Siskiyou County it is only 7.6 percent. In general, the Native American population has a much higher presence in the county than in the state as a whole; it is the second most populous race in Siskiyou County at 3.9 percent.

Employment and Income

It is particularly important to consider the impact to employment in remote areas where jobs supported by the affected resources may consist of a large portion of total employment. Such areas may not be as resilient to a certain loss in jobs as a more metropolitan area.

Retail trade, health and social services, and government support the largest percentage of jobs in Siskiyou County. Overall, natural resource based industries are not a major contributor to employment. Agriculture, forestry, fishing, and hunting account for 6.6 percent of total jobs in Siskiyou County. However retail, accommodation, food service and entertainment/recreation sectors total 23%. Retail, accommodation, food service and entertainment/recreation are assumed to include National Forest related recreation and tourism at least in part.

Siskiyou County has consistently maintained an unemployment rate near or greater than the state average in recent years, consistently experiencing rates above 8 percent since 2002. With the higher unemployment rates in the analysis area, it is likely that any new demands for labor would be supplied from the local labor market. Thus, any additional jobs created by the Parks Eddy project would likely not affect household migration patterns, and may serve to reduce unemployment rates.

Per capita personal income is $26,874 in Siskiyou County. Labor income remains the primary source of income. Siskiyou County also has a high poverty rate, and it is likely that a high proportion of income is also derived from public assistance sources.

Project Area Use and the Local Economy

The National Visitor Use Monitoring (NVUM) program serves as the primary means of monitoring recreational activity at the national, regional and forest level. Under the NVUM program, each forest is to be surveyed once every 5 years, yielding consistent data regarding visitor use. The primary purpose of the collection of NVUM data is to provide reliable estimates of recreational visits to National Forests.

Unfortunately, NVUM data is not available for the Parks Eddy project area as surveys of recreation activities have not been conducted there. Forestwide, NVUM data from the survey period 2000-2004 showed that approximately 2% of recreation activity was motorized use (snowmobiling, OHV use, driving for pleasure, other motorized uses), and 16.5% was non-motorized travel (horse riding, hiking/walking, backpacking, bicycling, cross country skiing, other non-motorized use) (Wilson, 2010). The remaining activities could not be linked specifically to motorized or non-motorized use.

The Motorized Travel Management FEIS also looked at the proportion of local vs. nonlocal use, Forestwide. This distinction allows for spending related to the Forest visit to be differentiated between locals and non-locals. Expenditures by non-locals generates additional economic stimulus. Such spending is treated as an export of local goods and services, and thus represents new money to the economy. Data from the 2000-2004 time period indicated that approximately 35% of Forest visitors were non-local, vs. 58% local visitors (Wilson, 2010). In the last few years a number of group athletic events have been established (cycling, running) that include a portion of the race course on Forest land, so the number of local and non-local Forest visitors is likely greater than in 2004.

Environmental Consequences

Economic Impact Analysis

The economic impact analysis looks at the effects of the project alternatives on Forest Service project spending and Forest visitor spending in the study area. Implementing a project can result in economic stimulus to an area, by changing the level of jobs and income in the area through increased demand for related products and services, and indirectly affecting the spending habits from individual households due to increased income.

Alternative 1 – No Action

Under this alternative no project activities would be carried out in the Parks Eddy project area. This alternative provides a baseline by which Alternatives 2, 3, and 4 are analyzed for environmental effects.

Direct and Indirect Effects

There would be no direct or indirect effects on the socioeconomic environment if no action were to take place. Any change in conditions would occur as a natural progression of socioeconomic activity and would occur regardless of this decision.

Cumulative Effects

Given that there are no measurable direct and indirect effects that would occur under the no action alternative, there would also be no measurable cumulative effects.

Alternatives 2, 3, and 4

Project Costs/Contributions to the Local Economy (Direct and Indirect Effects)

All the action alternatives will result in increased expenditures at local businesses by the Forest during implementation for construction materials, fuel for equipment, and other needed supplies. Alternative 2 is anticipated to cost approximately $446,800 to implement. Alternative 3 would cost approximately $2,300 less than Alternative 2 ($444,500), and Alternative 4 would cost $60,000 less than Alternative 2 ($386,800) (Bielecki, 2014). All three action alternatives would be implemented over a 5 year period. Preliminary cost estimates for the Project were calculated based on generic activity costs. No actual engineering, calculations, or site specific cost considerations have been completed. Actual implementation

costs may vary greatly. The cost estimates in this analysis serve to provide figures for a cost comparison between alternatives only.

Table 13: Estimated Costs to Implement Alternatives

Alternative	Estimated Cost to Implement (rounded)
Alternative 1 (no action)	$0
Alternative 2 (proposed action)	$446,800
Alternative 3 (decommission additional roads in LSR)	$444,500
Alternative 4 (No trailhead construction or improvements)	$386,760

The differences in project costs of each of the action alternatives are small, considering the costs to implement any action alternative. Contributions to the local economy through Forest acquisition of materials and supplies would be similar, regardless of alternative, with Alternative 4 contributing the least.

Effects to Forest Visitors and Related Local Spending (Direct and Indirect Effects)

During project implementation, access to portions of the project area may be temporarily restricted to forest visitors. Reduced access may discourage recreational activities on the forest, which may translate to reduced visitor-related spending at local businesses (This reasoning assumes that either potential visitors would recreate in the forest outside the local area, or simply not recreate in the forest at all). Because there is little data on the average number of visitors and level of recreation activity in the project area, the actual impact on visitor-related spending at local businesses cannot be determined.

The project's long term economic effects in regard to forest visitors to the project area and related local spending would be determined by which alternative is chosen for implementation and the resulting changes in visitor use due to changes in the road and trail system, and availability of trailheads. A smaller road system may not attract as many Forest visitors and therefore reduce the amount of money spent at local businesses. However, the addition of more miles of trails and trailhead facilities may attract more visitors interested in outdoor activities (including hunting and fishing), which may increase the amount of money spent at local businesses by recreation users.

In comparing action alternatives, it can be noted that with the additional road decommissioning in Alternative 3, local spending by motorized use visitors would be expected to be less. Local spending by non-motorized use visitors may or may not change with Alternative 3 compared to Alternative 2. With Alternative 4, motorized use visitor local spending would be similar to that of Alternative 2, but due to no trailhead construction or improvements, non-motorized use visitor spending may not be affected as compared to Alternative 2.

All three action alternatives include the same proposed work on Parks Creek Road. This work may affect the amount of motorized travel (and associated visitor local spending) on Parks Creek Road if road condition and turnouts/scenic viewing opportunities are important to visitors, the same effects across action alternatives. The road improvements may also affect bicycling traffic (individually and

participation in the Mt. Shasta Summit Century event), the effects being the same across action alternatives.

Only monetary benefits and costs are accounted for in this analysis. Values that are not included are those that cannot be accurately measured through currency. Estimating the value of benefits and costs not accounted for in the market place is outside the scope of this analysis. But these non-market benefits may include improved ecosystem health, increase in wildlife, reduced sedimentation in local waterways, etc.; and the costs may include reduced recreational values and scenic quality. Thus, the financial measures reported in this document should be considered along with any other social and ecological impacts resulting from the management activities.

In addition to the financial implications of these alternatives, management activities would require human labor to be completed. This could affect the level of jobs and income in the analysis area. Jobs and income could be generated indirectly if Forest Service purchases of contracted services, materials and supplies, and increased/decreased recreation/tourism spending prompt local businesses to respond to changes in profits with changes in employee staffing.

Cumulative Effects

Cumulative effects include the total change in economic conditions that would result from these alternatives in conjunction with the direct and indirect effects of other present and reasonably foreseeable natural resource related activities. For example, any environmental change as a result of this alternative would be in addition to other resource management actions occurring simultaneously (see Appendix D for a list of projects).

Estimates of the impacts associated with these projects are not readily available; however, on the margin, it is expected that they will contribute to the local economy through company, employee, and visitor spending, and support additional jobs and income to the local area. In general, the analysis area has low population density, a large proportion of the population is in the working age group, and unemployment rates are higher than state averages. Thus, any new jobs created by local spending would likely be filled by unemployed residents, which would contribute to reduced unemployment rates and increased resident incomes. Cumulative impacts should continue to positively influence local spending.

The Degree to Which the Alternatives Meet the Purpose & Need for Action as It Pertains to Economics

The differences in project costs of each of the alternatives is small, considering the costs to implement any action alternative. With the additional road decommissioning in Alternative 3 over Alternatives 2 and 4, Alternative 3 would result in fewer road miles of long term maintenance, hence “efficiency” of transportation system operations and management. But all alternatives contain decommissioning and all would result in a smaller road system needing long term maintenance.

Effects Relative to Key Issues as They Pertain to Economics

A key issue includes the concern that the road and trail system costs more to maintain than budgets can accommodate. All action alternatives will reduce the size of the forest transportation system in the project area. This would lead to less road maintenance needed in the area and therefore less funding needed.

Soils

A soils report was completed for the project (Rust, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

Indicators for analyzing effects to soils are soil erosion, compaction, fertility, and displacement based on the Forest Plan Standard and Guidelines Soil Quality Standards (SQS).

Boundaries

In order to evaluate soil quality, a site-specific assessment of soil quality indicators was conducted within the soil analysis area bounded to the road or trail "footprint" (cut slope, traveled way, and fill slope) and up to 200 feet downslope from the roads. The temporal boundary is 10 years: the 5-year implementation period, plus five additional years to allow for revegetation of disturbed areas, soils downslope from the road/trail traveled way, and restored meadows.

On each road, trail, and downslope area the following indicators were examined: 1) Percent detrimental[36] soil disturbance that impairs downslope site productivity, present soil displacement, severe soil erosion, lack of adequate cover off-site, or rutting below road; 2) Slope stability and erosion concerns.

Methodology

Soil resources in the project area have been reviewed using soil survey data, Forest GIS data, and field reconnaissance. Most of the roads have been field reviewed by the soil scientist to verify mapping, identify areas where soil productivity may be affected by proposed actions, and examine current disturbance on site. In determining a significant change in productivity, a 15 percent reduction in inherent soil productivity potential was be used as a basis for setting threshold values. This 15 percent reduction is generally considered a reduction of productivity over 15 percent of an area. Threshold values would apply to measurable or observable soil properties or conditions that are sensitive to significant change. The threshold values, along with aerial extent limits, would serve as an early warning signal of reduced soil productive capacity, where changes to management practices or rehabilitation measures may be warranted.

Management activities have potential to cause various types and degrees of disturbance. Soil disturbance is categorized into compaction, displacement, puddling, churning, severe burning, and erosion. Direction was established that properties, measures, and thresholds relative to these disturbance types would be developed at the Regional and Forest levels, known as Soil Quality Standards (SQS).

The effects of each alternative on the soil resource have been assessed using the Region 5 SQS and the Forest Plan. Soil quality analysis standards provide threshold values that indicate when changes in soil properties and soil conditions would result in significant change or impairment of the productivity potential, hydrologic function, or buffering capacity of the soil. The best available science was used in analyzing the soils and the effects of the Parks Eddy project. The most current and relevant reports were used. Studies and monitoring were related to the specific project area.

[36] Detrimental soil disturbance refers to either a decrease in porosity greater than 10%, or greater than 2 inches of topsoil displaced, eroded, or severely burned, or lack of large woody debris of less than 5 trees per acre with some or all occurring over the project unit greater than 15% of the area.

Existing Condition

Soil Information

The watershed is dominated by soils derived from ultramafic parent materials that are strongly influenced by topography. These ultramafic soils support unique botanical communities due to a shift in the ratio of calcium and magnesium. Smaller portions (about 25%) of the watershed's soils are volcanic in nature reflecting their position on the lower slopes of Mt. Shasta. These soils are largely on private land. Erosion potential for soils in the watershed is moderate to high, particularly in the frigid and mesic temperature regimes due to their position on steep mountain side slopes. Many of the drainages in the watershed have a network of wet meadows and fens where soils reflect an aquic moisture regime.

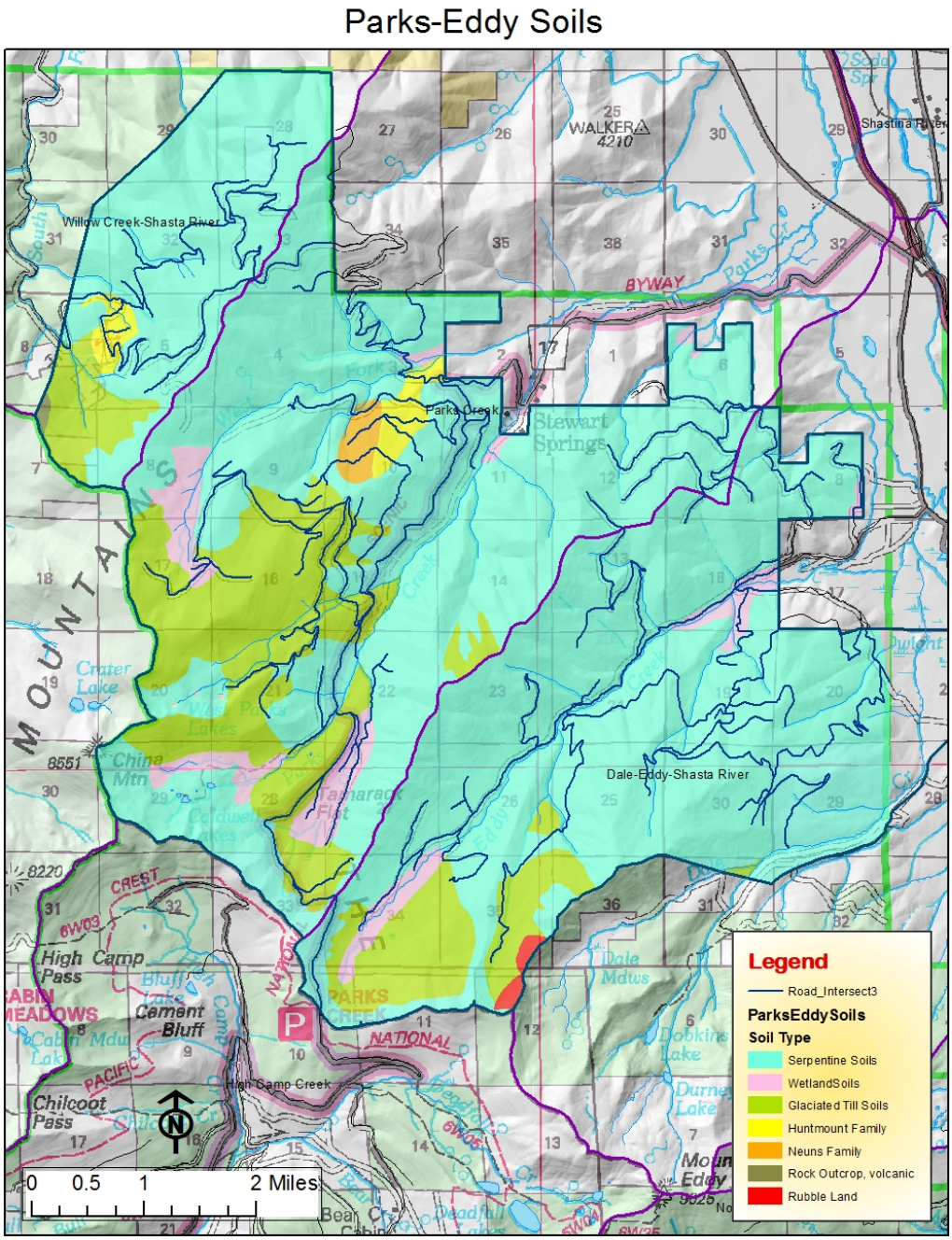
Soils in the highest elevations of the watershed are weakly developed (Entisols and Inceptisols) and in the cryic temperature regime. Due to the harsh temperatures, these soils develop slowly and exhibit poor site conditions with a high component of semi-barren land and rock outcrop. Forested sites are dominated by subalpine conifer species. Soils in the frigid temperature regime (5000' to 7000' elevation) are generally more developed and have a subsurface accumulation of clay (Alfisols). These ultramafic soils support stands of white fir and ultramafic mixed conifer but productivity is still low and re-establishment of vegetation after disturbance is slow. Skid trails are readily visible decades after logging.

The lowest elevations in the watershed (below 5000') that are on federal land are dominated by soils with dark surface horizons (Mollisols) and are in the mesic temperature regime. They are more developed than soils at higher elevations, and have subsurface clay accumulation and support stands of ponderosa pine and mixed conifer. However, site class for these soils remains low and re-vegetation is slow.

Many of the drainages in the watershed have a network of wet meadows and fens. These are often mapped as Aquolls indicating their aquic moisture regime (saturated conditions for at least a few days). These soils also support a unique botanical community and are highly susceptible to damage from vehicular traffic. Several meadows visited within the watershed show evidence of recent OHV traffic and occasional passenger vehicle traffic.

Five general soil groups are represented throughout this project area (Figure 3 below): 1) a moderately deep glacial-till very gravelly sandy loam soil on mountain side-slopes – Endlich; 2) a deep granitic gravelly loam soil on dormant landslides – Huntmount; 3) moderately deep serpentinitic cobbly clay loams soils on mountain side-slopes – Kang/Dewmine/Tamflat; 4) deep clay wetland soils in seeps and sumps areas – Aquolls/Copsey; and 5) a moderately deep metamorphic very gravelly loam soil on mountain side-slopes - Neuns. Figure 4 shows the soils within the project area. Table 1 in Appendix A of the Soils Report**,** lists the major soils within the project area, their physical properties, and their ratings for erosion, compaction, displacement, puddling, and productivity.

Figure 3 – Soils of the Parks Eddy Watershed Restoration Project



Soil Cover/Erosion

Many land use activities have the potential to cause erosion rates to exceed natural soil erosion or soil formation rates. In order to assess the potential risk of a given soil to erode, an erosion hazard rating (EHR) was developed (R-5 FSH 2505.22). This rating system is based on soil texture, depth, permeability of soil, amount of rock fragments, surface cover (vegetative and surface rocks), slopes, and climate.

Risk ratings vary from low to very high with low ratings meaning low probability of surface erosion occurring. Moderate ratings mean that accelerated erosion is likely to occur in most years and water quality impacts may occur for the upper part of the moderate numerical range. High to very high EHR ratings mean that accelerated erosion is likely to occur in most years and that erosion control measures should be evaluated.

Table 2, of the Soils Report shows fine-loamy and sandy soils with the highest erosion hazard ratings for the project soils (Glacial-till soils and Huntmount soil). Loamy-skeletal soils (Neuns) have the lower erosion hazard ratings due to rock fragments along with serpentine soils due being moderately deep with cobbles and high clay content.

Soil Compaction/Porosity

Compaction reduces infiltration and increases runoff, which can increase erosion hazard ratings and may decrease down site water quality. Proper road design and drainage features can reduce adverse effects of compated road surfaces by ensuring drainage is dispersed.

The Forest Plan states that in an even-aged managed stand no more than 15% of the area shall be in a nonproductive state (landings, roads, and main skid-trails). The project area falls below the 15% limit, but some roads are sources of sediment due to their existing condition. Loamy soils in the project area (Huntmount) have moderate compaction hazard ratings due to textures and lack of rock fragments in the subsoil. The rest of the project soils (loamy-skeletal, serpentine, and sandy soils) have low to moderate compaction hazard ratings due to soil textures and high rock content.

Soil compaction in the project area is not a concern due to both the high rock content within the soil and the limited management activity throughout the entire watersheds and project area. Compacted road surfaces are imperative to ensuring proper road drainage. Roads can affect soil by several mechanisms including accelerated erosion from the road surface and prism or by mass and surface erosion. Typical causes of surface and prism erosion is lack of control of surface water which results in concentrated flows. Road surface shape including insloped, outsloped, and crowned roads help to disperse surface flows and reduce erosion. Mass erosion can occur due to location, design, and in some case abundance of buried organic material in road fills. By restoring and improving road drainage, soil erosion is greatly reduced. Proper road design and location lengthen maintenance cycles and provide improved road access.

For soil with rock fragments greater than 40%, compaction is only moderate but with rock fragments less than 40% compaction can be severe depending on texture. Soil compaction is not of great concern on most soils within the Parks Eddy project since most soil rock content is greater than 40%. Only fine-loamy soils have high compaction risks; the rest of the soils only having moderate compaction ratings.

Soil Fertility

Soil fertility in the Parks Eddy project area is moderate to low depending upon the parent material formation and available water holding capacity. Loamy soils (Huntmount) have the best soil fertility due to their depth and available water-holding capacities (AWC). Serpentine soils have low soil fertility due to their parent rock type (chemical imbalance) and low AWC. In general, in most timber soils, the parent material has low fertility and most nutrients are recycled from decomposing roots and surface duff that gets incorporated into the soil. Most soils in the project area have low displacement susceptibility with the Glacial-till soils, Huntmount, and Neuns soils having moderate ratings. Since most roots are in the upper 1 to 2 feet of soil, it is very important to protect topsoil from displacement, puddling, and erosion especially for the Huntmount soils since they are the most productive.

Naturally Occurring Asbestos

Within the Parks Eddy project area, large bodies of peridotite and serpentinite exist that could contain naturally occurring asbestos (NOA). Asbestos occurs in six different commercial forms, five belonging to the amphibole group (Tremolite, Actinolite, Anthophylite, Crocidolite, and Amosite) and one belonging to the serpentine group, Chrysotile (Van Gosen, 2007). All of these minerals are of the fibrous nature making them asbestiform (fibers with greater than a 3:1 length to width ratio). In California the most common form is Chrysotile with the five amphibole types in smaller concentrations.

The majority of serpentinite soils that could contain NOA are located in the middle portion of the Parks Eddy Project area where many roads are affected (Rust, 2014). About 1/3 of the roads to be decommissioned are on serpentine soils.

Environmental Consequences

The environmental consequences are discussed within the context of potential adverse effects to soils from the proposed alternatives. The effects considered are guided by Soil Quality Standards (SQS) from the Forest Plan and include soil productivity, hydrologic function, and environmental health. Soil hydrologic function and environmental health (as described in SQS) are not adversely affected by this project due to restorative nature of the project and soils that have high levels of resiliency. Soil productivity is evaluated on a soil type basis and considers impacts to erosion, compaction, and soil fertility.

- Soil Stability – Erosion of soil particles by water, wind or gravity. Visual evidence of surface erosion may include rills, gullies, pedestalling, soil deposition, erosion pavement or loss of the surface "A" horizon. Erosion models are also used to predict on-site and off-site soil loss [water erosion prediction project (WEPP) and/or the erosion hazard rating (EHR)].

- Soil Hydrology – This function is assessed by evaluating or observing changes in surface structure, surface pore space, consistence, bulk density, infiltration or penetration resistance (compaction and soil hydrologic function).

- Nutrient Cycling – This function is assessed by evaluating the vegetative community composition, litter, coarse woody material, and root distribution. These indicators are directly related to soil organic matter.

- Detrimental Soil Displacement – Excessive topsoil being moved laterally from its usual place in the profile by blading or pushed aside by machines or logs.

- Ultramafic soils with potential NOA – Open travel issue of dust inhalation.

Alternative 1 (No Action)

Direct and Indirect Effects

Current soil conditions for the Parks Eddy project area are landscapes shaped from previous activities including dispersed recreation, timber harvest, mining, and associated road construction to access the area. Metamorphic soils are moderately susceptible to erosion and past use indicates that erosion has been moderately low except for roads that are poorly located, designed, and maintained. Properly designed and located roads generally do not cause adverse impacts to soils. Roads on ridge tops and flat areas are often good examples of roads with low impact to the soil resource. However, roads located on steep slopes, or

in areas with high road densities can intercept surface and subsurface flows causing changes in natural flow paths, modifying vegetative composition, and result in accelerated erosion. Road segments with through cuts, steep gradients, or immediately adjacent to streams can be hydrologically connected to the fluvial system causing chronic erosion. Many of the roads within the project area were poorly designed and or located and have been identified as poorly functioning (TAP analysis, WA, and past environmental analysis). These roads and some trails will continue to produce significant amounts of sediments (542 tons/year untreated) if left untreated.

In several areas there are roads that may contain NOA which are open to unrestricted recreation that could pose health risks to recreationists during dry and dusty conditions. Poorly located and designed roads are hard to maintain and often wash out in large storm events or are chronic sources of sediment which can adversely affect aquatic habitat.

There are several unauthorized user created OHV routes that access sensitive meadows in the project area. Left untreated unauthorized access may continue which will have adverse impacts to soil hydrology, and stability through detrimental soil displacement from vehicle ruts. Several meadows were identified that have ruts which can modify vegetation and further degrade these areas. In addition there are some locations of dispersed recreation within sensitive meadows and riparian areas. Parking and vehicle use in meadows increases compaction which modifies soil infiltration resulting in increased erosion. Without providing improved parking and access to dispersed areas in riparian areas there will continue to be compaction and erosion which will reduce vegetative cover within the riparian area.

Hiking trails within the area have evolved over the years and several segments have been identified for reconstruction and relocation. Trail segments that intercept hillslope streams and flowpaths have caused accelerated erosion of the trail segment. In many areas the trail segments have become flowpaths which has modified the hillslope hydrology.

With this alternative these areas will continue to degrade, accelerated erosion will continue, road and trail access will be reduced, and visitor safety will be at risk.

Alternative 2 (Proposed Action)

Direct Effects

Direct effects of Alternative 2 actions will be improved infiltration, restoration of natural hillslope drainage patterns, and reduced chronic erosion. There may be some minor erosion during road decommissioning and reconstruction activities but these effects are temporary, and will be minimized by implementing RPMs.

Treatments will have the substantial beneficial effects of reducing erosion, sediment delivery, and compaction, increasing soil productivity, and reducing roaded acres in NOA areas. Background road erosion is 9.5 tons/mile vs. 0.8 tons/mile when a road is decommissioned, 1.6 tons/mile when a road is storm proofed, and 1.0 ton/mile when a road is closed. With 21.5 miles of roads being decommissioned, 27.0 miles being storm proofed, 3.3 miles being closed, and 43.0 miles being retained, this equates to 258 tons/year of sediment, which is a 52% reduction in road sediment from no treatment to treated (542 tons/year to 258 tons/year).

User created routes to dispersed recreation areas (0.21 miles) that will be brought into the FTS will be storm proofed to correct any adverse erosion. Decommissioning and closing roads will also reduce areas of NOA exposure by vehicles creating dust and return roads to the productive land base.

Trail and trailhead improvements will cause some temporary localized erosion but with RPMs in place, erosion will be minimal. Overall benefits of trailhead improvements include better drainage for parking areas, improved parking location so to minimize compacted surfaces will improve soil productivity overall. Walking trail development to West Parks Lake, OHV conversion of a portion of 41N73A and reconstruction of a portion of road to a walking trail will cause some short-term erosion that is minimized with the implementation of RPMs.

Indirect Effects

Indirect effects will be beneficial due to less road erosion and sediments into streams post project. With decommissioning and closure of roads less erosion will occur and roads will recover to become productive sites for vegetative growth. Over time these areas will recover back to a productive land base.

Cumulative Effects

Cumulative effects analysis quantifies the effects as a sum of the direct and indirect effects in addition to the past, present, and reasonably foreseeable future actions (which are independent of the Parks Eddy project alternatives). The spatial boundaries for the cumulative effects analysis of soils are the road or trail "footprint" (cut slope, traveled way, and fill slope) and downslope up to 200 feet below the roads or road segment. These boundaries are appropriate because ground disturbance is primarily within the road "footprint". The area below the road up to an additional 200 feet may be affected by infiltration and runoff. This bounding also includes the new footprint where roads and/or trails will be relocated.

Past actions are included as contributing to the current condition of soils within the cumulative effects spatial boundaries. There are no other projects (present or reasonably foreseeable future) being planned or implemented for the soils cumulative effects analysis area. There will be ongoing use of the roads for recreation and administrative activities into the future. Levels of use are expected to be similar to current levels since most of the roads identified for decommissioning are not drivable at this time.

Implementing Alternative 2 is expected to reduce the amount of erosion and sediment from roads, which would be beneficial in the long term, even with future ongoing use of roads. SQS would be met by improved soil hydrologic function, improved soil stability and reduction of detrimental soil displacement from closure of unauthorized user trails in sensitive meadows. Cumulative effects would be minimal.

Alternative 3

Direct Effects

Direct effects from implementing Alternative 3 would be improved infiltration, restoration of natural hillslope drainage patterns, and reduced chronic erosion. There may be some minor erosion during decommissioning and reconstruction activities but these effects would be temporary and minimized with RPMs. Treatments would have substantial beneficial long-term effects by reducing erosion, sediment delivery, and compaction. Over time there would be an increase in soil productivity, and reduced roaded acres in NOA areas. Background road erosion is 9.5 tons/mile vs. 0.8 tons/mile when a road is decommissioned, 1.6 tons/mile when a road is storm proofed, and 1.0 ton/mile when a road is closed. With 38.1 miles of roads being decommissioned, 25.6 miles being storm proofed, 3.3 miles being closed, and 31.8 miles being retained, this equates to 219 tons/year of sediment, which is a 60% reduction in road sediment from no treatment to treated (542 tons/year to 219 tons/year). Decommissioning and closing roads would also reduce areas of NOA exposure by vehicles creating dust and would return more roads to a productive landbase.

Trail and trailhead improvements would cause some localized erosion but with RPMs in place, erosion would be minimal. Walking trail development to West Parks Lake would cause some short-term erosion but would be minimal with RPMs in place.

Indirect Effects

Indirect effects would be beneficial due to less road erosion and sediments into streams. With additional decommissioning and closure of roads, less erosion would occur and more roads would recover to become productive sites for vegetative growth. Over time these areas would recover back to a productive land base in the late successional stands.

Cumulative Effects

Cumulative effects would be similar to Alternative 2. While there would be ground disturbance associated with road decommissioning of additional miles of roads, those roads would be restored and soil productivity objectives would be achieved.

Alternative 4

Direct Effects

The direct effects of Alternative 4 would improve infiltration, restore natural hillslope drainage patterns, and reduced chronic erosion. There could be some short-term erosion during road decommissioning and reconstruction activities similar to Alternative 2. Background road erosion is 9.5 tons/mile vs. 0.8 tons/mile when road is decommissioned, 1.6 tons/mile when road is storm proofed, and 1.0 ton/mile when road is closed. With 21.7 miles of roads being decommissioned, 27.0 miles being storm proofed, 3.3 miles being closed, and 43.6 miles being retained, this equates to 258 tons/year of sediment, which is a 52% reduction in road sediment from no treatment (542 tons/year to 258 tons/year). Decommissioning and closing roads will also reduce areas of NOA exposure by vehicles creating dust and returning these roads to a productive land base.

Decommissioning routes to dispersed recreation areas would reduce sediments in the short term and some in the long term (0.21 miles).

Indirect Effects

Indirect effects would be beneficial due to less road erosion and sediments into streams. With decommissioning and closure of roads, less erosion would occur and roads would recover to become productive sites for vegetative growth.

Cumulative Effects

Cumulative effects would be similar to Alternative 2.

Table 14. Soil Quality Standards Matrix for Alternatives – Overall Direct & Indirect Effects

Soil Quality Standards	Alternative 1 (no action)	Alternative 2 (proposed)	Alternative 3 (max decom)	Alternative 4 (no trailheads)
Erosion (tons/year)*	542			
• Decommissioning	-	21.5	38.1	21.7
	-	43.2	41.0	43.2
• Stormproofing	-	3.3	3.3	3.3

Soil Quality Standards	Alternative 1 (no action)	Alternative 2 (proposed)	Alternative 3 (max decom)	Alternative 4 (no trailheads)
• Hydro-closure • Retained Erosion hazard rating#	- High	189.2 Moderately low	137.3 Low	189.2 Moderately low
Compaction • Miles decompacted roads • Hydrologic functionality	0 roads Impaired	5.4 miles Partial Restored	9.6 miles Partially Restored	5.4 miles Partial Restored
Fertility • Productivity • Possible Presence of NOA	No change 94 miles	5.4 miles partial 75 miles	9.6 miles partial 62 miles	5.4 miles partial 75 miles

*WEPP road erosion modeling (see Appendix B) for an average 30-yr. storm period
#Soil adjacent to roads cut & fill material of roads
~25% of road to be decommissioned and rest (75%) to be storm proofed or closed due to being self-decommissioned

Degree to Which the Alternatives Meet the Purpose and Need for Action as It Pertains to Soils

Under watershed condition restoration, the purpose and need includes the need to reduce sediment sources (assume erosion).

All of the alternatives have various combinations of storm-proofing, decommissioning, closures, converting roads to motorized trails and non-motorized trails, replacing culverts, and adding or decommissioning spur roads to dispersed areas except for Alternative 1 (no action). With Alternative 1, chronic erosion levels will remain high due to various routes that are failing and other routes that have chronic spot failures. By doing nothing, hydrologic functionality and water quality will remain impaired.

With Alternatives 2 and 4, chronic failing routes and chronic spot erosion areas will be treated resulting in a lower erosional profile. Both alternatives will reduce total road erosion by 64%. With Alternative 3 non-mandatory routes in LSR will be decommissioned, crossing that have chronic failure and spot erosion will be treated, trailheads will be reconstructed or improved along with trail development. This alternative will reduce total road erosion by 69%.

Effects Relative to Key Issues as They Pertain To Soils

A key issue includes the concern that road and motorized trail construction and maintenance would allow for continued soil erosion. All action alternatives address this issue by reducing soil erosion post-project, to the degrees noted above.

Transportation

A Transportation Resource Report was completed for the project (Bielecki, et al., 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Indicators

- **Road and Trail Decommissioning:** The number and miles of roads and motorized trails decommissioned from the Forest transportation system may indicate reduced future management costs and reduced motorized vehicle access.

- **Open road density:** Changes to open road density indicate a change to motor vehicle access capabilities for management and public access within the analysis boundary.

- **Road and Trail work:** The number and miles of roads and trails improved and maintained indicates an improvement in user conditions and safety.

Methodology

The Forest transportation atlas provides the spatial and tabular data that capture the existing routes being analyzed. Field visits were used to become familiar with the project area, review areas identified as sediment sources or deferred maintenance sites, and develop proposals for actions. All mileages are approximate values based on the Forest transportation atlas and INFRA database and are limited to the accuracy of those sources which includes measurements from GIS, GPS, field instruments and aerial photography. Mileages were updated throughout the planning process as better information became available. Mileages may change slightly with additional field verification and project implementation. The Motor Vehicle Use Map (MVUM) does not include unauthorized routes or roads which do not have verified (e.g. recorded deed) right of way documentation. As a result, the MVUM road miles do not match the INFRA road miles and that difference is noted. Open road density is calculated using the MVUM road mileages.

Quantitative analysis utilized GIS tools for analysis and summarization. A qualitative discussion is also presented to elaborate on these numbers and describe in detail the actions and effects for each alternative.

Boundaries

The spatial bounds for analysis are the Project Area in addition to two areas outside the project boundary across private land: four segments in the lower Eddy Creek region including 41N26 connecting to North Old Stage Road, 41N49C, 41N20, and 41N50 across section 17; and the three segments associated with the Dewey Mine road re-route (42N19, 42N19A and U42N19AA) in section 34 (see Project map). The temporal bounds are set at 5 years; this is the period in which the Project actions are expected to be fully implemented and complete.

Recurrent maintenance is expected to occur on the main roads (Parks Creek, Dewey Mine and Eddy Creek Roads) within the project area as funding allows. Hazard tree felling, wood-cutting, OHV use, dispersed recreation (e.g., hiking, camping, sightseeing, hunting), forest products collection and other permitted uses would also be expected to continue at their current level.

Known upcoming private timber harvests in and near the project area are located in Parks Creek, and Dale Creek watersheds.

Existing Condition

The transportation network varies from a paved segment of the Trinity Heritage Scenic Byway (Parks Creek Road) to closed and stored roads to non-motorized system trails to high-clearance vehicle roads to unauthorized and non-system roads and trails. There are approximately 103 miles of existing routes within the analysis area. Of these, 99.2 miles are managed as system routes.

There are 76.2 miles of road designated on the 2014 Motor Vehicle Use Map (MVUM) and available for public motorized use within the Project area; this results in an open road density of 2.1 miles per square mile. The remaining 23 miles are identified in INFRA but are not currently identified on the MVUM and are all located in the far northwest corner of the Project area. These roads were omitted from the MVUM until easement documents were confirmed. Within Late Successional Reserves (LSR), there are currently 45.8 miles of open road, accounting for an open road density of 2.2 miles per square mile within the LSRs.

A sediment source inventory completed in 2011 identified road segments and road drainage features that were not functioning properly. A road condition inventory in 2012 confirmed the overall condition of the Forest transportation system in the analysis area and the need for road maintenance.

Access

Watershed access is hindered by a lack of maintenance and lack of active management. Some of the roads in the watershed can no longer be driven; most roads within the watershed are degraded and not passable for most two-wheel drive vehicles. About 1/3 of roads that were inventoried in 2012 were closed by natural events and are currently not accessible to vehicles. Several routes not included on the MVUM are needed for access to facilities (e.g. Park Mountain Electronic Site), resource management and important dispersed recreation areas. Other existing roads are currently unauthorized routes (non-FTS acquired in land exchange) but needed for recreational access. Other unauthorized user-created routes that remain physically open to vehicles continue to impact resources when used illegally.

Cost Share

There are some cost share[37] roads within the project area. These agreements were taken into consideration when the various alternatives were developed. Previous land exchanges have altered the ownership pattern leaving several NFS roads in cost share agreements when the roads only access NFS land and no longer access private lands owned by the cost share participant. The closure or decommissioning of these roads is limited until the cost share agreements have been modified or removed. Inventoried cost share routes are identified in Appendix D of the Transportation Report.

The Forest anticipates entering into a maintenance agreement with Michigan California Timber Company, which would include sharing maintenance on Parks Creek Road.

Parks Creek Road – Road 42N17

Parks Creek Road is part of the Trinity Heritage Scenic Byway and a primary access route to Mt. Eddy, the Deadfall Lakes area, the Pacific Crest Trail, the Trinity Alps Wilderness and to the northern California coast. The road receives a notable amount of annual use by recreationists, including use as a route for a bicycle recreation event. Road condition is slowly deteriorating and in need of maintenance which may

[37] The Forest Service is authorized to cooperate with others in developing, planning, and implementing mutually beneficial projects that enhance Forest Service activities, where the cooperators provide matching funds or in-kind contributions. Cooperators may be public and private agencies, organizations, institutions, and individuals (FSH 1509.11).

eventually lead to less use by the public. Parks Creek Road is a single lane road in several locations and has inadequate passing width and sight distance in places. Cemented glacial outwash gravel under the road fill material and subsurface water flow combine to remove material from beneath the road to create a slump, or depression in the road surface. These slumps may be difficult to see on the roadway since they can occur without visually disturbing the surface pavement creating a safety concern. Michigan California Timber Company owns in the project area and conducts commercial log haul on the Parks Creek Road.

Eddy Creek Road – Road 41N26

Eddy Creek Road begins at the County road (North Old Stage) as a paved surface road across private property through rural residential development, and transitions into a native surface road passable only by high-clearance four-wheel drive vehicles (Maintenance Level 2). Watershed access is hindered by lack of maintenance and poorly located segments of road that frequently wash out in large storm events. Poorly maintained drainage features divert water into the road in several locations. Fine materials have been washed away leaving only the larger, rocky materials. Eddy Creek Road ends near a meadow and turns into a non-motorized trail where illegal motorized use is evident up to the Parks Creek Trailhead. Some short road segments located in close proximity to Eddy Creek are hydrologically connected and serve as sources of sediment to the creek.

West Parks Lake Access Road – NFS Road 41N73

The first 1.45 miles climbs away from Parks Creek Road and steep grades have contributed to poor, eroding road conditions. After 1.45 miles the road is in an acceptable, but deteriorating condition until mile 2.5 where a stream crossing was washed out and removed. There is no suitable crossing for four wheel drive vehicles beyond this point. Across the creek, a network of parallel roads climb the drainage towards the lower lake. OHV use, on and off of the road, is apparent beyond the stream crossing and continues beyond the end of the road on an unauthorized trail, within a riparian area, to the lower Lake.

Caldwell Lakes Access Road – Road 41N74

This road begins at Parks Creek Road and has eroded surface to end near meadow and start of non-motorized trail. The surface erosion and damage were caused by lack of drainage features. The A spur is passable with minor maintenance. Roads are currently only accessible by high clearance vehicles.

Dewey Mine Road – Road 42N19

Dewey Mine Road begins at Parks Creek Road and crosses the West Fork of Parks Creek where it is heavily eroded due to poorly maintained culverts and drainage features. The road climbs and crosses a section of private land until it crosses the ridgeline and drops into the Willow Creek drainage, where it turns into a private road across mixed private/NFS ownership in the South Fork Willow Creek drainage. It is gated across the private lands near Dewey Mine. Portions of the Dewey Mine Road and the A and B spurs do not have Forest Service right of way across private lands. Additionally, the switch-back portion of 42N19 is severely degraded due in part to steep terrain and subsurface water. An existing bypass of this portion is also on private lands without Forest Service right of way.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects

The no action alternative provides a baseline for effects analysis of the action alternatives. The existing transportation system in the assessment area would remain unchanged; no road or trail actions would be

implemented. Refer to the existing condition for a full description of the existing transportation system. Roads and trails would continue to deteriorate from traffic use and weather, and vegetation would slowly continue to encroach the travelled ways.

Alternative 2 (Proposed Action)

Direct Effects

Under Alternative 2, roads, trails (motorized and non-motorized) and trailheads would be maintained, reconstructed, realigned, decommissioned, and converted to improve public safety and reduce negative watershed impacts while balancing access needs for recreation and administration. Some unauthorized but existing roads and user-created routes would be decommissioned (actively or naturally). This alternative would add 0.21 miles of unauthorized but existing roads to the road system; 0.13 miles of existing unauthorized road as motorized trail (50” wide or less); and 3.12 miles of existing unauthorized roads as non-motorized trails. This is a total of 3.46 miles of additional NFTS routes. The FTS would be better maintained and more efficient.

Parks Creek Road would provide for safer passenger car vehicle access. Changing the maintenance level of Eddy Creek Road from ML 3 to ML 2 and the reconstruction activities would improve road conditions, reduce sedimentation and may increase road use slightly. Overall use on the FTS would be similar, and traffic volume on open routes could increase slightly due to slight concentration of use on open routes.

The Forest transportation system management actions within the project area would be consistent with the recommendations provided by the TAP (USDA Forest Service, 2014).

This alternative would propose to decommission 21.5 miles of routes, maintain 43.8 miles of road and reconstruct approximately 27.0 miles of roads. Three short road segments (0.21 miles) leading to dispersed recreation areas would be added to the Forest transportation system and designated on the MVUM for motor vehicle use.

Under Alternative 2, there would be a small reduction in motor vehicle opportunities within the project area due to the current undrivable condition of many of the “open” roads, with the open road mileage dropping to 70.8 miles. This includes a decrease in open road density of 0.1 miles per square mile, and an open road density decrease of 0.3 miles per square mile within the LSRs.

Non-motorized recreation opportunities would increase due to the increase in non-motorized trails [see Transporation Report (Bielecki, et al., 2014) for more information].

Indirect Effects

With Alternative 2, user safety and efficiency provided by the Forest transportation system would increase.

Cumulative Effects

Under this alternative, the cumulative effects with the analysis area and 5-year time period are as follows:

- Parks Creek Road would provide for safer passenger car vehicle access, while Eddy Creek Road could see a slight increase in vehicle use. Overall use on the Forest transportation system would be similar, and traffic volume on open routes could increase slightly due to better road maintenance.
- Under this alternative, the Forest transportation system would fall closely in line with the recommendations made by the TAP, and more in accordance with the Forest Plan standards and

guidelines for transportation. Unneeded roads and trails would be decommissioned, and erosion concerns would be mitigated, reducing negative resource impacts.

- Overall, the Forest transportation system would be better maintained, safer, more economically sustainable, and more efficient.
- Known upcoming private timber harvests in and near the project area could affect the Forest transportation system included in this analysis, however a Maintenance Agreement to replace the previous Cost Share Agreement is currently proposed to address maintenance needs.

Alternative 3

Direct Effects

The direct effects of Alternative 3 would be greater than Alternative 2 in that it would close or decommission all roads (38.1 miles) in LSRs that are not primary connector roads, active cost share roads, or roads that access private property. It does not include the construction or reconstruction of motorized trails in the LSRs. Roads and trails would be maintained, reconstructed, decommissioned, or converted to reduce negative watershed impacts while balancing access needs for recreation and administration.

This alternative would decommission 38.1 miles of routes, maintain 31.8 miles of roads and reconstruct approximately 25.6 miles of roads. No routes leading to dispersed areas in LSR would be added to the Forest transportation system or MVUM.

The remaining Forest transportation system, although smaller, would be better maintained and more efficient than the current condition. It would be less efficient than Alternative 2, with less management access (including fire) in LSRs. Parks Creek Road would provide for better passenger car vehicle access, while Eddy Creek Road could see small increase in vehichle use. Overall use on the Forest transportation system would be similar, and traffic volume on open routes would slightly increase due to concentration.

Under Alternative 3, the Forest transportation system would move towards the recommendations made by the TAP except where roads proposed for closure in the LSR are within the Wildland Urban Interface and identified to remain open. Under Alternative 3, there would be a reduction in motor vehicle access within the project area, with the open road mileage dropping to 56.8 miles. This includes a decrease in open road density of 0.5 miles per square mile, and an open road density decrease of 1.0 miles per square mile within the LSRs.

Non-motorized recreation opportunities would increase due to the increase in non-motorized trails.

Indirect Effects

With Alternative 3, user safety and efficiency provided by the Forest transportation system would increase on the remaining open roads.

Cumulative Effects

Under Alternative 3, the cumulative effects within the analysis area and 5-year time period are as follows:

- Parks Creek Road would provide for safer passenger car vehicle access, while Eddy Creek Road could see a slight increase in vehicle use. Overall use on the Forest transportation system would be similar, and traffic volume on open routes could increase slightly over Alternative 2 due to a higher travel concentration on fewer open roads.

- Under Alternative 3, the Forest transportation system would move towards the recommendations made by the TAP except where roads proposed for closure in the LSR are within the Wildland Urban Interface and identified to remain open.
- Known upcoming private timber harvests in and near the project area could affect the Forest transportation system included in this analysis, however a Maintenance Agreement to replace the previous Cost Share Agreement is currently proposed to address maintenance needs.
- Overall, the Forest transportation system would be better maintained, safer, more economically sustainable, and more efficient.

Alternative 4

Direct Effects

The direct effects of Alternative 4 would be similar to those in Alternative 2, except that no trailheads would be constructed for trails to Eddy Creek Meadow, West Parks Lakes or to Caldwell Lakes, and no trailhead improvements would be constructed at the Parks Creek Trailhead. In addition, all user created vehicle routes for access to dispersed recreation areas greater than one car length from the road would be decommissioned. All proposed road actions for closure, decommissioning, maintenance and reconstruction would remain the same.

The Forest transportation system would be better maintained and more efficient than the current condition. Parks Creek Road would provide for safer passenger car vehicle access, while Eddy Creek Road could see no a slight increase in vehicle use. Overall use on the transportation system would be similar, and traffic volume on open roads would increase slightly due to better road maintenance.

Under Alternative 4, the Forest transportation system within the project area would be brought more in line with the recommendations provided by the TAP and more in accordance with the Forest Plan standards and guidelines for transportation. Unneeded roads and trails would be decommissioned, and erosion concerns would be mitigated, reducing negative resource impacts.

Under Alternative 4, there would be a slight reduction in motor vehicle opportunities within the project area due the current condition of many of the “open” roads, with the open road mileage dropping to 70.8 miles. This includes a decrease in open road density of 0.1 miles per square mile, and an open road density decrease of 0.3 miles per square mile within the LSRs.

Non-motorized recreation opportunities would increase due to the increase in non-motorized trails.

Indirect Effects

With Alternative 4, user safety and efficiency provided by the Forest transportation system would increase.

Cumulative Effects

Under this alternative, the cumulative effects within the analysis area and 5-year time period are as follows:

- Parks Creek Road would provide for safer passenger car vehicle access, while Eddy Creek Road would see a slight increase in vehicle use. Overall use on the Forest transportation system would be similar, and traffic volume on open routes would slightly increase due to better road maintenance.

- Overall, the Forest transportation system would be better maintained, safer, more economically sustainable, and more efficient than the existing condition.

Table 15: Open Road Densities (MVUM mileages only)

	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 3	Alternative 4
Open Roads (miles) (per 2014 MVUM)	76.2	70.8	56.8	70.8
Open Road Density (miles / sq. mile) *[Project Area = 38.5 sq. mi.]*	2.1	2.0	1.6	2.0
Open Roads in LSR(miles) (per 2014 MVUM)	45.8	40.4	25.0	40.4
Open Road Density in LSR (miles / sq. mile) *[LSR Area = 21.3 sq. mi.]*	2.2	1.9	1.2	1.9

Degree to Which the Alternatives meet the Purpose and Need for Action as It Pertains to Transportation

Under Alternative 1, the purpose and need for action related to transportation would not be met. There would be no progress towards an improved motorized and non-motorized Forest transportation system in support of watershed condition restoration, and for safe and efficient administrative and public access. Maintenance Level 1 roads would not be properly stored (closed) for future use while protecting the environment. Roads and routes not included in the system would not be permanently decommissioned. Preferred rights-of-way would not be acquired. The Forest transportation system would not be maintained to standard.

Under Alternative 2, the purpose and need for action related to transportation would be met. There would be strong progress towards an improved motorized and non-motorized Forest transportation system in support of watershed condition restoration, and provisions for safe and efficient administrative and public access. Road maintenance levels would reflect access requirements. Maintenance Level 1 roads would be properly stored (closed) for future use while protecting the environment. Routes not included in the system would be permanently decommissioned. Preferred rights-of-way would be pursued. and the transportation system would be maintained to standard.

Alternatives 3 and 4 would also meet the purpose and need for action related to transportation, although for Alternative 3 there would be fewer miles of Forest transportation system roads available for motorized travel. Alternative 4 would meet the purpose and need for roads similar to Alternative 2 except that vehicular access to some dispersed recreation areas would not be available and improved recreation opportunities (trailheads) would be be provided.

Effects Relative to Key Issues as They Pertain to Transportation

A key issue was identified that road and motorized trail construction and maintenance would allow continued negative impacts including soil erosion and impacts to wetlands, meadows, fisheries, and wildlife habitat. All action alternatives will result in a reduction of the open road density in the project area and will close or decommission roads.All action alternatives will improve road conditions and reduce negative impacts including soil erosion and impacts to wetlands, meadows, fisheries and wildlife habitat.

Visual/Scenery

A Visual Quality/Scenery Resource Report was completed for the project (Joyce, 2014) and is incorporated by reference. Information relevant to the decision is summarized here.

Indicators, Boundaries, and Analysis Methodology

Issues Identified During Scoping

Visual Quality was not identified as an issue during scoping.

Indicators

The Forest Plan utilizes the Visual Management System (VMS) to reduce impacts to scenery caused by management activities. VMS incorporates the distance of the project from the viewer, duration of the view, variety class and the sensitivity level of the viewpoint to assess visual impacts. During the Forest planning effort various Visual Quality Objectives (VQO's) were established for areas seen from travel routes and management areas. VQO's indicate allowable changes to scenery as a result of management activities.

The Forest Plan incorporated the VMS system, however currently FSM 2380 directs that the VMS is superseded by the Scenery Management System (SMS). The differences between the two systems are summarized by the following: "While the essence of the system [VMS] remains essentially intact, still supported by current research, terminology has changed and the system has been expanded to incorporate updated research findings. Conceptually, the SMS differs from the VMS in that: it increases the role of constituents throughout the inventory and planning process; and it borrows from and is integrated with the basic concepts and terminology of Ecosystem Management. The Scenery Management System provides for improved integration of aesthetics with other biological, physical, and social/cultural resources in the planning process." (USDA Forest Service, 1995)

Current Forest Service policy directs that SMS (FSM 2380) may be used on a project by project basis, if the Forest Plan references the VMS. However when the Forest Plan is revised it would reference the SMS and be used on all projects thereafter. The analysis for the Parks Eddy project utilizes the VMS, since the current Forest Plan references this system.

Methodology

The methodology utilized to complete this analysis included researching the Forest Plan direction for management areas, Standards and Guidelines and the Forest Plan VQO map. Professional knowledge of the VMS, SMS and over 20 years of experience in natural resources were also used. Field visits verified the existing condition and gave a reference point for the desired future condition for scenery. Forest Plan direction was used as a baseline for analyzing the allowable amount of changes to scenery; this was also integrated with current probable public expectations and balanced with other resource disciplines.

Boundaries

The cumulative effects analysis would include the views as seen from the Trinity Heritage Scenic Byway; distant views to the Scott Mountains to the west and Mt. Shasta to the east, plus an occasional view to the Shasta valley. Near views are of upper Eddy Creek and the Parks Creek drainages.The time frame would be 20 years because that is the estimated time for a tree to grow to a height that could block the views made at proposed vista points.

Foreseeable future actions are not included in this analysis because there will not be any direct, indirect or cumulative effects to the VQOs.

Existing Condition

Parks Creek Road, part of the Trinity Heritage Scenic Byway, winds thorough a diverse landscape. It is located within the Klamath-Siskiyou landscape province which is a group of mountains with uplifted plateaus and rugged topography and an irregular and transverse drainage patterns (USDA Forest Service, 1976). The province is typified by repetitive ridges of similar but rising elevations towards the east that are heavily forested. The ridge tops are narrow and the canyons are deep and narrow in most places. Moderate glaciation has created some cirques, u-shaped valleys and rock basins. The province is generally covered with a moderate Douglas fir, pine and true fir forest with areas sparsely covered in brush.

The Scott and Eddy Mountains are punctuated with interesting reddish to gray rock outcroppings. Vegetation varies from moderate conifer stands with variable understory to mountain slopes dotted with sparse conifers and small herbaceous plants. Mountain streams cascade down the drainages flanked by riparian vegetation offering a refreshing view and adding diversity to the landscape.

Views can be seen in the immediate foreground, middle ground and occasionally a screened view to the valley floor and Mt. Shasta. The winding road often constrains a person's view to the immediate foreground due to safety. In some areas, there are only 1 to 1 ½ lanes and a steep drop off requiring drivers to concentrate on the road and the immediate foreground. The proposed vista points would help drivers view scenery while remaining safe, thus be an asset to the scenic byway.

The current views, as seen from Parks Creek Road meets a VQO of Retention (management activities not visibly evident) to Modification (management activities may visually dominate the original characteristic landscape) (Handbook 462, pages 30-32). The views look primarily natural meeting Retention (Handbook 462, page 30) to Modification VQO due to the roads, turnouts and Parks Creek Trailhead (Handbook 462, page 34) (USDA Forest Service, 1976).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects

Parks Creek Road Reconstruction

The proposed Parks Creek Road reconstruction and improvements would not take place under the no action alternative. Visitors would not have the increased opportunity to see the distant views and driver safety may be reduced. There would not be any direct, indirect or cumulative effects.

Parks Creek Trail Reconstruction

The Parks Creek Trail reconstruction would not take place under the no action alternative. The Parks Creek Trail cannot be seen from the Trinity Heritage Scenic Byway, so would not be sensitive for the scenery resource and will not be analyzed for impacts to visual quality. It is not identified as sensitive for scenery in the Forest Plan and is a minor trail without major significance and thus would not be seen as sensitive per the VMS. There would not be any direct, indirect or cumulative effects.

Parks Creek Trailhead Improvement

No improvements to the Parks Creek Trailhead would be completed under the no action alternative. The VQOs would remain the same. There would not be any direct, indirect or cumulative effects to the VQOs.

Alternative 2 (Proposed Action)

Direct, Indirect, and Cumulative Effects

Parks Creek Road Reconstruction

The proposed maintenance and reconstruction activities on Parks Creek Road would support the intent of the Trinity Heritage Scenic Byway. The improvements would not only make the road safer to drive, but create more opportunities for the public to view scenery. The narrow road occasionally offers pull-outs for passing, but larger areas would benefit the public for safety and viewing opportunities. Only existing pullouts would be improved, thereby minimizing disturbances. Some brush would be removed to improve sight distances. Some trees may be removed to accommodate safer turnouts and improve views. Trees would be felled out of sight of the scenic byway or be removed. If there were any trees 20 inches or greater diameter at breast height cut, they would be left on site for large woody debris and the limbs removed and scattered.

The VMS incorporates the distance of the project from the viewer, duration of the view, variety class and the sensitivity level of the viewpoint to assess visual impacts as well as design concepts such as visitor expectations, scale, color, texture, spatial relationships and form to evaluate changes to scenery and VQOs. Visitors driving on Parks Creek Road would have the expectation of viewing the road surface, water drainage structures, pullouts and cut banks since these improvements are associated with and necessary for roads. Any vegetative debris would be removed out of sight of the viewer. Changes to the environment would be slight and not noticed by the casual forest visitor due to the drivers expectations of seeing road improvements. For these reasons the proposed project would meet Retention to Modification upon project completion and there would be no direct, indirect or cumulative effects.

Parks Creek Trail Reconstruction

The proposed Parks Creek Trail reconstruction would be unseen from the Trinity Heritage Scenic Byway, thus would not affect the VQOs and there would not be any direct, indirect or cumulative effects.

Parks Creek Trailhead Improvement

Improvements to the Parks Creek Trailhead would retain the current landscape character and not be highly visible to passing motorists. The parking would be maximized for site conditions and visitor use and to protect natural resources. The proposed improvements would include a rocked surface parking area and accessible path to the restroom, a natural colored concrete vault restroom and information boards, which would meet the ABA and the Forest Service Outdoor Recreation Accessibility Guide (USDA Forest Service, 2014). [38]

The improvements would meet a low development level and blend with the natural environment. Improvements could include planting trees and shrubs to provide shade and reclaiming a large rocked

[38] Architectural Barriers Act Accessibility Standards: Toilets 603 and 604. Information Boards 703, Parking 208 and 502 (Note: Janet Zeller USFS Accessibility Coordinator instructs the FS to only stripe and place Accessible Parking Signs in parking areas with individually marked spaces in high development areas.) More information can be found at www.access-board.gov; Forest Service Outdoor Recreation Accessibility Guide: Outdoor Access Routes (ORARS) 2.0. Recreation Sites 3.0, Toilet Buildings 5.2. More information can be found at www.fs.fed.us/recreation/program/accessibility.

area. Eventually the shrubs and trees would obscure the views of the parking area and make it look more scenic. The changes would not be noticed by a casual forest visitor, since visitors would expect these types of improvements at a trailhead. The VQOs would meet Modification for the trailhead and thus remain the same as the existing VQO. There would be no direct, indirect or cumulative effects for VQOs.

Road Closures, Decommissions or Reconstructions

There are two roads proposed to be decommissioned on the Trinity Heritage Scenic Byway. The proposed actions would help the roads to re-vegetate. The forbs, grasses, shrubs and trees that would naturally establish in one to five years without vehicle traffic compaction could improve the scenic beauty of the area. The changes would not be enough to alter the Modification VQO for Parks Creek Road (and associated roads), so the VQOs would remain the same and there would not be any direct, indirect or cumulative effects.

Alternative 3

Direct, Indirect, and Cumulative Effects

The actions under Alternative 3 that are associated with the Trinity Heritage Scenic Byway would be the same as Alternative 2, thus the analysis would be the same and there would not be any direct, indirect or cumulative effects.

Alternative 4

Direct, Indirect, and Cumulative Effects

The actions under Alternative 4 that are associated with the Trinity Heritage Scenic Byway would be the same as Alternative 2 with the exception of the improvements at Parks Creek Trailhead. Alternative 4 may not reclaim the large rocked area by planting shade trees and shrubs next to the Scenic Byway, thus may not improve scenery as the proposed action could. The VQOs would remain the same, thus there would not be any direct, indirect or cumulative effects.

Wildlife-Threatened and Endangered Species

A Biological Assessment (BA) for wildlife species listed under the Endangered Species Act (ESA) was completed for the project (Mapula, 2014) and is incorporated by reference. Information relevant to the decision is summarized here. The BA is included in this EA as Appendix A. This BA was updated with an addendum which is also included in Appendix A.

The Forest accessed the list of threatened and endangered wildlife species proposed for listing for the 7.5-minute USGS quadrangles that comprise the project's Action Area (as defined by the ESA) from the United States Fish and Wildlife Service (FWS) Arcata Field Office website species portal on March 17, 2014 (http://arcata.fws.gov). These lists are included as Appendix 1 of the BA. In accordance with the ESA and regulatory guidance, only those organisms and critical habitat listed on the official species list were considered, and only those species under the regulatory jurisdiction of the FWS. A species list was re-queried on August 19, 2014 and no additional species have been listed since completion of the BA and informal consultation. The lists are contained in the project record.

The species and designated critical habitat considered in detail in the Biological Assessment and discussed here are:

- Northern spotted owl (*Strix occidentalis caurina*),
- Critical Habitat for the northern spotted owl (Unit 8, Subunit 3 (East Cascades South [ECS-3]).

The FWS revised critical habitat for the northern spotted owl (NSO) on December 4, 2012 and the Rule became final on January 3, 2013 (USDI Fish and Wildlife Service, 2012). The project area and Action Area contain critical habitat within Unit 8, Subunit 3 (East Cascades South [ECS-3]). Project activities may modify Principal Biological Features or Primary Constituent Elements within critical habitat but will not remove or appreciably reduce their function. The project area contains approximately 7,167 acres of designated critical habitat, and the Action Area contains approximately 5,677 acres of designated critical habitat.

Indicators, Boundaries, and Analysis Methodology

Indicators

Potential direct, indirect and cumulative effects (as defined under the ESA and for NEPA) of Alternative 2 are evaluated using a combination of qualitative and quantitative indicators that are used to determine the degree to which project activities may affect individual NSOs and/or their habitat components. Descriptions of how the proposed road and trail actions and project design features will reduce the potential for direct, indirect and/or cumulative effects (including long term beneficial effects) were assessed in the BA and summarized here.

Indicators include:

- Potential for direct disturbance to breeding pairs, young, and/or dispersing individuals.
- Amount and quality of suitable habitat maintained, degraded, downgraded or removed within a core and home range.
- Amount of dispersal habitat affected in a core and home range.
- Amount of suitable and dispersal habitat affected at the Action Area scale (for a definition of Action Area see Boundaries section, below).
- Amount of critical habitat affected at the Action Area scale.

Measurements for how project activities will inform the above indicators include:

- Distance to breeding pairs/individuals and location of project actions (i.e., proximity to nesting/roosting habitat or known consistent reproductive pairs).
- Miles/Acres of suitable, dispersal and critical habitat affected at the various spatial scales.
- Habitat variability and structural complexity remaining post-treatment, including understory layering, large trees, snags and coarse woody debris.

Indicators that measure the issues developed for project alternatives include:

- Miles of roads closed or decommissioned in NSO home ranges and cores,
- Post-project open road densities (measured in miles/square mile),
- Acres of Riparian Reserves benefited, as these provide the majority of suitable habitat for NSO,
- Estimated acres of terrestrial habitat benefitted by road decommissioning and closure with subsets of NSO suitable and dispersal habitat benefits,
- Changes in noise levels from motorized vehicle use in NSO habitat.

Boundaries

The analysis of effects to threatened and endangered species is typically bounded by reasonable and agreed upon spatial and temporal boundaries. The ESA defines the spatial boundary for analysis as the Action Area. Under the ESA, the Action Area includes “all areas likely to be affected directly or indirectly by the proposed action” (50 CFR §402.02). Additionally, effects analyses may occur across multiple

analysis areas within the Action Area that are relevant to conservation concerns for listed species that can frequently overlap. For purposes of this analysis, the following spatial scales are utilized:

Action Area

The Action Area is the boundary for the spatial analysis and includes all areas to be affected directly or indirectly by the project. It is not merely the immediate area involved in the action. For this analysis, the Action Area is defined by a 0.25-mile buffer on the proposed project activities (road, trail, and recreation facilities improvements). One-fourth mile is considered the distance at which noise above ambient levels may harass NSO by flushing an adult or juvenile from an active nest during the breeding period and/or precluding adult feeding of young. Northern spotted owl young in the project area typically fledge by July 10 and are mobile and responsive to environmental stimuli. Behaviors of young after July 10 are likely to be within the typical range of NSO responses to environmental disturbances (e.g., storms, proximity of predators or other animals). As a result, July 10 is as a reasonable threshold for a “not likely to adversely affect” determination relative to disturbance stressors.

The Action Area is approximately 19,812 acres in size; consisting of NFS lands (16,560 acres; 84%) and private lands (3,252 acres; 16%). The Action Area encompasses all lands, regardless of ownership (refer to Map 2 in the BA). The Action Area described for the ESA analysis is the same bounding utilized for the cumulative effects analysis under NEPA.

Project Area

The project area is approximately 23,300 acres. It is wholly located on NFS lands, though activities are proposed within Forest right-of-way on private lands.

Treatment Area

The treatment area is a subset of the project area that reflects the physical footprint where proposed road, trail, and recreation facilities improvement actions would occur, and therefore, potential direct and indirect effects. Specific road prism widths are utilized for specific actions. The general average road prism width is 10 to 24 feet of centerline and varies depending on location within the project area (e.g., some roads have no cut/fill and some are extensive). The maximum 48-foot width is utilized for the analysis of all road reconstruction activities as work may extend well outside of the road surface to realign portions of a road, remove/replace or install culverts, and stabilize cutbanks and/or outboard fill faces.

For road maintenance and closure, a total width of 24 feet is utilized as work is expected to be limited to the road surface, though some hazard tree removal and ditch maintenance may be completed.

For road decommissioning, a width of 36 feet is utilized as this activity may consist of active decommissioning that extends outside of the narrower road surface (typically 14 to 20 feet). This larger width is considered conservative, but active decommissioning may include removal of drainage structures and replacement of fill to return natural contours.

For trail work, the average trail prism width is 6 to 10 feet, taking into account hazard trees that may be located off/away from the narrower trail tread. These widths are used in conjunction with suitable, dispersal and critical habitat to estimate the total work completed within each respective habitat type.

Northern Spotted Owl Core and Home Range

The core represents an area surrounding the nest site used disproportionately by territorial NSOs, especially during the breeding season where effects of proposed actions are presumed to have relatively stronger influences on spotted owls compared with areas located further from the nest (USDI Fish and

Wildlife Service, 2009). For this analysis, habitat conditions in the core are evaluated within a 0.5-mile radius (~500 acre 'circle') centered on the last known nest site or cluster of detections.

The core is included within a larger area known as the home range. Habitat within a home range provides foraging and alternate nest/roost sites that support NSO occupancy, survival and reproduction. For this analysis, habitat conditions are evaluated within the home range area, which has a 1.3-mile radius (~3,398 acre 'circle') and is centered on the most recent nest site or cluster of detections (Thomas, 1990) (USDI Fish and Wildlife Service, 2009). Actual NSO home ranges likely conform to the distribution of high-quality habitat, and while it is recognized that they are generally non-circular, this spatial analysis represents a reasonable approximation of the area within which territorial owls obtain resources (USDI Fish and Wildlife Service, 2009). There are four NSO home ranges/cores within the Action Area.

Eddy and Scott Mountain LSRs

As they serve as a management mechanism under the Forest Plan to provide for viable population of NSOs (and other late-successional species) throughout their historic range, an analysis of the project relative to its likely effects on owl habitat quantity and distribution in the Eddy and Scott Mountain LSRs is included.

Temporal Boundaries

Temporal bounding for this analysis consists of both short- and long-term timeframes. Short-term consists of when project actions occur, usually within one season to one year of implementation. Long-term effects extend for approximately five or more years after actions occur. Maintenance activities are expected to occur beyond the five-year implementation timeline, depending on need, and would remain subject to the applicable RPMs.

Temporal bounding for cumulative effects of future State or private activities (under ESA), and federal activities (under NEPA), which are reasonably certain to occur within the Action Area, includes the period when all of the proposed project activities are expected to be completed and when any effects from foreseeable future actions can be reasonably predicted and felt on the landscape in combination with the project's effects. Effects of past actions are included in the environmental baseline and existing condition for NSO in the Action Area as those conditions reflect the aggregate impact of all prior human actions and natural events that have resulted in the current environmental conditions and might contribute to cumulative effects, and can be used as a proxy for the impacts of past actions (Connaughton, 2005).

Temporal bounding for cumulative effects is 10 years given the predicted timeline to complete project activities and short/long term effects. Northern spotted owls also do not attempt to breed every year and the number of years varies between each attempt (Distribution and biology of the spotted owl in Oregon, 1984). A 10-year timeframe is considered adequate to encompass several breeding attempts by owls, and potential disturbances to those attempts, and it represents the time in which all project activities are expected to occur and overlap with any potential effects of reasonably foreseeable future state, private or federal actions.

Methodology

The analysis was prepared using the best available scientific and commercial data at the time it was developed to determine the likely effects of all alternatives on federally listed species. This includes information such as data collected from NSO protocol surveys and activity center searches, aerial photos (2010 and 2012 National Aerial Imagery Photography) and the Forest's existing vegetation layer (EVEG) (USDA Forest Service, 2007). The draft NSO Habitat EVEG model queries (described fully in the BA), field surveys of habitat type and quality, research for noise disturbance on owls, the most recent and appropriate scientific research or species information from the Northern Spotted Owl Recovery Plan

(USDI Fish and Wildlife Service, 2011) and Final Rule for Northern Spotted Owl Critical Habitat (USDI Fish and Wildlife Service, 2012) and direct observations in the Action Area were also utilized.

Interrelated and Interdependent Project Elements

Interrelated actions are those that are part of a larger action and depend on the larger action for their justification [50 CFR §402.02]. Interdependent actions have no independent utility apart from the proposed action [50 CFR §402.02]. Interrelated and interdependent activities include temporary rock and material storage, temporary re-routing of stream flow, and hauling of rock from sources outside of the project area via main, high use roads such as Interstate 5 and Stewart Springs Road.

Timing of the Project

Project implementation is anticipated to start in fall 2014 and it is estimated to take up to five years for the road, trails, drainage, and recreation facility actions to be completed. Project level monitoring activities throughout and beyond this timeframe include but are not limited to: NSO surveys/spot checks/activity center searches, implementation monitoring with the FWS, and noxious weed, soils, archaeology, water quality and BMP implementation monitoring.

Existing Condition

Species Status

Species status refers to the known occurrence or likely occurrence of NSOs within the Action Area and focuses on actual or assumed individuals likely to be affected by proposed activities.

The project is located within the California Cascades Province; the eastern extent of the NSO's range in California. This Province is characterized as having relatively gentle terrain, low annual precipitation and dry forest types; influencing the distribution and quality of suitable NSO habitat in the Province (USDA Forest Service, USDI Bureau of Land Managment, 1994).

The Action Area is typified by serpentine ultramafic soils and dry climatic conditions. These conditions, combined with the natural fragmentation from brushfields, serpentine barrens and high elevation meadows, limits the capacity of the Action Area to provide contiguous areas of high-quality spotted owl habitat. Suitable nesting, roosting and foraging habitat is primarily located within the drainages of Parks and Eddy Creeks. Within these drainages, there is a higher proportion of mixed-conifer forest of Douglas and white fir, sugar pine and incense cedar mixed with Jeffrey and ponderosa pine, and scattered hardwoods and riparian species.

Four NSO activity centers are currently located within the Action Area:

- West Parks Creek (ST-014),
- Dewey Mine (ST-015),
- Lower Eddy Creek (ST-016),
- Upper Eddy Creek (ST-019).

Based on survey results through 2013, ST-014 has not been occupied since 1990. ST-015 has not been occupied since 1989. In 2013, a reproducing pair occupied ST-016 and produced 2 fledglings. ST-019 was occupied by a single male NSO in 2013.

Barred owls pose a threat to NSO as competitors and known predators of owls. At this time and based on survey results and personal communications with adjacent private landowners, there are no barred owls

known to occur in the Action Area. The closest confirmed barred owl detection is approximately 5 miles southeast of the project area near Deetz Meadow (Jordan, 2014).

From 1989 to 2014, surveys within portions of the action area and/or activity center searches for the known activity centers have occurred. Protocol surveys were completed using the 1992 (USDI Fish and Wildlife Service, 1992) or 2012 versions (USDI Fish and Wildlife Service, 2012). During spot calling in 2012, no detections occurred. The 2013 activity center searches conducted for the known activity centers (two each) resulted in one reproducing spotted owl pair in the ST-016 activity center with two juveniles observed. Private land surveyors detected a single male at ST-019. No spotted owl pairs or individuals were detected during the ST-014 or ST-015 activity center searches.

Survey results through 2013 are included in the BA on pages 23-25.

Stand searches and private land surveys completed to date in 2014 resulted in the detection of a NSO pair at ST-016. A nighttime audio detection occurred at ST-014, but no NSOs were detected during the follow-up visits. No detections have occurred at the ST-015 or ST-019 activity centers to date during the stand searches or protocol surveys. No barred owls have been detected in the Action Area during any survey efforts, including the 2014 surveys completed to date.

At this time, there are no other known NSO or barred owl home ranges/detections on private ownership within the Action Area. Surveys, activity center searches and/or spot checks will be continued prior to and throughout project implementation as funding and personnel are available, in accordance with guidance provided in the 2012 NSO survey protocol and as discussed and agreed to with the local Level 1 team on an annual basis (USDI Fish and Wildlife Service, 2012 pp. 5-6).

Habitat Status

The distribution and quality of suitable (nesting/roosting and foraging) and dispersal habitat in the Action Area is strongly influenced by local physiographic conditions, climate, elevation ranges, serpentine soils, topography, the extent of streams and Riparian Reserves and to a limited extent, past forest management on NFS and private lands. It is typically limited in distribution, fragmented, and structurally dependent on the factors mentioned above, with the majority of the suitable habitat being located within the drainage bottoms of Parks and Eddy Creeks. Refer also to the project's Botany and Soils reports for more information on the existing conditions.

Nesting/Roosting Habitat

Habitat quality within the Action Area is closely associated with topographic relief, soil types, slope, elevation and Riparian Reserves. Based on field review, the nesting/roosting habitat is primarily limited to areas within or adjacent to Riparian Reserves (within portions of Parks and Eddy Creeks, near springs and wet meadows).

Foraging Habitat

Based on the existing stand conditions within the Action Area, where it exists; the nesting, roosting and foraging habitat is considered to be moderate to lower quality in comparison to those habitats typically used by nesting, roosting and foraging NSOs. Within the Parks and Eddy Creek drainages, and areas near wet meadows and springs there is a higher frequency of Douglas fir, incense cedar, sugar pine and hardwoods, including riparian species, which contribute to higher canopy cover, snags/down wood, understory structure/layering and prey species habitat.

Dispersal Habitat

Most of the Action Area is not considered suitable (nesting/roosting or foraging) NSO habitat due to the serpentine soil types that primarily support homogenous stands of incense cedar and Jeffrey pine that have less than 40% canopy cover, serpentine barrens and high elevation meadow areas of lodgepole pine (USDA Forest Service, 2014).

Dispersal habitat and connectivity within and outside of the Action Area is limited to the northwest by the higher elevations and lack of continuous forested habitat on ultramafic soils, and to the north and east by agricultural valleys, juniper/eastside pine dominated areas, open rangelands and rural residential areas. Northern spotted owls likely disperse south towards and beyond Dale Creek, and west/southwest into the Trinity River watershed (above Trinity Lake) and Trinity Alps Wilderness area where there is contiguous, lower to mid elevation mixed conifer forest, streams and rivers that provide suitable habitat.

Areas classified as non-habitat comprise the remaining category and are not suitable for NSO nesting, roosting, foraging or dispersal. These areas include the pine-dominated stands in eastside pine vegetation types, juniper stands, lodgepole pine dominated stands, and early- and mid-seral/pole size[39] stands with small diameter trees and low cover (<35%). This includes plantations and non-forested lands such as brushfields, grasslands, high elevation meadows, true hardwood stands and serpentine barrens.

Northern Spotted Owl Prey Species

Small mammals such as flying squirrels, dusky-footed woodrats and red tree voles are primary prey for northern spotted owls; other mammals (deer mice), reptiles and insects are generally secondary. Flying squirrel abundance is positively correlated with the presence of mature and late-seral forests with a significant Douglas fir component and large diameter trees, but have been observed at lower densities in ponderosa pine dominated forest types (Demography of Northern Flying Squirrels informs Ecosystem Managment of Western Interior Forests, 2006). Dusky-footed woodrats are associated with drier, early-seral mixed-conifer forest or open, late-seral forests (Courtney, 2004) (Thomas, 1990) (Habitat selection by northern spotted owls: the consequences of prey selection and distribution, 1998).

Within the Action Area, deer mice and California voles probably constitute the bulk of NSO prey, with other minor species such as woodrats where early seral-vegetation is available. The majority of the Action Area does not contain the habitat elements typical to support northern flying squirrel populations, and the probability of this species occurring at high densities is low due to the overall small tree size and soil types that primarily support Jeffrey pine and incense cedar.

Habitat in the Action Area

The habitat typing was completed using a combination of:

- Surveys and field review of the four northern spotted owl territories and home ranges,
- Field review of the roadways and treatment sites and adjacent private lands,
- Forest activities (FACTS) database,
- The Forest's preliminary NSO EVEG (Existing Vegetation) habitat model, 2010 and 2012 aerial photography from the National Aerial Imagery Program (NAIP),
- Peer-reviewed literature reviews, and
- Personal communications with other Forest Service and FWS biologists.

[39] Early and mid seral stands contain California Wildlife Habitat Relationship (CWHR) tree size classes 1, 2, 3, and 4 and all canopy cover classes; they are generally range from one to 110 years of age, but may be older.

The project biologist evaluated species composition, coarse woody debris sizes and levels, snags, structural characteristics, understory composition and canopy cover/closure in the Action Area to quantify (and qualify) suitable and dispersal habitat. Field reviews were conducted to review, validate and modify the Northern Spotted Owl EVEG habitat model queries.

Action Area

The 19,812-acre action area consists of NFS lands and private lands. Approximately 7% is suitable habitat (14% nesting/roosting, 86% foraging); 25% provides dispersal habitat; and 68% is classified as non-habitat. Table 4 displays suitable, dispersal and non-habitat in the Action Area. There are 1,290 acres of suitable habitat on NFS land, with approximately 5,034 acres of dispersal habitat. About 32% of the Action Area currently provides dispersal habitat. This includes nesting/roosting and foraging habitat (7% of habitat) that can also be used for dispersing, as well as 'dispersal-only' (25%) habitat. This is below the 50% level typically used to evaluate the dispersal capability of a landscape (Natal and breeding dispersal of northern spotted owls, 2002) (Thomas, 1990) (USDI Fish and Wildlife Service, 2012), and it is due to the natural conditions of the action area that limit development of dispersal and suitable stands.

Table 16. Northern Spotted Owl Habitat Types Within the Action Area

Action Area	NSO Habitat Types			
	Nesting/Roosting	Foraging	Dispersal	Non-Habitat
19,812 acres	186	1,104	5,034	13,488
Percent	1%	6%	25%	68%

Treatment Area

As described in the spatial and temporal bounding section above, treatment areas are defined by the maximum extent of road and trail prism widths for certain activities. Table 17 displays the estimated acreage affected by the seven activities proposed within suitable or dispersal habitat.

Table 17. Acres of Northern Spotted Owl Suitable and Dispersal Habitat Within the Defined Treatment Areas (Alternative 2)

Treatment Area / Action	Suitable (Nesting/Roosting and Foraging) acres	Dispersal acres (excludes Nesting/Roosting and Foraging)
Road Reconstruction	20.3	49.5
Road Maintenance	9.5	40.7
Road Decommissioning	16.3	24
Road Closure	0	5.4
Reconstruct Existing Non-Motorized Trail, Add To System	0	2.12
Reconstruct Existing Road as a Trail, Add to System as a Non-Motorized Trail	< 1 acre (0.11-acre)	<1 acre (0.91-acre)
Reconstruct Existing Non-Motorized Trail	0.91	0
TOTAL	**47**	**123**

Northern Spotted Owl Cores and Home Ranges

All four NSO home ranges fall at least partially within the Action Area (portions of all four home ranges also fall outside the Action Area; refer to the BA maps). Habitat conditions within each entire home range (and core) have been analyzed.

Table 18. Acres of Suitable Northern Spotted Owl Habitat Within Action Area Home Ranges and Cores^

Activity Center ID	Acres of Habitat: 0.5 mi Core			Acres of Habitat: 1.3 mi Home Range		
	Nesting/ Roosting	Foraging	Total	Nesting/ Roosting	Foraging	Total
ST-014	35	97	132	35	131	166
ST-015	134	19	153	151	254	405
ST-016	13	65	78	13	217	230
ST-019	110	182	292	250	504	754

Table 19. Acres of Northern Spotted Owl Dispersal and Non-Habitat Within the Action Area Home Ranges and Cores

Activity Center ID	Acres of Habitat: 0.5 mi Core		Acres of Habitat: 1.3 mi Home Range	
	Dispersal	Non-Habitat	Dispersal	Non-Habitat
ST-014	172	331	650	2,748
ST-015	307	196	862	2,536
ST-016	255	248	1,434	1,964
ST-019	67	436	528	2,870

Eddy and Scott Mountain Late-Successional Reserves

Within the Eddy and Scott Mountain LSRs (RC-341 and RC-340) there are 56 acres (<1%) of nesting/roosting habitat, and 460 acres (4%) of foraging habitat. There are 3,315 acres of dispersal habitat (25%) and 9,229 acres are classified as non-habitat (71% of the total LSR allocation).

The Scott Mountain LSR was primarily developed to provide a dispersal network and home range connectivity for marten at the higher elevations, and fisher at the lower elevations. This LSR has few large or contiguous blocks of late-successional habitat, has lower site productivity due to the ultramafic soils, and is not conducive to the development of suitable owl habitat. There is a significant amount of mid-successional habitat on NFS lands that does provide a beneficial dispersal corridor to the west and southwest of the action area.

The Eddy LSR, which is situated between Eddy Creek and Dale Creek (to the south), was established around a single pair of NSOs to provide habitat for this pair, and to provide for dispersal to the south (USDA Forest Service, 1999).

Table 20. Acres of Northern Spotted Owl Suitable, Dispersal and Non-Habitat Within the Eddy and Scott Mountain LSRs

Nesting/Roosting	Foraging	Dispersal	Non-Habitat	Total
56 acres	460 acres	3,315 acres	9,229 acres	13,060 acres

The areas of non-habitat within the two LSRs are primarily due to ultramafic serpentine soils and high elevations. Table 21 summarizes suitable, dispersal and non-habitat for northern spotted owls at all project analysis scales.

Table 21. Summary of Suitable, Dispersal and Habitat Classified as Non-Habitat for All Project Spatial Scales

Analysis Area	Total Acres	Nesting/Roosting	Foraging	Dispersal	Non-Habitat
Action Area	19,812	186	1,104	5,034	13,488
Project Area	23,293	322	1,133	6,215	15,623
Treatment Area	170	47		123	NA
ST-014 Home Range	3,398	35	131	650	2,582
ST-014 Core	503	35	97	172	199
ST-015 Home Range	3,398	151	254	862	2,131
ST-015 Core	503	134	19	307	43
ST-016 Home Range	3,398	13	217	1,434	1,734
ST-016 Core	503	13	65	255	170
ST-019 Home Range	3,398	250	504	528	2,116
ST-019 Core	503	110	182	67	144
Eddy and Scott Mountain LSRs (RC-341 and 340)	13,060	56	460	3,315	9,229

Critical Habitat

Revised Critical Habitat for the Northern Spotted Owl; Final Rule (Final Rule) was issued on December 4, 2012 and became effective January 3, 2013. Within the Action Area, critical habitat is designated on 5,677 acres, including approximately 164-180 acres within the road and trail prism areas proposed for treatment under the action alternatives. Critical habitat is only designated on NFS lands in the Action Area.

Table 22: Critical Habitat Acres Within the Project and Action Areas

Critical Habitat	Within the Project Area	Within the Action Area*
Nesting/Roosting (PCE 2)	304 acres	185 acres
Foraging (PCE 3)	774 acres	690 acres
Dispersal (PCE 4)	3,045 acres	2,439 acres
Non-Habitat^	3,010 acres	2,363 acres

*14 acres are located on the Klamath National Forest and are not designated as Critical Habitat

^Serpentine barrens, shrublands, plantations

The function of subunit ECS-3 is to provide demographic support in this area of sparsely distributed, high-quality NSO habitat and federal land, and to provide for population connectivity between subunits to the north and south (USDI Fish and Wildlife Service, 2012) (page 71931).

Status of Predators and Competitors in the Action Area

Great horned owls, northern goshawks and red-tailed hawks are common throughout the Shasta-McCloud Management Unit and may depredate and/or harass northern spotted owls. Predation is the most frequent source of mortality among young owls.

Avian predation includes that from goshawks and great horned owls and potentially barred owls. Other sources include mammalian predation, starvation and accidents. There are no historic northern goshawk territories within the project area or Action Area (Jordan, et al., 2014).

Due to similar dietary and habitat preferences, the barred owl is a serious competitor with the northern spotted owl, and a known predator (USDI Fish and Wildlife Service, 2011). Barred owls have been observed on the Shasta-McCloud Management Unit since 1997. They have not, to date, been detected during the activity center searches, historical nest checks and surveys, or observed within the project area or Action Area during field work for the project or by private land surveys.

It is recognized that when barred owls and northern spotted owls co-occur, a reduction in habitat availability and quality may exacerbate interactions between the two species. Dugger and others (2011) suggest that in environments where the two species compete directly for resources, maintaining larger amounts of older forest (nesting/roosting habitat) may help northern spotted owls to persist in the short term.

Environmental Consequences

Alternative 1 (No Action)

Under Alternative 1 (no action) there would be no direct or indirect effects. As there are no direct or indirect effects, there are no cumulative effects. While there would not be project effects, the road conditions would continue to pose sedimentation risks to streams. Wildlife habitat would continue to be fragmented and no restoration of riparian or upland habitat function would occur. Vehicle related disturbances to wildlife habitat would continue on project roads.

Alternative 2 (Proposed Action)

Direct Effects

Direct effects are the direct or immediate effects of a project activity on a species or its habitat, including the effects of interrelated and interdependent actions. Direct effects are generally described as those that result in physical harm, death or the disruption of reproductive attempts during project implementation or near occupied habitat, but also include direct effects to habitat structure or function.

Alternative 2 does not propose any silviculture, fuels treatment or smoke generating activities. Table 23 lists the closest proposed activities to the four activity centers, and the last date of confirmed occupancy. Surveys and activity center searches will be continued prior to, and throughout implementation as feasible, with methods described in the 2012 Survey Protocol.

Table 23: Northern Spotted Owl Activity Center Information for the Action Area

Activity Center ID	Distance from Nearest Project Activities	Proposed Activity
ST-014	<0.25-mile	Road maintenance
ST-015	~0.3 mile	Road maintenance
ST-016	<0.25-mile	Road reconstruction
ST-019	<0.25-mile	Road decommissioning

The project includes multiple activities that may result in direct effects to NSO breeding, feeding, sheltering and dispersing due to noise disturbance. The noise disturbance would result from road decommissioning, maintenance and reconstruction activities on roads and trails, including:

- Blasting to remove large rocks on trails or realign short (<200-foot long) segments of road,
- Felling hazard trees or snags,
- Felling trees to improve sighting distance and safe travel conditions and scenic vistas along Parks Creek Road,
- Trimming brush/limbing trees to improve sighting distance and safety,
- Heavy equipment use to remove, replace or repair stream crossing and ditch relief culverts, or other infrastructure such as overside drains, drop inlets, flared inlets, and to shape roads, install rolling or critical dips, etc.

These activities may be completed with noise-creating heavy equipment, explosives and/or chainsaws. Vegetation removal (shrubs, small and large trees), tree branch limbing/pruning and hazard tree felling may occur within the road and trail prism to implement all of the aforementioned activities. While adult and sub-adult NSOs are highly mobile and able to move away from disturbances such as noise, these 'stressors' have a higher likelihood of affecting adult and juvenile spotted owls during the breeding season when they are closely associated with the core. This is the period when juvenile spotted owls are not yet able to fly and adults are closely defending their territories. The project includes provisions for a range of limited operating periods (LOPs) that are dependent on specific conditions. These are contained in RPMs WF-8, WF-8a, and WF-8b on page 33.

These LOPs are expected to minimize, if not eliminate, the likelihood that project activities will have direct effects on single and/or breeding NSOs, their young, and dispersing individuals. While spotted owls may disperse and forage within the Action Area, they are generally expected to avoid areas of treatment activity and be measurably affected by noise during dispersal (~September to November).

Road Maintenance

The road maintenance activities will produce noise while being implemented. Maintenance Level 3 roads have fairly high ambient noise levels and most if not all maintenance activities that occur will be within the ambient noise[40] levels. High-use Maintenance Level 2 roads have ambient noise levels near those associated with Maintenance Level 3 roads and so road maintenance noise effects will be similar. Under Alternative 2, road maintenance will occur in approximately 9.5 acres of suitable habitat for NSOs and 42 acres of dispersal habitat. Some roads will require an LOP for disturbance. These roads are listed in Appendix 3 of the BA. All roads not listed in Appendix 3 of the BA will not be subject to the LOPs unless surveys find NSOs occupying areas within 0.25-mile of the roads.

[40] Ambient noise is noise that normally occurs in an area and to which an animal is accustomed, such as road noise, wind, water rushing in a stream or river, human-caused noise associated with road use, campgrounds and other Forest administrative sites.

Road Reconstruction, Realignment and Storm proofing

With road reconstruction, realignment and storm proofing work, blasting may be utilized to clear large boulders or to realign road portions through areas of bedrock. The predicted short term effects from road reconstruction, realignment, or storm proofing may include noise disturbance from heavy equipment (excavators, graders, bulldozers, loaders), blasting, the use of chainsaws, vehicles and crews where noise may be above ambient levels for extended periods of time (2 to 8+ hours). Project LOPs during the critical breeding period will eliminate the potential for noise disturbance within 0.25-mile of suitable NSO habitat. Under Alternative 2, road reconstruction will occur in approximately 20 acres of suitable NSO habitat and 49.5 acres of dispersal habitat.

Road Decommissioning and Closing

Road decommissioning and road closures will involve both active and passive decommissioning and closing techniques. Where active decommissioning occurs, similar equipment types as described above for road reconstruction may be used. Closures may require placement of large boulders with heavy equipment or other closure methods. Road decommissioning and closing will be subject to the project limited operating periods for disturbance. Decommissioning and closing are predicted to reduce the potential for human caused noise disturbance in the short- and long-term. Under Alternative 2, road decommissioning and closures will occur in approximately 16 acres of suitable NSO habitat and 24 acres of dispersal habitat. Road closures under Alternative 2 would occur in approximately 5.5 acres of dispersal habitat with no closures in suitable habitat.

Trail Maintenance, Repair, Reconstruction and Realignment and Adding to the System

Trail maintenance, repair, reconstruction, and realignment will generally consist of using hand tools and chain saws for short periods of time, usually less than two days per quarter mile of trail, but may require using heavy equipment and blasting to remove large boulders/bedrock that cannot be removed with hand tools or heavy equipment. Due to accessibility, the vast majority of trail work is expected to occur after July and, therefore, areas that require the use of heavy equipment/chainsaws would generally occur later in the breeding season. All activities will be subject to the LOPs for noise disturbance if safe access to conduct trail work is permitted sooner (e.g., a low snow year). Under Alternative 2, trail work will occur in approximately one acre of NSO foraging habitat and 3 acres of dispersal habitat.

No direct effects are expected from the recreation site facility actions proposed under any of the action alternatives. Activities that result in loud and continuous noise above ambient levels would be subject to the LOPs. At this time, there are no proposed trailheads or improvements proposed within 0.25-mile of suitable NSO habitat. If surveys result in detections near these proposed locations, the LOPs listed above would be adhered to.

Indirect Effects

Indirect effects are those caused by Alternative 2 that occur later in time, but are still reasonably certain to occur [50 CFR §402.02]. For example, changes to NSO habitat may affect the species later in time by affecting prey base, reducing the risk of habitat loss caused by a stand replacing wildfire or modifying habitat to the extent that allows predators to move in (e.g., significant reductions or removals of canopy cover).

Effects from Northern Spotted Owl Habitat Modification

The proposed treatments with Alternative 2 have limited to no potential to affect the ability of NSOs to feed, breed, shelter or disperse by modifying habitat components required for these activities.

All treatments under Alternative 2 will occur within very minor amounts of suitable and dispersal habitat along existing NFS roads, user created routes and trails, and would be primarily limited to the existing road or trail prism.

Effects to Suitable and Dispersal Habitat

The ranges of treatments/scale for this analysis were defined in the treatment area bounding section above. Effects to suitable and dispersal habitat will include both short- and long-term reductions of live shrubs, small trees, larger hazard trees and snags within the road prism and along trails. While these habitat elements may be used by nesting, roosting or foraging spotted owls, the treatments will not significantly or measurably alter the function of the habitat. Effects will be restricted to narrow, linear extents along existing roads, routes and trails and NSO habitat function will be maintained.

The project is designed to reduce the potential for adverse effects to NSOs and their habitat elements. District biologists will assess potential nest/roost trees as described in RPM WF-6 (page 32), and proposed road realignments (<200 feet long) prior to implementation. If these assessments show that NSOs (or other late successional dependent sensitive species) are using these areas, the LOPs for nesting NSO will be applied and the biologist will work with the transportation planner/recreation staff and project implementation staff to reduce impacts to these features as safely feasible.

Road decommissioning and closures will have beneficial effects by reducing the potential for noise disturbance and for human ignition of fires. Road reconstruction and maintenance actions that improve driving conditions will also increase the response times for any future fire starts, lowering the chance of stand-replacing fires, notably within the Eddy LSR near ST-016 and ST-019. Trail maintenance and re-routing may fall hazard trees and remove down logs and brush from the trail tread and trail prism (estimated at a 6 to 10-foot width), but will also occur in a narrow, linear area and will not modify the function of the surrounding NSO habitat.

Table 24 shows the acres of NSO habitat affected by the various road and trail treatments within the four activity centers.

Table 24. Habitat Acres Affected by Various Road and Trail Treatment Actions in the Four Northern Spotted Owl Activity Centers - Habitat Function is Maintained at all Spatial Scales

Activity Center	Acres Nesting/Roosting habitat (0.5 mi)	Acres Foraging habitat (0.5 mi)	Acres Nesting/ Roosting and Foraging habitat degraded (0.5 mi)	Acres Nesting/ Roosting habitat (1.3 mi)*	Acres Foraging habitat (1.3 mi)*	Acres Nesting/ Roosting and Foraging habitat degraded (1.3 mi)
ST-014	2.2	4	0	2.2	6.3	0
ST-015	0	0	0	0	0	0
ST-016	0.6	2.9	0	0.6	12.4	0
ST-019	2.1	6.7	0	3.85	12.2	0

*Acreage total includes acres within the 0.5-mile core

Road Maintenance

Hazard trees and snags that contribute to potential nest sites, foraging habitat, and prey base habitat may be felled to provide safe road/trail use conditions; improve vistas and enhance turnouts along Parks Creek

Road, and safely implement reconstruction, decommissioning, and maintenance activities on other roads and trails. Trees and snags that are felled will be retained on-site as coarse woody debris (RPM WF-5). An exception to this RPM is along Parks Creek Road where felled hazard trees and snags would be moved outside of the visible road prism to maintain visual quality along the Trinity Heritage Scenic Byway.

Very limited, dispersed (discontinuous) suitable habitat (9.5 acres) will be affected by hazard tree or snag felling from road maintenance activities. RPMs and LOPs will be in place to assure that any snags and trees that may be or are being used by NSO will be maintained until after the nesting season (RPM WF-6).

Road Reconstruction, Realignment and Storm proofing

Some habitat and/or prey base components (small trees and shrubs, hazard trees and snags) may be felled but would not be removed. Short and long-term beneficial effects include decreasing the response time for fire suppression equipment and personnel through road reconstruction, notably along Eddy Creek Road within the Eddy LSR, ST-016 and ST-019, hence better protecting existing habitat. Under Alternative 2, road reconstruction will occur in approximately 20 acres of suitable NSO habitat and 49.5 acres of dispersal habitat. There is no estimate of road realignment within suitable or dispersal habitat, but short sections (<200 feet) may be needed to relocate roads outside of sensitive areas.

Very limited, dispersed, discontinuous suitable habitat (20 acres) will be affected by hazard tree or green tree felling from road reconstruction, realignment and storm proofing activities. There are no reconstruction points proposed within suitable habitat. RPMs and LOPs are in place to assure that any snags or trees that may be used (or are being used) by spotted owls would be maintained until after the nesting season (RPM WF-6).

Road Decommissioning and Closure

Road and route decommissioning and closure work will involve both active and passive decommissioning and closing techniques. Where active decommissioning occurs, similar equipment types as described above for road reconstruction may be used. Decommissioning and closing are predicted to result in both short- and long-term benefits to watershed values as well as reducing the potential for human fire ignitions. Indirect and long-term effects to NSOs are expected to be beneficial by increasing and restoring habitat connectivity. Decommissioning of roads and revegetation will also increase habitat suitability for spotted owl prey species.

Under Alternative 2, road decommissioning will occur in approximately 16 acres of suitable habitat for northern spotted owl and 24 acres of dispersal habitat. Road closures under Alternative 2 would occur in approximately 5.5 acres of dispersal habitat, with no closures in suitable habitat.

Trail Maintenance, Repair, Reconstruction and Realignment and Adding to the System

As noted for direct effects above, trail maintenance, repair, reconstruction, and realignment will generally involve using hand tools and chain saws for short periods of time, usually less than two days per quarter mile of trail, but may require using heavy equipment and blasting to remove large boulders/bedrock that cannot be removed with hand tools or heavy equipment.

The majority of trail work will occur within or in proximity to dispersal habitat. The effects of trail maintenance and reconstruction actions on shrubs, small trees, and hazard trees/snags are not expected to measurably influence NSO use or affect habitat suitability. None of the roads/trails that are being reconstructed as trails, realigned or added to the Forest transportation system are considered new trails and these actions are not expected to change the level of trail use. They are existing roads or trails that are

already in use, and all actions are intended to improve safe use of the trails while reducing current negative resource impacts.

Under Alternative 2, trail maintenance, repair and/or reconstruction will occur in approximately one acre of suitable foraging habitat (the Eddy Creek MeadowTrail), and approximately 3 acres of dispersal habitat (portions of the lower Parks Creek, Caldwell Lakes and West Parks Lake Trails). There is no trail realignment proposed within suitable habitat.

Prey Effects

Disturbance to and cutting of roadside understory plants, small diameter trees (<10 inches diameter at breast height), hazard trees and snags, herb and shrub cover, below-ground fungi, and movement of large coarse woody debris may reduce some prey forage and cover habitat components over both the short-term (majority of project actions) and the long-term (future road and trail maintenance). These effects may be felt during the first season, and up to 3 to 5 years following implementation.

While many species are positively related to the forage and hiding cover that these actions may influence, the effect will be restricted to narrow, linear areas along existing roads, routes and trails and the current densities of prey species in the action area, and where NSOs are more likely to forage, are not likely to appreciably decrease.

While a short-term decrease in prey habitat quality and microsite availability may occur along roads, routes and trails, the scale and intensity of this effect is not considered important as effects will be spatially and temporally separated. Prey species habitat located away from roads, routes and trails will remain available, including adjacent untreated early-, mid- and late-seral forest, shrublands and brushfields within the Eddy and Scott Mountain LSRs and the larger action area.

Although local prey densities and distribution may experience a minor shift as a result of project activities, populations will not be measurably or significantly affected. Based on the rationale above, neither direct nor indirect adverse effects are expected to occur on NSOs from short-term, site specific changes in prey density or availability.

Effects on Suitable and Dispersal Habitat in Owl Nest Cores and Home Ranges

The four NSO cores and home ranges in the Action Area, ST-014, ST-015, ST-016 and ST-019, were assessed for direct and indirect effects and potential changes to habitat resulting from Alternative 2. There are no silviculture or fuels treatments proposed under the project and the road actions will not measurably or significantly affect the function of nesting/roosting, foraging or dispersal habitat at the nest core or home range scale. Suitable and dispersal habitat will not be removed, downgraded or degraded within any of the 0.5-mile cores or 1.3-mile home ranges.

Tables 25-28 show the road and trail actions within each NSO core and home range (HR) in the Action Area by alternative.

Table 25: Road and Trail Actions Within ST-014 (by Miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Add Non-Motorized Trail	0	0	0	0.75	0	0.75
Keep/Maintain Road	0	0	2.10	7.25	0	2.10
Decommission Road	0	0	0.75	5.1	2.85	10.85
Close Road	0	0	0	0.50	0	0.50

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Reconstruct Road	0	0	0	4	0	3.40
Add Existing Road to NFS	0	0	0	0.25	0	0.25

Table 26: Road and Trail Actions Within ST-015 (by Miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Keep/Maintain Road	0	0	1.15	4	1.15	3.25
Decommission Road	0	0	0	2.10	0	2.85
Close Road	0	0	0.25	0.35	0.25	0.35

Table 27: Road and Trail Actions Within ST-016 (by Miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Keep/Maintain Road	0	0	0.25	5.75	0.25	4.90
Decommission Road	0	0	0.10	3.75	0.10	4.60
Reconstruct Road	0	0	2.10	5.35	2.10	5.35

Table 28: Road and Trail Actions Within ST-019 (by Miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Keep/Maintain Road	0	0	0.5	3	0.5	2.5
Decommission Road	0	0	1.35	3.2	1.35	3.7
Reconstruct Road	0	0	1	3.15	1	3.15
Reconstruct - Convert to Motorized Trail	0	0	0	~500 feet	0	~500 feet
Reconstruct - Convert to Non-Motorized Trail	0	0	0	0.5	0	0.5

Critical Habitat

All designated critical habitat is within Unit 8, Subunit 3; East Cascades South (ECS-3). The 112,179-acre ECS-3 subunit consists entirely of NFS lands on the Klamath, Modoc, and Shasta-Trinity National Forests. Critical Habitat is only designated on NFS lands. Table 21 above displays suitable, dispersal and non-habitat designated as critical habitat in the Action Area, and Table 28 below displays the estimated amounts of Primary Constituent Elements (PCEs) 2, 3, and 4 affected by road and trail actions under each alternative.

The potential effects of road and trail actions on critical habitat were based on an evaluation of the magnitude, intensity and duration of effects to PCE 1, and the amount and quality of existing nesting/roosting (PCE 2), foraging (PCE 3) and dispersal (PCE 4) habitat that may be affected. Overall, PCE 2 and PCE 3 will not be removed.

Though individual components may be reduced or variously affected (such as large trees, small trees, prey base habitat, canopy cover, coarse woody debris and snags along roads, routes and trails) these effects would not be at a scale that would significantly reduce the value of critical habitat, or the overall ability of these PCEs to function for their intended purposes (actions affect approximately 4 percent of the total combined PCE 2 and PCE 3 in the Action Area).

Important habitat elements will be retained, and in combination with RPMs, adverse effects to critical habitat over the short and long term would not occur. No old growth trees would be removed and trees with characteristics desirable for wildlife, such as cavities, flat, broken tops, and/or deformed limbs would be retained, or felled and left on site as logs (or out of view of Parks Creek Road) if they are a defined safety hazard. Actions are not expected to significantly or appreciably reduce the function of PCE 4 given the small degree of change, or significantly affect the ability of NSO to disperse across the landscape in the Action Area, affecting approximately three percent of the total PCE 4 in the Action Area.

As described for RPM WF-7c, when falling hazard trees or removing trees >16" diameter at breast height within designated critical habitat, emphasis will be given to maintaining primary constituent elements (canopy closure, snags, and coarse woody debris) while mitigating the hazard. In other words, trees will be felled in a manner that reduces damage to the surrounding stand structure as safely as feasible, and retains them on the landscape as coarse wood. There will be no measureable reductions in canopy cover, large or small trees, large snags and logs, and vertical and horizontal complexity that contribute to nesting/roosting, foraging and dispersal habitat within the four NSO cores/home ranges, LSRs or Action Area.

There are approximately 11 site-specific actions on Parks Creek Road located within designated critical habitat. These actions primarily consist of enhancing safety at existing turnouts and wide spots. The range of tree sizes in these areas that would be affected is < 1-inch to 18 inches diameter at breast height, and species consist primarily of ponderosa pine, Jeffrey pine and incense cedar with a minor Douglas fir component (refer to Appendix 4 of the BA for representative photographs). While tree and shrub removal within critical habitat would occur at these sites, the linear, narrow extent of treatments, the distribution across the larger Action Area and placement outside of high quality habitat and owl use areas will result in this being a non-significant removal of connected or critical habitat.

Table 29: Mileage and Acres of Critical Habitat Affected by Road and Trail Actions

Treatments	Approximate Miles of Treatment Actions within Critical Habitat			Approximate Acres of Critical Habitat Affected*		
	Alternative 1	Alternative 2 / 4	Alternative 3	Alternative 1	Alternative 2 / 4	Alternative 3
Road Maintenance (Keep / Maintain)	0	12	5	0	35	15
Road Reconstruction	0	16	15.40	0	93	90
Decommission Road	0	7.50	16.50	0	33	72
Reconstruct Existing Road, Convert to Motorized Trail	0	0.09	0.09	0	0.10	0.10
Reconstruct Existing Non-Motorized Trail	0	2.60	2.60	0	3.15	3.15
TOTAL APPROXIMATE MILES and ACRES	**0**	**38.20**	**39.60**	**0**	**164.25**	**180.25**

*Based on an average road and trail prism widths described in the BA and EA.

Effects to stand components of PCEs are expected to be minor and insignificant in the short term with both short- and long-term benefits in regards to a reduced risk of losing quality habitat from human disturbance (fire starts, etc.) and protection (improved fire suppression access). Approximately 164-180 acres of combined PCEs 1-4 within the ECS-3 subunit may be affected. Given that the road and trail actions will not significantly nor appreciably affect the ability of NSOs to nest, roost, forage or disperse across the Action Area or any other smaller scale, the project will not result in any measurable change in the ECS-3 subunit's ability to provide the functions for which it was designated.

Cumulative Effects – NEPA and ESA

At this time, using the best available data from the Forest and surrounding private lands, ongoing and reasonably foreseeable future actions on both federal and private lands in the Action Area include, but are not limited to: annual routine road and recreational site maintenance (including hazard tree felling), firewood collection, fire suppression activities, noxious weed monitoring, dispersed recreation and two Timber Harvest Plans (THPs).[41] These actions have enough information from which to reasonably assess the potential for cumulative effects within the established spatial and temporal bounds for the project. Implementation of Motorized Travel Management and special use permit authorizations under previously completed NEPA are also ongoing on NFS lands. There are no state-administrated lands in the Action Area.

On federal lands, road and facilities maintenance does not measurably affect NSO habitat as work is generally conducted in the road prism, though can include noise above ambient levels, felling of hazard trees, removal of small trees/saplings and shrubs alongside and in the roadway. The Shasta-McCloud Management Unit's annual road maintenance projects include RPMs for LOPs within and near known activity centers and suitable habitats.

Under the 2014 fuel wood collection permit, the cutting of dead and down trees, and standing dead conifers ≤15 inches diameter at 4.5 feet from the ground, is allowed and cutting is limited to within 100 feet of roads within the LSRs. The project maintains hazard trees and/or snags that may be felled, contributing to downed woody debris, though this material may be gathered later under fuelwood permits. Fuelwood collection is ongoing and is separate from the proposed action and could reduce the amount of downed woody material near roadsides. Collection of downed wood that is a result of the project activities is not expected to measurably or significantly impact NSO prey, or NSO foraging behaviors however, as areas located away from roads where NSOs are more likely to forage would continue to have scattered downed wood that contributes to prey cover habitat.

As noted in the Forest's Fire Management Plan, the use of MIST (Minimal Impact Suppression Tactics) is anticipated to reduce the potential for significant direct and indirect effects from fire suppression activities. As a general rule, if a fire is larger than five acres, National Forest Resource Advisors assist in guiding suppression activities (e.g., making recommendations for dozer line placement, snag retention, or concentrated suppression techniques near high quality NSO habitat or known Activity Centers in order to protect them from full loss).

Noxious weed monitoring and dispersed recreation uses do not generally result in NSO habitat modification, though dispersed noise may be above ambient levels (e.g., OHV use). Winter recreational use of the road system as well as cross-country over-snow use by snowmobiles, which may occur through April in an average snow year, may also create dispersed noise levels above ambient. These disturbances

[41]Based on a query of the Calfire THP database at http://www.fire.ca.gov/ResourceManagement/THPStatusUpload/THPStatusTable.html on March 13, 2014 and Personal Communication with Bobby Douglas, Biologist for Michigan-California Timber Company, on March 25, 2014.

are typically short-duration and sporadic, and therefore not predicted to measurably impact NSOs during pair-bonding and early season nesting behavior. While there are two vacant grazing allotments within the Action Area/cumulative effects analysis area assessed for NEPA, there is no estimated timeline for reauthorization of their use. The effects of grazing activity are not predicted to measurably impact NSO prey habitat if surface vegetation is not excessively removed.

Private lands in the Action Area are owned and managed by rural residents or Michigan-California Timber Company (Mich-Cal). Activities on the 588 acres owned and managed by Mich-Cal have included commercial thinning, salvage, clear-cutting and other forest stand treatments. Similar to treatments on NFS lands, the effects of these activities are reflected in the existing condition.

As the project is expected to begin in fall 2014, and take up to five years to implement, the temporal bounding for private actions that could contribute to cumulative effects is 10 years. There is currently one ongoing THP, and one planned THP submitted for approval within the Action Area. The ongoing Deadfall THP (02-08-106-TRI), located southwest of the project area, includes units that are partially within the Action Area, not yet reflected in the existing condition for NSO. The THP includes clear-cutting and meadow restoration treatments outside of suitable habitat. The submitted but currently unapproved Dale Creek THP (2-14-016-SIS) is proposed on 297 acres of adjacent private timberland directly southeast of the project area, partially within the Action Area. It includes tractor and cable yarding within suitable habitat in the action area not yet reflected in the existing condition. The ongoing Deadfall THP is located within the outer portions of the ST-019 home range, and the proposed Dale Creek THP is not located within a current/known NSO home range. While future forest management actions on private lands may occur within the 10-year timeframe, reasonable effects cannot be evaluated in the absence of a proposed timber harvest plan.

The California Forest Practice Rules (FPRs) (2014) govern timber harvest on private lands and provide that no THP can be approved if it is likely to result in the take of a federally listed species, unless authorized by a federal Habitat Conservation Plan.[42] Timber harvest plans also require survey efforts, and disturbance limited operating periods, similar to those prescribed for the project, and other measures to maintain suitable habitat levels within/near NSO cores (2014 Forest Practice Rules, various pages). As suitable and dispersal habitat function will not be degraded, downgraded or removed under the Parks Eddy project, the project is not expected to contribute to significant or adverse cumulative effects on the northern spotted owl or its habitat in combination with the proposed and ongoing THPs.

There are no cumulative effects (under the ESA) to critical habitat because there are no activities proposed within critical habitat under Alternative 2 that would modify its function, and critical habitat is not designated on private lands within the Action Area. Under NEPA and on federal lands, cumulative effects to critical habitat are not expected to be significant or adverse. There are no future foreseeable vegetation management actions proposed in the Action Area on federal lands. Fire suppression activities within designaged critical habitat may result in the falling of hazard trees or snags, impacts to trees/shrubs that contribute to PCEs, though minimization measures are employed as safely feasible. Emergency consultations are also completed to address fire suppression activities. There are no other ongoing actions on federal lands that would meaningfully contribute to adverse or significant cumulative effects to critical habitat for the NSO.

While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal and non-federal actions significantly modify or improve habitat for the NSO. When taken into consideration with the past, ongoing, and future foreseeable actions, the activities proposed under the Parks Eddy project are localized and are expected to result in relatively low impact short-term effects. The

[42] Refer to the project BA for more detail and analysis of effects on federally listed species.

project is not anticipated to contribute to any significant cumulative adverse or beneficial effects on the NSO or its habitat.

Alternative 3

Direct and Indirect Effects

The direct and indirect effects of Alternative 3 on NSO are similar to those of Alternative 2. Treatments proposed under Alternatives 2 and 3 within the ST-015, ST-016 and ST-019 cores are the same. Under Alternative 3, there would be zero miles of road kept/maintained in the ST-014 core with approximately 2.85 miles of road decommissioned.

The differences between Alternatives 2 and 3 at the home range scale include a reduction in roads being kept/maintained (20 miles under Alternative 2; and 12.75 miles under Alternative 3); and road reconstruction (9.35 miles under Alternative 2; and 8.75 miles under Alternative 3). These changes result in an additional 7.85 miles of road decommissioning within the four home ranges under Alternative 3 when compared to Alternative 2 (14.15 miles under Alternative 2; and 22 miles under Alternative 3).

Though minor in the ST-014 core, and all four home ranges, the increases in road decommissioning at both spatial scales contribute to increased beneficial effects of reduced disturbance (noise and potential human fire ignitions) and increased habitat connectivity when compared with Alternative 2.

Cumulative Effects

Cumulative effects are the same as discussed under Alternative 2.

Alternative 4

Direct and Indirect Effects

Under Alternative 4, all road actions would be the same as Alternative 2 with the exception that no trailheads (signage and parking enhancement) would be constructed for trails to Eddy Creek Meadow, West Parks Lakes or Caldwell Lakes. In addition, no trailhead improvements would be constructed at the existing Parks Creek Trailhead. None of the activities that would be dropped under Alternative 4 are proposed within suitable NSO habitat. In addition, all user-created vehicle routes for access to dispersed recreation areas longer than one car length from a road would be decommissioned (total of approximately 0.2 miles at various locations). This could possibly result fewer human fire ignitions if fewer people access these sites.

Cumulative Effects

Cumulative effects are the same as discussed under Alternative 2.

Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Threatened or Endangered Wildlife

The purpose and need for action is not specific to threatened and endangered wildlife species. However, the purpose and need includes improving road conditions and watershed health, which have beneficial indirect effects on the NSO and its habitat. All action alternatives are expected to result in long-term beneficial effects due to the predicted reduced disturbance after road decommissioning and road closures, and improvements in the transportation system that will allow for improved response times and more effective fire suppression activities. These two main beneficial effects are offset however, depending on the alternative selected. Alternatives 2 and 4 afford for greater protection of forested areas that provide NSO habitat in the event of a fire due to decommissioning fewer road miles in LSR, while Alternative 3

reduces fragmentation and the potential for human disturbances on a larger percentage of the landscape. Without action, the existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Effects Relative to Key Issues as They Pertain to Threatened or Endangered Wildlife

While there are no key issues regarding specific effects to the NSO or other listed species, the key issue of road and motorized trail construction and maintenance resulting in negative impacts to wildlife and habitat is assessed. As described above, indicators to measure issues developed for the project alternatives in terms of the NSO include:

- Miles of roads closed or decommissioned in NSO home ranges and cores,
- Post-project open road densities (measured in miles/square mile),
- Acres of Riparian Reserves benefitted, as these provide the majority of suitable habitat for NSO,
- Estimated acres of terrestrial habitat benefitted by road decommissioning and closure with subsets of NSO suitable and dispersal habitat benefits,
- Changes in noise levels from motorized vehicle use in NSO habitat.

These indicators are summarized in Table 30 below and overall, there will be a larger benefit to NSO and terrestrial habitat from Alternative 3 when compared with Alternatives 2 and 4 (which have the same effects) through both increases in terrestrial and suitable habitat connectivity and reduced noise disturbance from humans. No suitable or dispersal habitat will be removed, downgraded or degraded with any alternative. Effects to suitable and dispersal habitat under all action alternatives are expected to be both insignificant and beneficial in the short and long term. Critical habitat and its PCEs will be maintained; there will be no significant reduction or removal of PCEs.

Table 30: Indicator Summary by Alternative for Northern Spotted Owl

Issue Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of Roads Closed or Decommissioned in NSO Home Ranges and Cores	0 miles	2.45 miles in Cores 15 miles in Home Ranges (includes cores)	4.55 miles in Cores 22.85 miles in Home Ranges (includes cores)	2.45 miles in Cores 15 miles in Home Ranges (includes cores)
Post-Project Open Road Density	1.31 mi/mi^2	0.97 mi/mi^2	0.74 mi/mi^2	0.97 mi/mi^2
Acres of Riparian Reserve Benefitted, as these provide the majority of suitable habitat for NSO ^	0 acres	928 acres	1,166 acres	928 acres
Estimated Acres of All Terrestrial Habitat Benefitted by Road Decommissioning and Closure	0 acres	102 acres	176 acres	102 acres
NSO Suitable Habitat	*0*	*~16*	*~22*	*~16*
NSO Dispersal Habitat	*0*	*~29*	*~47*	*~29*
Changes in Noise Levels from Motorized Vehicle Use in NSO Habitat	No Change	Moderate Reduction	High Reduction due to increased decommissioning in the ST-014 core and ST-016 home range	Moderate Reduction
NSO Habitat Degraded, Downgraded or Removed	0 acres	No Reduction in Quantity or Quality of Suitable or Dispersal Habitat, though Habitat Elements may be Removed or Reduced in Isolated Locations along Narrow, Linear Extents of Existing Roads, Routes and Trails		

^ The estimated acres of benefit were calculated by totaling the Riparian Reserve acres that contain road and trail actions and adding the downstream Riparian Reserve area within 0.25-mile of the lower extent of the proposed activities.

The action alternatives considered in detail may result in removal or reduction of NSO habitat elements, but will not change the function of any nesting/roosting, foraging or dispersal habitat as described in the BA and summarized above. Most road and trail actions are expected to have neutral effects on habitat function, along with beneficial effects over the long-term. Road decommissioning and closures will reduce disturbance, the potential for human caused fire starts and fragmentation. Road reconstruction will improve driving conditions and reduce the response times for fire suppression equipment and personnel.

Wildlife – Sensitive Species

A Biological Evaluation for Sensitive Wildlife and Aquatic Species (Jordan, et al., 2014) was prepared for the project and is incorporated by reference. Of the 29 Forest Service Region 5 designated wildlife species, there are 15 species where occurrence has been recently documented in the project area and the project area is considered occupied habitat, or occurrence has not been documented, but suitable habitat exists in the project area. These species include the bald eagle, willow flycatcher, northern goshawk, Pacific fisher, American marten, California wolverine, pallid bat, Townsend's big-eared bat, fringed myotis, western bumble bee, southern torrent salamander, foothill yellow-legged frog, Cascades frog, western pond turtle and Shasta hesperian snail.

The remaining 14 wildlife species were excluded from detailed analysis because the project area is either located outside their range, or lacks suitable habitat. These include the yellow rail, northern red-legged frog, Shasta salamander, Shasta side-band snail, Wintu sideband snail, Shasta chaparral snail, Tehama chaparral snail, Big Bar hesperian snail, Nugget pebblesnail, California floater, scalloped juga, black juga, montane peaclam and kneecap lanx.

Indicators, Boundaries, and Analysis Methodologies

Indicators

When considering effects on sensitive species from the proposed action and alternatives, primary factors of change that influence determinations about the scope and scale of direct and indirect effects (beneficial, neutral, adverse) and species viability include those factors that influence individual species breeding, feeding and sheltering behaviors and habitat suitability. These include:

- Proximity and duration of disturbance to nesting, resting, denning, foraging, roosting and/or aquatic habitats from road and trail actions,
- Acres of suitable habitat degraded, downgraded, removed or maintained/improved.

Indicators that measure the issues developed for project alternatives include:

- Miles of roads closed or decommissioned in Riparian Reserves,
- Miles of road drainage improved through reconstruction activities,
- Post-project open road densities (measured in miles/square mile),
- Acres of Riparian Reserves benefitted,
- Estimated acres of terrestrial habitat benefitted by road decommissioning and closure,
- Changes in noise levels from motorized vehicle use in sensitive wildlife habitats.

Boundaries

Temporal Boundaries

Project implementation is anticipated to start in fall 2014 and is estimated to take up to five years for completion. Timeframes for direct and indirect effects are defined by both short- and long-term. Short-term effects result from when project actions occur, usually extending for one season to within one year of implementation. Long-term effects extend for approximately five or more years after activities occur. Direct effects are defined by the period that actions would be occurring in/near individuals or their habitat (short term). Indirect effects occur over both the short and long term. Road and trail maintenance activities associated with the project, as well as regularly scheduled maintenance activities, are expected

to occur beyond the five-year implementation timeline, depending on need, and would remain subject to applicable RPMs.[43]

For cumulative effects, past actions (human actions and natural events) and their effects are reflected in the existing condition and baseline habitat for each species considered.[44] Temporal bounding for future effects includes the period when all of the proposed project activities are expected to be completed and when any effects from ongoing and foreseeable future actions can be reasonably predicted and felt on the landscape in combination with the project's effects. For this analysis, temporal bounding is 10 years given the predicted timeline to complete project activities, short and long-term effects and the various breeding patterns of all sensitive species considered.

Spatial Boundaries

Wildlife use and distribution across an area is primarily influenced by the availability of suitable habitat and connectivity within and between habitat elements. For all action alternatives, direct and indirect effects are evaluated at the activity site scale (where road and trail management, decommissioning and noise-generating activities will occur).

The spatial bounding for cumulative effects can be unique to each wildlife species considered in detail and for purposes of this analysis, two separate boundaries are assessed: A 19,812-acre area that addresses all lands within 0.25-mile of the proposed activities, and a 4,380-acre area that encompasses the Riparian Reserves affected by all project actions, regardless of ownership.

Ongoing and Reasonably Foreseeable Actions for Cumulative Effects

Past fires and vegetation management projects, including timber harvest, fuels treatments, plantation maintenance and salvage, as well as grazing, have resulted in the existing condition that influences suitable foraging habitat and its distribution across the project and cumulative effects analysis areas for some species, including the private lands outside of the project area where project work is also proposed. These actions have likely impacted and influenced wildlife habitat use patterns by reducing habitat for late-seral species, while increasing early-seral habitat. Previous road construction has also increased fragmentation of habitat, combined with the potential for discharges of sediment into streams within the Cumulative Effects Analysis Areas. Refer to Appendix D for a more complete catalogue of activities for all cumulative effects.

Ongoing and reasonably foreseeable future actions on both federal and private lands in the largest cumulative effects analysis area considered for sensitive wildlife species include, but are not limited to the following activities:

- Annual routine road and recreational site maintenance (including hazard tree felling),
- Firewood collection,
- Fire suppression,
- Noxious weed monitoring,
- Dispersed recreation,
- Private lands management and ranching, and
- Two Timber Harvest Plans on lands managed for industrial timber production.

[43] Future maintenance on project-specific roads and trails is anticipated, as well as additional maintenance on project area roads if determined necessary. This work is typically addressed under 36 CFR 220.6(d)(4) and on an annual basis, the Management Unit reviews proposed road and trail maintenance work and prescribes applicable resource protection measures such as LOPs and other BMPs for the proposed work.

[44] This is consistent with the Council of Environmental Quality's 2005 Memorandum to Federal Agency Heads Providing Guidance on the Consideration of Past Actions in Cumulative Effect Analysis.

These activities have enough information from which to reasonably assess the potential for cumulative effects on sensitive species. Special use permit authorizations (under previously completed NEPA) and implementation of Motorized Travel Management are also ongoing on federal lands. There are no current or proposed vegetation management activities on federal lands.

On federal lands, road and facilities maintenance does not measurably affect sensitive species habitat as work is generally conducted in the road prism. However, road and facility maintenance can include noise above ambient levels, felling of hazard trees, removal of small trees/saplings alongside and in the roadway, and culvert and ditch maintenance.

Under the 2014 fuel wood collection permit, the cutting of dead and down trees, and standing dead conifers ≤15 inches diameter at 4.5 feet from the ground, is allowed and cutting is limited to within 100 feet of roads within LSR allocation. The project includes measures to maintain hazard snags and trees that are felled as downed wood, though this material may be gathered later under fuel wood permits.

Per the Forest's Fire Management Plan, (USDA Forest Service, 2014), the use of Minimal Impact Suppression Tactics is anticipated to reduce the potential for significant direct and indirect effects from fire suppression activities.

Noxious weed monitoring and dispersed recreation uses do not generally result in habitat modification, though dispersed noise may be above ambient levels (e.g., OHV use).

While there are two vacant grazing allotments within the cumulative effects analysis area, there is no estimated timeline for reauthorization of their use. Effects of grazing activity are also not predicted to negatively impact species or their prey habitat if surface vegetation is not excessively removed.

Methodology

Data sources include species and habitat surveys, field and literature reviews, Forest Activities Database (FACTS) and GIS data, and personal communications with other Forest Service personnel. Habitat within the project area and respective cumulative effects analysis areas for all species was evaluated based on 2012, 2013 and 2014 field reviews, local and Forest-level research, and 2002 and 2012 stream condition inventories. Existing vegetation data (USDA Forest Service, 2007) and definitions from the Forest Plan Habitat Capability Models (USDA Forest Service, 1995) (pp. G.5, G.6 and G.11) were also used to describe habitat for northern goshawk, Pacific fisher and American marten.

Potential effects to suitable and connective/dispersal habitat elements are based on a comparison between pre- and post-treatment conditions. All treatments under the proposed action and the two action alternatives will occur within very minor amounts of suitable and dispersal habitat along existing NFS roads, routes and trails and would be primarily limited to the existing road or trail prisms. The general average road prism width is 10 to 24 feet from the centerline, thought this varies depending on location within the project area (e.g., some roads have no cut/fill and some have extensive cuts and fills).

In general, for road reconstruction, a total width of 48 feet is utilized for the analysis of activities as work may extend well outside of the road surface. For road maintenance and closure, a total width of 24 feet is utilized. For road decommissioning, a width of 36 feet is utilized. For trail reconstruction and maintenance work, the average trail prism width is estimated at 6 to 10 feet, taking into account hazard trees that may be located off/away from the narrower trail tread.

Bald eagle (Haliaeetus leucocephalus)

Existing Condition

Bald eagles require large trees protected from disturbance for nesting. Suitable nesting habitat is near coastlines, rivers, large lakes, reservoirs and streams that are proximate to an adequate food supply. Late-successional and old growth forests relatively close to large rivers, streams or lakes provide foraging and winter roosting sites. They may also roost in agricultural lands as long as in proximity to large rivers or lakes that remain unfrozen, or provide protection from weather. They are opportunistic feeders with fish comprising much of their diet. They also prey on waterfowl, shorebirds, colonial waterbirds, small mammals, turtles and carrion (often along roads or at landfills).

The small, high-elevation lakes and streams within the project area do not provide enough suitable habitat or prey base for this species to regularly utilize much of the area for nesting, though the lower reaches of the Parks and Eddy Creek drainages may provide occasional roosting structure and foraging opportunities. The closest suitable habitat and known territory is located near Siskiyou Lake, approximately eight miles southeast of the project area. Roosting individuals have been observed in the lower elevation reaches of the project area and within the agricultural lands along Stewart Springs Road and near Interstate 5, in proximity to Lake Shastina (Jordan, C., pers. comm. 2013, 2014). There are two documented sightings of bald eagle within or near the project area in addition to recent observations (USDA Forest Service, CNDDB, 2014).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. The no action alternative would not affect the bald eagle and would not cause a trend towards federal re-listing or a loss of viability as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

While individuals may avoid areas where road and trail actions are occurring over the short term, direct effects are not expected in terms of measureable negative influences on breeding, feeding or sheltering behaviors. An LOP for any nests observed or reported within 0.25-mile of project activities will extend from January 1 to August 15.

Reconstruction, maintenance, decommissioning and storm proofing activities on roads and trails will occur in LSRs and Riparian Reserves, will occur at perennial and intermittent stream crossings and in some instances, short segments of road or trail may be realigned (<200 feet) and may require blasting to remove large rock. These actions may require falling of large trees that bald eagles could use for nesting or roosting if they are a hazard. The impact of falling large trees is not considered a significant or adverse removal of habitat as effects would be restricted to narrow, linear extents along existing roads. Routes and trails and suitable habitat outside of the road and trail prism will remain unaffected. District biologists will assess potential nest/roost trees as described in RPM WF-6 (page 32), and any proposed road realignments (<200 feet long) prior to implementation. If these assessments show that northern goshawk (or other late successional dependent sensitive species such as bald eagles or NSOs) are using these areas,

the LOPs for nesting NSO would be applied and the biologist will work with the transportation planner/recreation staff and project implementation staff to reduce impacts to these features as safely feasible.

Prey populations would not be measurably affected by any action alternative, given the large variety of prey items for bald eagle. Aquatic and riparian protections would be provided through BMPs and RPMs. Habitat quality and dispersal of aquatic and riparian organisms would be improved through the proposed stream crossing upgrades, the reduced sediment delivery that results from storm-proofing activities, culvert removal and other road maintenance actions. Road decommissioning activities will result in beneficial effects by reducing the potential for noise disturbance and fire starts, as well as increasing habitat connectivity and reducing fragmentation. Road reconstruction and maintenance actions that improve driving conditions will also decrease the response times for any future fire starts, lowering the chance of stand-replacing fires that could negatively affect roost or nest habitat elements, notably within the Eddy LSR that surround portions of the Eddy Creek drainage.

Cumulative Effects

Cumulative effects bounding for bald eagle consists of the 19,812-acre area described in Spatial Boundaries, above.

Harassment may include flushing an adult or juvenile from a roost site, flushing adults from an active nest during the breeding period, and/or precluding adult feeding of young. When combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or improves habitat for bald eagles. System road and facility maintenance activities include LOPs and habitat protection measures. All actions on private lands are also governed by the Forest Practice Rules to implement LOPs and maintain habitat elements for bald eagle.

Determination

It is my determination that implementing any of the action alternatives may affect individual bald eagles but would not cause a trend toward federal re-listing or a loss of viability based on the following rationale:

- There are project road and trail actions within LSR areas and Riparian Reserves that contain suitable large roost and potential nest trees for bald eagles.
- An LOP will reduce the potential for direct effects to nesting bald eagles within 0.25-mile of project activities.
- The small quantity of suitable habitat for bald eagle nesting, foraging and prey species in the project area, such as large lakes, reservoirs and rivers suggests a low probability of consistent use by bald eagles.
- Trees that are deemed a hazard to project implementation or the public may be felled, but would be left on site as large down wood, in accordance with RPMs (exception being along Parks Creek Road, where felled trees would be moved out of sight from the traveled way, or lopped/scattered).
- RPMs and BMPs will protect aquatic and riparian systems that contribute to suitable habitat for bald eagle prey.

Willow flycatcher (Empidonax trailii)

Existing Condition

The willow flycatcher is a migratory species that breeds in a variety of usually shrubby, often wet habitats, and prefers moist, shrubby areas, often with standing or running water. Breeding habitat is typically moist meadows with perennial streams, lowland riparian woodlands dominated by willows, primarily in tree form, and cottonwood or smaller spring-fed or boggy areas with willow or alders.

While specific surveys for willow flycatcher have not been conducted for the project, riparian habitat that may contain willow shrubs and trees is scattered throughout the perennial, intermittent and ephemeral stream channels and/or the seasonal wet meadows in the project area. Both the Parks and Eddy Creek drainages at the lower, flatter elevations contain higher densities of suitable types and amounts of riparian vegetation for breeding (dense willow thickets, moist shrubby areas). Observations of this species have occurred in the Shasta River Watershed (California Department of Fish and Wildlife, 2009) and surveys conducted along the McCloud River in wet meadow willow habitat, approximately 25 miles east of the project area, have documented several breeding pairs (USDA Forest Service, Various years).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) will have no effect on willow flycatcher as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The general nesting and rearing period for willow flycatcher extends from May 15 to August 30. To reduce the potential for direct effects, activities that would disturb nesting habitat will not be permitted within 300 feet of nesting habitat. Activities may occur if surveys for active nests are completed with negative results. While individuals may avoid areas where road and trail actions are occurring over the short term, direct effects are not expected in terms of measureable negative influences on breeding, feeding (hawking/gleaning foliage) or sheltering behaviors of willow flycatcher.

Reconstruction, maintenance, decommissioning and storm-proofing activities on roads and trails will occur in Riparian Reserves, at perennial and intermittent stream crossings, and in some instances, short segments of road or trail may be realigned (<200 feet) and may require blasting to remove large rock. These actions may require trampling, lopping or removal of willow plants. While short-term above-ground impacts to willow plants may occur during these activities, they are not considered a significant or adverse removal of habitat as effects would be restricted to narrow, linear extents along existing roads, routes and trails and available habitat beyond the road and trail prism will remain unaffected. Vegetation is expected to grow back quickly after activities are completed, though brush and shrubs within the road/trail prisms would be managed over the long term during road and trail maintenance.

None of the action alternatives are predicted to measurably influence prey populations (deerflies, sawflies, bees, wasps, moths, butterflies), given the large variety of prey items. Aquatic and riparian protections would be provided through BMPs and RPMs. Habitat quality and dispersal of aquatic and

riparian organisms would be improved through the proposed stream crossing upgrades, the reduced sediment delivery that results from storm-proofing activities, culvert removal and other road maintenance actions. Road decommissioning activities will result in beneficial effects by reducing the potential for noise disturbance and for fire starts, as well as increasing connectivity and reducing fragmentation.

Cumulative Effects

Cumulative effects bounding for willow flycatcher consists of the 4,380-acre Riparian Reserve area.

When combined with ongoing and reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or benefits habitat for this species, or results in noise above ambient levels. While NFS road, trail and facility maintenance activities may occur in willow habitat, they include LOPs, BMPs and RPMs to limit disturbance to riparian vegetation. The watercourse and lake protection guidelines in the Forest Practice Rules ensure that private timber operations do not cause significant adverse or site-specific cumulative effects to native riparian-associated species or beneficial functions of riparian zones.

Determination

Implementing any of the action alternatives may affect individual willow flycatchers but would not cause a trend towards federal listing or a loss of viability based on the following rationale:

- Some project road and trail actions are in Riparian Reserves and will cross perennial, intermittent and ephemeral streams where there may be potential nesting habitat for willow flycatcher.
- Due to the lack of suitable breeding habitat at higher elevations, there is a low probability of willow flycatcher occurring in most of the project area and disturbance to individuals would be minimal. An LOP will also reduce the potential for direct effects to nesting birds within 300 feet of habitat disturbing activities.
- Localized noise disturbance during project activities near stream channels and riparian habitat outside of the nesting season may result in avoidance by individual willow flycatchers utilizing the area, but the potential impact is so small as to be discountable (short duration and low magnitude).
- RPMs and BMPs will protect aquatic and riparian systems that contribute to suitable habitat for willow flycatcher and their prey.
- Though some riparian shrubs/forbs may be removed and/or trampled by equipment, root systems are not expected to be damaged during road reconstruction or stream crossing repair/upgrades and this vegetation is expected to grow back quickly.
- Road and trail maintenance activities in Riparian Reserves will manage shrub and brush habitats over the long term, though riparian habitats outside the road/trail prisms will remain unaffected.
- Hydrology that supports willow and other riparian vegetation species would be positively affected by project treatments.

Northern goshawk (Accipiter gentilis)

Existing Condition

Northern goshawks can be found in mid and high elevation mature coniferous forests, usually with little understory vegetation and flat or moderately sloping terrain. Moderate and high quality habitat contains abundant large snags and large logs for prey habitat and plucking posts. Goshawks use a variety of forest types for nesting and foraging.

The lower reaches of the Parks and Eddy Creek drainages provide areas of contiguous mature forest habitat preferred by northern goshawks for nesting. Conversely, due to their generalist foraging behavior and habitat use, larger portions of the project area are considered suitable foraging habitat. The Forest Plan habitat capability model (page G-6) for preferred and required goshawk habitat conditions is summarized below and most habitat within the project area would fall under the low to moderate capability category.

Table 31: Forest Plan Northern Goshawk Habitat Capability Model

Goshawk Habitat*	High Capability (preferred)	Moderate Capability (required)
Vegetation	Douglas-fir, ponderosa or Jeffrey pine, red fir, mixed conifer	Riparian, aspen, lodgepole pine, black oak
Forest Types	all 4N and 4G [Tree size 4: 25-40 inch dbh; G: >70% crown cover N: 40 - 69% crown cover]	all 3N and 3G [Tree size 3: 13-24 inch dbh; G: >70% crown cover N: 40 - 69% crown cover]
*Does not account for percent slope (High: 0-25%; Moderate: 25-35%)		
Distance to Water (High: <1/4 mile; Moderate: ¼ to 1 mile)		

Based on this information, there is approximately 2,900 acres of high quality habitat and 2,800 acres of moderate quality habitat in the project area (USDA Forest Service, 2007), though these stands are scattered, with the most contiguous mixed conifer habitat being within the Eddy Creek and Parks Creek drainages. Given the lack of contiguous high-quality suitable habitat for northern goshawk nesting/foraging, the probability that goshawks consistently utilize the majority of the project area is very low. Incidental sightings have been recorded, but there are no known historic or current territories within the project area.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

Under Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on northern goshawk as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects to northern goshawks. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

While individual goshawks may avoid areas where road and trail actions are occurring over the short term, direct effects are not expected in terms of measureable negative influences on their breeding, feeding or sheltering behaviors. An LOP for nesting habitat and nest sites within 0.25-mile of project activities will extend from February 1 to August 15. The LOP may be lifted if year-of-action surveys determine there are no nesting northern goshawks within 0.25-mile of the proposed work. No goshawks were detected during project work or survyes completed in 2014.

Reconstruction, maintenance, decommissioning and storm proofing activities on roads and trails will occur in LSRs, Riparian Reserves and matrix lands that provide suitable nesting and foraging habitat for northern goshawks. In some instances, short segments of road or trail may be realigned (<200 feet) and

may require blasting to remove large rock. These actions may require falling of large trees (if determined to be a hazard) that goshawks may use for nesting, thermoregulation sites or perching/foraging sites.

Any felled trees or snags, especially those larger than 20 inches diameter, would be retained as coarse wood as long as not a safety hazard. Felled trees/snags would be left in a position where they would not be a potential hazard to roads, trails, turnouts, or recreation use areas from rolling, or affect visual quality objectives along Parks Creek Road. To the extent feasible, felling of trees >16 inch diameter at breast height with cavities and decadence that northern goshawks may utilize for nesting or thermoregulation sites would be minimized and these trees would be retained. District biologists will assess potential nest trees as described in the RPMs as well as any proposed road realignments (<200 feet long) prior to implementation.

Hazard trees, snags and the minor amounts of brush and vegetation adjacent the roads, routes, trails and or/drainage features that may need to be felled or trimmed contribute to suitable habitat for northern goshawks but these actions are not considered a removal, downgrade or degrade of habitat function. This impact is not considered a significant or adverse modification of habitat function as effects would be restricted to narrow, linear extents along existing roads, routes and trails. Canopy closure in contiguous stands would not be measurably affected and suitable habitat outside of the road and trail prism would remain unaffected. The quality and functionality of goshawk habitat would not be changed over the short or long term.

Prey populations for northern goshawks would not be measurably affected by any action alternative, given the wide variety of prey species. Road decommissioning activities will result in beneficial effects by reducing the potential for noise disturbance and fire starts, as well as increasing connectivity and reducing fragmentation. Road reconstruction and maintenance actions that improve driving conditions will also decrease the response times for personnel and equipment to address any future fire starts, lowering the chance of stand-replacing fires that could negatively affect northern goshawk nesting and foraging habitat. This will protect existing and any future suitable habitat for northern goshawk, notably within the Eddy LSR that surrounds portions of the Eddy Creek drainage.

Cumulative Effects

Cumulative effects bounding for the northern goshawk consists of the 19,812-acre cumulative effects analysis area described above. This bounding is appropriate as it accounts for the area where all project activities will occur and 0.25-mile is considered the distance at which noise above ambient levels may harass northern goshawks.

Harassment may include flushing an adult or juvenile from the nest during the breeding and fledging period, and/or precluding adult feeding of young. When combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or improves habitat for the northern goshawk. System road, trail and facility maintenance activities include LOPs and habitat protection measures. All actions on private lands are also governed by the Forest Practice Rules to implement LOPs and maintain habitat elements for goshawks, a sensitive species under the Forest Practice Rules.

Determination

Implementing any of the action alternatives may affect individual northern goshawks but would not cause a trend towards federal listing or a loss of viability based on the following rationale:

- There are project road and trail actions within LSRs, Riparian Reserves and matrix lands that contain suitable nesting and foraging habitat for northern goshawk.
- An LOP within 0.25-mile of any active nests and/or nesting habitat would be implemented to reduce the potential for direct effects and noise disturbance above ambient levels on breeding pairs.
- Trees or snags that are deemed a hazard to project implementation or the public may be felled, but would be left on site as coarse wood, in accordance with RPMs. These impacts would be limited to the existing road, route and trail prisms and would be narrow and linear, retaining adjacent suitable nesting and foraging habitat in an unaffected condition.
- Proposed road closures and decommissioning will reduce the potential for noise and other human disturbance impacts within and near suitable goshawk habitat and should increase prey forage and cover habitat over the long term.

Based on local experience, data collected on goshawk breeding and reproduction on the Forest and Shasta McCloud Management Unit, and the known breeding biology of goshawk, individuals within and near the project area are expected to maintain a pattern of breeding and survival similar to past activities. The actions proposed in the Parks Eddy project will not affect:

- Northern goshawk distribution across the western States,
- The current patterns of habitat use and dependency on mixtures of forest types,
- The current demographic patterns of goshawk reproduction and survival,
- The existing population viability of this species.

Pacific fisher (Martes pennanti pacifica)

Existing Condition

Pacific fishers use large snags, live trees, and logs for birthing, denning and resting; and are associated with dense-canopied, late-successional and old growth mixed conifer stands most often between 2,000 and 5,000 feet elevation. They are also closely tied to drainage bottoms and riparian areas, usually selecting resting sites within 500 feet of, and rarely more than 1,100 feet from water. Riparian areas provide important rest site elements, such as broken tops, large snags and large coarse woody debris. There is a strong association with hardwoods, particularly black oaks with large-enough cavities that allow for entry of fisher, but preclude predators. High canopy closure is an important component of fisher habitat relationships, especially at the rest site and den site level.

Pacific fishers are generalist predators with a diverse diet of mammalian and avian prey, ungulate carrion, vegetation, insects and fungi.

The project area currently provides some of the structural habitat elements for fisher at the lower to moderate quality scale. While forest stands are conifer-dominated, they contain low to suitable denning and resting habitat, lacking large oaks as stand components throughout most of the project area. The project area contains 3,963 acres of Riparian Reserves; several small lakes, ponds and springs; and wet meadows. Based on field review and the 2007 existing vegetation layer (USDA Forest Service, 2007), there is about 6,460 acres of suitable habitat for fisher in the project area.

Denning and resting structure, in combination with riparian areas and contiguous forest habitat, does not exist in large patches throughout the project area due to the dry conditions, steep topography, and serpentine soils. Areas within the Parks and Eddy Creek Riparian Reserves are likely to constitute the majority of fisher denning and resting habitat given the structural habitat that corresponds with the forested and riparian stands adjacent to these streams.

There are several historical sightings of Pacific fisher within the project area (USDA Forest Service, CNDDB, 2014). Management Unit-wide carnivore surveys were also reinitiated in early 2014, including areas within and near the project area. To date, there has been one fisher detection during the survey efforts. Winter 2010 carnivore surveys conducted in the Upper Sacramento watershed west of Mt. Shasta City (North State Resources, Inc., 2010) resulted in numerous fisher detections. This survey area is approximately 10 miles south of the project area.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on Pacific fisher as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

Fishers are most likely to utilize the Riparian Reserves associated with Parks and Eddy Creeks for denning (as well as resting and dispersal corridors) and direct effects are not anticipated in terms of measureable negative influences on breeding, feeding and sheltering behaviors. Safe vehicle and heavy equipment access into the majority of the project area generally occurs later or outside of the critical kit birthing and rearing season for fisher; access is afforded in mid to late May, and mid-June in high snow years. The prescribed LOPs for NSO[45] that overlap with the quality fisher denning and resting habitat would also reduce the potential for direct effects.

While an increase in noise and human activity will occur over the short term during project implementation, the potential for vehicle caused collisions is expected to remain low due to the overall road condition in the project area that prohibits high vehicle speeds. The high mobility of fishers also reduces the probability that individuals may be injured or killed during implementation. Disturbance to and/or displacement from suitable habitat are the most likely direct effects. Project activities are not expected to disturb more than one or two individuals, due to the location of most activities outside of high quality habitat and the linear, narrows areas of activity along existing roads, routes and trails.

Reconstruction, maintenance, decommissioning and storm-proofing activities on roads and trails will occur in LSRs and Riparian Reserve areas that provide fisher denning and resting habitat, and matrix lands that provide foraging and dispersal habitat. In some instances, short segments of road or trail may be realigned (<200 feet) and may require blasting to remove large rock. These actions may require falling of large trees (if determined to be a hazard) that fishers may use for natal or maternal den sites or resting.

Any felled trees or snags, especially those larger than 20 inches diameter, would be retained as coarse wood as long as not a safety hazard. Felled trees/snags would be left in a position where they will not be a potential hazard to roads, trails, turnouts, or recreation use areas from rolling, or affect visual quality objectives along Parks Creek Road. To the extent feasible, felling of trees >16 inch diameter at breast height with cavities and decadence that may be utilized for denning or resting would be minimized and

[45] Refer to the Threatened and Endangered wildlife species section, and the BA Appendix 3 for additional detail.

these trees would be retained. District biologists will assess potential den/rest trees as described in the RPMs as well as any proposed road realignments (<200 feet long) prior to implementation.

Hazard trees, snags and the minor amounts of brush and vegetation adjacent the roads, routes, trails and or/drainage features that may need to be felled or trimmed do contribute to suitable habitat for fisher, but these actions are not considered a removal, downgrade or degrade of habitat function. This impact is not considered a significant or adverse modification of habitat quality or function as effects would be restricted to narrow, linear extents along existing roads, routes and trails. Canopy closure in contiguous stands would not be measurably affected. Suitable habitat outside of the road and trail prism will remain unaffected, and the quality and functionality of suitable fisher habitat will not be changed over the short- or long-term.

None of the action alternatives are predicted to measurably influence prey populations, given the large diversity of fisher prey. Aquatic and riparian protections would be provided through BMPs and RPMs. Habitat quality and dispersal of riparian-reliant organisms would also be improved through the proposed stream crossing upgrades, the reduced sediment delivery that results from storm proofing activities, culvert removal and other road maintenance actions. Road decommissioning activities will result in beneficial effects by reducing the potential for noise disturbance and fire starts, as well as increasing connectivity and reducing fragmentation. Road reconstruction and maintenance actions that improve driving conditions will also increase the response times for any future fire starts, lowering the chance of stand-replacing fires that could negatively affect fisher habitat, notably within the Eddy LSR that surrounds portions of the Eddy Creek drainage.

Cumulative Effects

Cumulative effects bounding for the Pacific fisher consists of the 19,812-acre cumulative effects analysis area. This bounding is appropriate as it accounts for the area where all project activities will occur and a 0.25-mile buffer is well beyond the distance at which noise above ambient levels may influence fisher behavior.

Effects may include diversion by an adult or juvenile away from a foraging area or rest site, flushing away from a den site during the breeding/rearing period and/or negatively influencing adult foraging and feeding of kits. When combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or improves habitat for the Pacific fisher. NFS road, trail and facility maintenance activities do not significantly or measurably affect suitable habitat, though may displace individuals for a short term due to noise disturbance. Actions on private lands may remove, downgrade or degrade habitat for fisher, though all actions on private lands are also governed by the Forest Practice Rules to implement LOPs and maintain habitat elements for NSOs and northern goshawks, which also typically correspond to reproductive habitat for Pacific fisher.

Determination

Implementing any of the action alternatives may affect individual Pacific fishers but would not cause a trend towards federal listing (by increasing the current priority listing) or loss of viability based on the following rationale:

- There are project road and trail actions within LSRs, Riparian Reserves and matrix lands that contain suitable denning, resting, foraging and dispersal habitat for Pacific fisher.

- The LOP within 0.25-mile of nesting habitat and active nests for NSO, along with the inherent climatic and limited access conditions in winter/late spring, will reduce the potential for direct effects on breeding fisher and kit rearing/feeding behaviors.
- Localized noise disturbance during implementation may cause any fisher using or near these areas to avoid them for short periods of time (2 to 8 hours in any one location), but the potential impact is so small as to be discountable (short duration and low magnitude).
- Trees or snags that are deemed a hazard to project implementation or the public may be felled, but would be left on site as coarse woody debris, in accordance with RPMs. These impacts would be limited to the existing road, route and trail prisms and would be narrow and linear, retaining adjacent suitable habitat in an unaffected condition.
- RPMs and BMPs will protect and improve aquatic and riparian systems that contribute to suitable habitats for fisher, including prey.
- Proposed road closures and decommissioning will reduce the potential for noise and other human disturbance impacts within and near suitable fisher habitat and should increase prey forage and cover habitat over the long term.
- The LSRs, Riparian Reserves, and other portions of the project area will continue to provide suitable resting, denning and foraging habitat, travel corridors and connectivity.
- The probability of adverse effects to existing and developing fisher habitat from uncharacteristic fire would be reduced due to improvement of the existing road system and associated suppression response times.

California wolverine (Gulo gulo luteus)

Existing Condition

Wolverines predominately use coniferous forest in alpine habitats, but their significant use of non-forest alpine habitat distinguishes them from the fisher and marten. Deep snow is required for successful reproduction as females dig elaborate dens in the snow. South of the Canadian border, wolverines are restricted to high elevation mountain ranges near the tree line where conditions are cold year-round and snow cover persists well into the month of May, providing thermal and hiding cover for natal dens and kits. Wolverines that occur in forested areas use dense forest cover for travel and resting, especially in winter. They select areas free from significant human disturbance. Home ranges are from 39 to 348 square miles.

Wolverines are opportunistic feeders that primarily scavenge carrion, but also prey on small animals and eat fruit and insects. Large mammal carrion, notably ungulates such as elk and deer in California are important to their survival.

The project area contains high elevation, non-forested alpine habitats along with coniferous forests. Project road and trail actions are located within and near high elevation montane, red fir and lodgepole stands and wet meadow areas with suitable habitat for wolverine.

Unconfirmed sightings of wolverine have occurred on the Forest, but there are no documented sightings in the project area to date. Carnivore monitoring on the Shasta-McCloud Management Unit was reinitiated in 2014, including portions within and near the project area. Surveys completed to the south and east of the project area during 2002/2003 and 2010 did not result in any detections of wolverine. Both the Mount Shasta (to the east) and Trinity Alps (to the west) Wilderness areas may provide the larger secluded areas this species requires as it is strongly associated with lower levels of human activities and road densities. The project area may provide a dispersal corridor for this species.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on California wolverine as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct, Indirect and Cumulative Effects

Given the low amount of suitable alpine forest habitat, discontinuous forest stands and human usage of the project area and the fact that there has only been one verified occurrence in California over the last 80 years, the probability that wolverine occurs within the project area is low. Wolverines may use portions of the project area as a dispersal corridor, but are unlikely to den or forage near roads or trails proposed for treatment. The restricted access at high elevation areas during wolverine breeding periods also reduces if not eliminates the potential for direct effects. Suitable and dispersal habitat and prey base would not be affected. Based on this rationale, no meaningful direct or indirect effects on wolverine or their breeding, feeding or sheltering behaviors are anticipated and there are no cumulative effects.

Determination

Implementing any of the action alternatives may affect individual California wolverines but would not cause a trend towards federal listing (by increasing the current priority listing) or loss of viability based on the following rationale:

- Wolverine's high use of non-forested alpine habitats along with coniferous forests.
- There are project road and trail actions within and near high elevation montane, red fir, lodgepole and wet meadow areas that may be utilized by wolverine.
- The inherent climatic and limited access conditions in winter/late spring will eliminate the potential for direct effects on any breeding wolverine and feeding behaviors.
- Localized noise disturbance during implementation may cause any wolverine using or near these areas to avoid them for short periods of time (2 to 8 hours in any one location), but the potential impact is so small as to be discountable (short duration and low magnitude).
- The fact that there has only been one verified occurrence in California over the last 80 years.
- Riparian Reserves, LSRs and surrounding lands will continue to provide travel corridors, connectivity and prey base.
- Project actions would not meaningfully influence local or regional climatic conditions (carbon release).

American marten (Martes americana)

Existing Condition

Marten are closely associated with late-successional coniferous forest characterized by closed canopies, large trees, and abundant, complex physical structure at or near the ground. They tend to use high elevation (>4,500 feet), multi-storied mature and old growth conifer (white fir/red fir) forests with moderate to dense canopy closure. Habitat consisting of a dense overstory exceeding 70 percent with

minimum tree size of 24 inches diameter at breast height and sufficient ground structure including slash, rotten logs and stumps that provide cover and den sites is preferred.

They generally occupy stands located within 0.25-mile of water with forest openings less than one acre in size. While small open areas and plantations are used for foraging, openings are of optimum value when they occupy a small percent of the landscape adjacent to mature forest habitat. Marten are most abundant in forested areas adjacent meadows or riparian corridors. Late-successional habitat generally provides required rest and den sites, as well as higher numbers and production of preferred prey species. They forage on small mammals, birds, carrion, bird eggs, insects and fruits.

Private land surveys completed from 1990 through 1995 in the Sacramento River Canyon area (Criss, 1990) documented marten at higher elevations (≥4,000 feet). During winter 2010, carnivore surveys were also conducted in the vicinity of the Upper Sacramento watershed west of the City of Mt. Shasta (North State Resources, Inc., 2010). This survey area is approximately 10 miles south of the project area and contains higher levels of late-seral red fir, mixed conifer, rivers, perennial streams and riparian corridors. Sixteen baited camera stations placed at least one mile apart across a 16-square mile area were run over a 42-day period with no marten detected. To date no marten have been detected within or near the project area during this monitoring, though several marten track locations have been recorded. A review of Forest and CNDDB records shows several recorded observations in the project area (USDA Forest Service, CNDDB, 2014).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on American marten as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

Marten are most likely to utilize the high elevation meadows and lodgepole, red fir and white fir stands, as well as Riparian Reserves associated with Parks and Eddy Creeks. Direct effects are not anticipated in terms of measureable negative influences on breeding, feeding and sheltering behaviors. Safe vehicle and heavy equipment access into the majority of the higher elevation areas generally occurs outside of the critical kit birthing and rearing season for marten (mid-June in high snow years). The prescribed LOPs for NSO that overlap with the lower quality marten habitat within the lower elevation Riparian Reserves would also reduce the potential for direct effects during critical breeding and rearing periods.

While an increase in noise and human activity will occur over the short term during implementation, the potential for vehicle caused collisions is expected to remain low due to the overall road condition in the project area that prohibits high vehicle speeds. The high mobility of marten also reduces the probability that individuals may be injured or killed during implementation. Disturbance to and/or displacement from suitable habitat are the most likely direct effects. If marten are within the project area, project activities are not expected to disturb more than one or two individuals, due to their average large home range size and linear, narrow areas of activity along existing roads, routes and trails.

Reconstruction, maintenance, decommissioning and storm-proofing on roads and trails may require falling of large trees (if determined to be a hazard). In some instances, short segments of road or trail may be realigned (<200 feet) and may require blasting to remove large rock. Any felled trees or snags, especially those larger than 20 inches diameter, would be retained as coarse woody debris as long as not a safety hazard. Felled trees/snags would be left in a position where they would not be a potential hazard to roads, trails, turnouts, or recreation use areas from rolling, or affect visual quality objectives along Parks Creek Road. To the extent feasible, felling of trees >16 inch diameter at breast height with cavities and decadence that may be utilized as den or rest sites would be minimized and these trees would be retained. District biologists will assess potential den/rest trees as described in the RPMs as well as any proposed road realignments (<200 feet long) prior to implementation.

In addition to hazard trees and snags, minor amounts of brush and vegetation adjacent the roads, routes, trails and or/drainage features that contribute to suitable habitat for marten may need to be felled or trimmed but these actions are not considered a removal, downgrade or degrade of habitat function. This impact is not considered a significant or adverse modification of habitat quality or function as effects would be restricted to narrow, linear extents along existing roads, routes and trails. Canopy closure in contiguous stands and suitable habitat outside of the road and trail prism will remain unaffected. The quality and functionality of suitable marten habitat will not be changed over the short- or long-term.

None of the action alternatives are predicted to measurably influence prey populations, given the large diversity of marten prey.

Project actions are expected to have both short- and long-term beneficial effects from preventing further damage to meadows through reduction of motorized traffic through these areas. Road decommissioning within meadows and throughout the project area would result in beneficial effects by reducing or eliminating traffic, and reducing the potential for compaction, noise disturbance, vehicle-related mortality and fire starts. Decommissioning would also increase connectivity and reduce fragmentation.

Cumulative Effects

Cumulative effects bounding for the American marten consists of the 19,812-acre cumulative effects analysis area. This bounding is appropriate as it accounts for the area where all project activities will occur and a 0.25-mile buffer is well beyond the distance at which noise above ambient levels may influence marten behavior. These effects may include diversion by an adult or juvenile away from a foraging area or rest site, flushing away from a den site during the breeding/rearing period and/or negatively influencing adult foraging and feeding of kits. When combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term.

While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or improves habitat for the American marten. Forest transportation system road, trail and facility maintenance activities do not significantly or measurably affect suitable habitat, though may displace individuals due to noise disturbance. Actions on private lands may remove, downgrade or degrade habitat for marten, though similar access timelines greatly reduce the potential for adverse effects on reproductive behavior and success. The proposed road and trail actions are not expected to significantly reduce species' numbers or impact marten population demographics or behavior in the cumulative effects analysis area.

Determination

It is my determination that implementing any of the action alternatives may affect individual American martens but would not cause a trend towards federal listing or loss of viability based on the following rationale:

- There are project road and trail actions within LSRs, Riparian Reserves and matrix lands that contain suitable denning, resting, foraging and dispersal habitat for American marten; notably the higher elevation fir stands and meadow areas.
- Localized noise disturbance may cause any marten using or near these areas to avoid them for short periods of time during project implementation (2 to 8 hours in any one location), but the potential impact is so small as to be discountable (short duration and low magnitude) and marten are highly mobile.
- The inherent climatic and limited access conditions in winter/late spring will reduce the potential for direct effects on breeding marten and kit rearing/feeding behaviors at the higher elevations.
- The LOP within 0.25-mile of nesting habitat and active nests for NSO will reduce the potential for direct effects on breeding marten and kit rearing/feeding behaviors in suitable denning habitats at lower elevations.
- Trees or snags that are deemed a hazard to project implementation or the public may be felled, but would be left on site as coarse wood, in accordance with RPMs. These impacts would be limited to the existing road, route and trail prisms and would be narrow and linear, retaining adjacent suitable den, resting, foraging and dispersal habitat in an unaffected condition.
- The project will not change the function of any suitable habitat for marten or their prey, though elements may be removed or reduced.
- The LSRs, Riparian Reserves, and other portions of the project area will continue to provide suitable resting, denning and foraging habitat, travel corridors and connectivity.
- Proposed road decommissioning near meadows and other portions of the project area would reduce the potential for noise, fire starts and other human disturbances within suitable marten habitat.

Pallid bat (Antrozous pallidus)

Existing Condition

Pallid bat is a locally common yearlong resident of California. Though it is mostly abundant in deserts, it is also found in coniferous forests and shrublands, their primary foraging habitat. Day roosts vary but are commonly found in rock crevices and tree hollows and have been documented in large conifer snags and bole cavities in oaks. Roosts must protect bats from high temperatures and it is very sensitive to disturbance of its roosting sites as these are essential for metabolic economy, juvenile growth and are used as night roosts to hunt from and consume prey. Night roosts may be located in more open sites.

Pallid bats prefer rocky outcrops, cliffs and crevices with access to open habitats for foraging and forage one to three miles from day roosts. They feed almost entirely on the ground, using echolocation less than other species, commonly preying on crickets, grasshoppers, beetles and scorpions. They are colonial and tend to hibernate in deep rock crevices and caves, rather than migrating. Maternity colonies form in early April.

The widespread distribution of forest stands intermixed with shrub habitats, presence of large trees and snags, the wide elevation range, riparian corridors and rocky talus slopes within the project area provide suitable roosting and foraging habitat for pallid bat. As such, a significant portion of the project area (20,726 acres) is considered suitable habitat.

There are no known maternity roosts or hibernacula for pallid bats in the project area and there have been no recorded observations of pallid bats within or near the project area (USDA Forest Service, CNDDB, 2014). While there are no known caves, there are other structures and elements these bats may use for roosting. Pallid bats may use all of the project area for roosting; selecting rocky outcrops, talus slopes, basal hollows in large trees, trees with loose bark and/or snags, culverts, buildings and/or old mine areas.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on pallid bats, as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

All proposed road and trail actions would produce noise. Roosting pallid bats are sensitive to noise disturbance and could be disturbed during daytime activities; this disturbance is expected to be low in magnitude, of short-term duration and temporally and spatially distributed across the project area (actions will not all occur at the same time).

All proposed road and trail actions may including falling individual large trees and snags where they are a hazard to roadways or the proposed work (e.g., culvert access to clean or remove/replace, ditch filling and outsloping of roads) or in areas where short segments (<200 feet) of road or trail require realignment. These actions may displace or harm roosting bats. As snags and large trees are not primary maternity roost or hibernacula sites for pallid bats, the probability that many, if any, individuals would be killed is low and would not affect breeding populations. Roosts may also be disrupted during culvert removals and replacements.

Bats may change roost sites in response to disturbance and any change in habitat that modifies microclimate in and near roosts (e.g., airflow and/or thermal regime) can substantially impact the suitability of the both the foraging habitat outside the roost and the microclimate within the roost. Modifications can also alter solar and wind exposure, thereby making an otherwise suitable roost unfit for bat occupancy because it is too hot or cold to allow bats to effectively thermoregulate. Given the narrow, linear area extents within or immediately adjacent to the road and trail prism, the probability of mortality is low. Snags and large trees, talus slopes and other roost sites are abundant in the project area and would remain available.

Bats are nocturnal foragers and none of the action alternatives are predicted to substantially affect prey species abundance or distribution. As canopy cover in forested stands (that provide provides habitat for Townsend's big-eared bat and fringed myotis) and shrub cover in more open habitats (habitat for pallid bat) would be maintained at current levels under all alternatives, no meaningful effects to pallid bat prey species are expected. Foraging habitat abundance and quality are not expected to be changed by proposed activities, though decommissioning of roads will increase connected habitats within shrub habitats (contributing to foraging habitat) and forested stands (contributing to roosting habitat.

Aquatic and riparian protections would be provided through BMPs and RPMs. Habitat quality and dispersal of riparian-reliant organisms would also be improved through the proposed stream crossing upgrades, the reduced sediment delivery that results from storm-proofing activities, culvert removal and other road maintenance actions. Surface hydrology, flow regime and connectivity within riparian habitats would be improved by treatments on perennial, intermittent and ephemeral stream channels. While likely immeasurable, this would result in beneficial microclimates for roosting bats. Road decommissioning activities will also result in beneficial effects by reducing the potential for noise disturbance and fire starts.

Cumulative Effects

Cumulative effects bounding for pallid bats consists of the 19,812-acre cumulative effects analysis area. This bounding is appropriate as it accounts for the area where all project activities will occur and potentially affect the most critical features of bat habitat, their day/night roosts and hibernacula. A 0.25-mile also adequately addresses the distance at which noise above ambient levels may influence roosting bats.

When combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. As all ongoing and future foreseeable actions are generally completed during daylight hours, the majority of any disturbances in the cumulative effects analysis area would be to roosting pallid bats.

Ongoing actions such as fuelwood collection, dispersed recreation and Forest transportation system road maintenance activities are considered part of the ambient noise within the project area. Predicted negative direct and indirect effects from implementing any of the action alternatives would be limited to the reduction of trees and snags that may be used as roost sites and the impact on individual bats is expected to be short term. Snags and trees would only be felled where they pose a safety hazard to the safe use of roads, trails or project implementation. Felling of hazard trees, snags and/or shrubs at campgrounds and administrative sites, along roadways during road maintenance, and during fire suppression activities and fuel woodcutting may also impact individual bats and their roost sites.

While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or improves foraging or roost habitat for this bat species. Land management on private lands may remove roosting or modify foraging habitat. These effects, combined with those of the project, are not expected to adversely or cumulatively impact the pallid bat's ability to roost (or forage and reproduce) in the cumulative effects analysis area over the short or long term.

Determination

Implementing any of the action alternatives may affect individual pallid bats, but would not cause a trend towards federal listing or a loss of viability for the species based on the following rationale:

- Roosting pallid bats are sensitive to noise disturbance and could be disturbed during daytime activities.
- This disturbance is expected to be low in magnitude and of short-term duration due to the current ambient noise levels and the linear, narrow extent of potential disturbance along existing roads, routes and trails. It will also be temporally and spatially distributed across the project area (not all actions will occur at the same time).
- All action alternatives may fall individual large trees and snags that provide roosting habitat, and culvert replacements may displace or harm roosting bats. As snags and large trees are not primary maternity roost or hibernacula sites, breeding behaviors of bats would not be measurably affected.

- Adjacent foraging, prey species and roosting habitat would remain unaffected. Shrublands, large trees, snags and talus slopes/piles are abundant in the project area and would remain available for foraging and roosting bats. Buildings and mine areas will not be changed by project actions.

Townsend's big-eared bat (Corynorhinus townsendii)

Existing Condition

Townsend's big-eared bat is found throughout California from low desert to mid elevation montane habitats and is most abundant in mesic habitats. It has been documented in the Sacramento River watershed. Roosts are cavernous sites associated with caves, mines, buildings, and basal hollows in large diameter trees. It also roosts at bridges and in some instances, bird boxes. This species is extremely sensitive to disturbance at roost sites and may abandon sites following a single disturbance.

Day roosts for Townsend's big-eared bat must provide protection from high temperatures. They are very sensitive to disturbance at roosts and may abandon sites following a single disturbance. A relatively sedentary species, Townsend's big-eared bats make short movements to hibernation sites and colonies are usually at least 10 to 12 miles apart. They forage along edge habitats near streams and adjacent to and within a variety of wooded habitats. Moths comprise over 90 percent of their diet.

Forested stands associated with mature stand characteristics and/or Riparian Reserves may be used by Townsend's big-eared bat for foraging. Foraging and roosting habitat for this species is predominantly located within the Parks, Eddy, and South Fork Willow Creek drainages, as it prefers more mesic conditions. Large trees and snags and riparian corridors also provide suitable roosting and foraging habitats. As such, a significant portion of the project area (20,726 acres) is considered suitable for Townsend's big-eared bat.

There are no known maternity roosts or hibernacula for Townsend's big-eared bat in the project area and there have been no recorded observations of the species within or near the project area (USDA Forest Service, CNDDB, 2014). While there are no known caves, there are other structures and elements these bats may use for roosting; selecting rocky outcrops, talus slopes, basal hollows in large trees, trees with loose bark and/or snags, culverts, buildings and/or old mine areas.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on Townsend's big-eared bat as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The direct and indirect effects of Alternatives 2, 3, and 4 for the Townsend's big-eared bat are the same as for the pallid bat (see above).

Cumulative Effects

As with pallid bat, the cumulative effects bounding for Townsend's big-eared bat consists of the 19,812-acre cumulative effects analysis area. And as with pallid bat, when combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. For details, see the cumulative effects discussion for pallid bat, above.

Determination

As with pallid bat, implementing any of the action alternatives may affect individual Townsend's big-eared bats but would not cause a trend towards federal listing or a loss of viability for the species. See the Alternatives 2, 3, and 4 determination for pallid bat, above, for details regarding the rationale for this determination.

Fringed myotis (Myotis thysanodes)

Existing Condition

Fringed myotis are generally found between 3,000-5,000 feet elevation and occur within a broad range of vegetative types, but are mostly reported to occur in pinyon juniper, oak, ponderosa pine and mixed confiner forest types. Fringed myotis generally roost in areas within close proximity to a water source, though size and extent of the source can vary. Fringed myotis use caves, mines and buildings as solitary day/night roosts and hibernacula. They may also use bridges and rock crevices as solitary day/night roosts.

Strong site fidelity has been demonstrated at both the stand and roost scale. Abundant large snags within microsites with a lower canopy cover allows more thermal heating of roosts, easier flight access to roosts, and the ability to readily switch roosts in the event of roost collapse, for predator avoidance, or to find more suitable microclimates. They are adapted to forage in areas of relatively high vegetative diversity, such as interior forests and/or edges, not in wide openings such as clear-cuts or meadows where their chief prey, beetles (*coleopterans*), would be less abundant.

Like Townsend's big-eared and pallid bat, a significant portion of the project area (20,726 acres) is considered suitable habitat for fringed myotis. Forested stands associated with mature stand characteristics and/or Riparian Reserves may be used by fringed myotis for foraging. Foraging and roosting habitat is highest within the Parks, Eddy, and South Fork Willow Creek drainages, as fringed myotis prefer more mesic conditions.

There are no known maternity roosts or hibernacula for fringed myotis in the project area and there have been no recorded observations of the species within or near the project area (USDA Forest Service, CNDDB, 2014). While there are no known caves, there are other structures and elements these bats may use for roosting. Fringed myotis may use all of the project area for roosting; selecting rocky outcrops, talus slopes, basal hollows in large trees, trees with loose bark and/or snags, culverts, buildings and/or old mine areas.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on fringed myotis as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to water quality, riparian and meadow habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The direct and indirect effects of Alternatives 2, 3, and 4 for fringed myotis are the same as for pallid bat (see above).

Cumulative Effects

As with pallid bat, the cumulative effects bounding for fringed myotis consists of the 19,812-acre cumulative effects analysis area. And as with pallid bat, when combined with ongoing or reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. For details, see the cumulative effects discussion for pallid bat, above.

Determination

As with pallid bat, implementing any of the action alternatives may affect individual fringed myotis but would not cause a trend towards federal listing or a loss of viability for any of the species. See the Alternatives 2, 3, and 4 determination for pallid bat, above, for details on the rationale for this determination.

Western bumble bee (Bombus occidentalis)

Existing Condition

The western bumble bee populations of central California, Oregon, Washington and southern British Columbia have declined dramatically since the 1990s and have largely disappeared. The recent dramatic decline of the western bumble bee in the west is speculated to be due to disease.

Western bumble bees are generalist foragers, feeding on pollen and nectar from many plant species. They are commonly found in riparian habitats, meadows and recently disturbed areas that contain abundant flowering plants. They primarily nest underground, typically in abandoned rodent nests located from six to eighteen inches below the surface.

Within portions of the entire project area and along the roadways and trails at all elevations, there are meadows, brushlands and Riparian Reserves with shrubs and flowering plants scattered throughout. These areas and vegetation types are in lower abundance along forested road and trail areas. The most suitable foraging habitat includes the wet meadow areas within the higher elevations of the project area. Based on field review and the 2007 existing vegetation data (USDA Forest Service, 2007), there are about 4,900 acres of suitable habitat for western bumble bee in the project area.

Despite the presence of suitable habitats, the overall likelihood that western bumble bees occupy the project area is low due to the increasingly rare distribution and limited abundance of the species. Surveys have not been conducted in the project area, and there are no known occurrences or detections to date in the project area. As the project area is located within the species' known historic range, and contains a wide variety and expanses of shrub and flowering plant habitat, presence is assumed.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1, no project activities would be implemented. Alternative 1 (no action) would have no effect on the western bumble bee as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to riparian and meadow habitats in the project area including meadow impacts from OHV and other motorized uses would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The proposed road and trail actions may result in disturbance to individuals using suitable habitats adjacent to project activity areas. Increases in traffic and heavy equipment use associated with project implementation may also increase the possibility of vehicle-caused mortality of bees. Individual foraging bees may be temporarily displaced during implementation due to the increased presence of humans, equipment and noise. Individual bees and underground hives could also be affected by hazard tree/snag felling, though hives can be located anywhere from 6-18 inches underground and are often protected from above ground disturbances depending on how much soil compaction and disruption occurs (Thorp. R., pers. comm. 2013). Underground hives are also typically located in areas of looser soils such as existing or old rodent burrows.

Road and trail actions may reduce shrub habitats within the road and trail prism (a narrow, linear effect) over the short-term, with ongoing road and trail maintenance affecting these habitat elements over the long-term. Effects to foraging habitat may occur if trees are felled directly on to flower resources which may be inadvertently affected during road or trail work. As the western bumble bee is a generalist forager and not restricted to any one plant, it is capable of utilizing a wide variety of flowering resources. If one type of flower is affected during operations by these activities, this species can readily move to another area with other types of flowering vegetation.

Project actions are expected to have both short- and long-term beneficial effects from preventing further damage to meadows through reduction of motorized traffic through these areas. Road decommissioning activities will result in beneficial effects by reducing the potential for noise disturbance and fire starts while reducing fragmentation. Revegetation of past disturbed sites, such as meadow areas, or at culver replacements/removals, with native plant species would also increase potential foraging habitats for this species.

Cumulative Effects

The cumulative effects analysis area for the western bumble bee consists of the 19,812-acre cumulative effects analysis area. This bounding is appropriate as this area contains flowering shrub and herbaceous plant habitats. It contains all areas proposed for road and trail actions, allowing for an assessment of past and future actions that may or may not result in cumulative effects on this species and/or its suitable habitat in combination with the predicted direct and indirect effects of the project.

Ongoing actions such as fuelwood collection, dispersed recreation and Forest transportation system road and trail maintenance activities may all affect individual bees (potential for vehicle collisions). Removal of shrubs at campgrounds and administrative sites, along roadways during road maintenance, and during fire suppression activities that reduce shrub and flowering plant habitats for one season to three years may also impact individual bees and underground hives. The potential reauthorization of two grazing allotments and timber management on private lands may also affect individual bees, hives or suitable foraging habitat. Effects of grazing activity, as with mammals or avian species, are not predicted to negatively impact western bumble bee foraging habitat if surface vegetation is not excessively removed. When combined with these ongoing and reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or improves habitat for the western bumble bee. This is due to the narrow scope of actions proposed under the project and these other actions, combined with the RPMs to limit removal of flowering shrubs and bees being generalist foragers.

Determination

Implementing any of the action alternatives may affect individual western bumble bees but would not cause a trend towards federal listing or a loss of viability based on the following rationale:

- There is a low potential of occupancy in the project area due to the general rarity of the species, but open riparian habitats, high elevation meadows, and flowering shrub and plant habitats that western bumble bees may forage in are present and may be affected by the project.
- It is a generalist forager and capable of transitioning to other flowering resources located either adjacent to or distant from project activities.
- Vehicle and heavy equipment use and tree/snag felling may impact individuals or underground hives.
- Road decommissioning within meadows and throughout the project area would reduce or eliminate traffic, thus reducing potential for compaction, vehicle-related mortality and fire starts.
- The majority of the shrub habitats, grasslands and open areas within the project area that contain more abundant flowering plants and shrubs would be left untreated, providing potential food sources in these areas unaffected.

Southern torrent salamander (Rhyacotriton variegatus)

Existing Condition

The southern torrent salamander occurs in aquatic habitat within conifer forests below 5,000 feet elevation. Their geographic range includes the coast range from Mendocino County, California to northwestern Oregon. It is associated with cold, clear headwater to low-order streams with loose rocky substrates (low sedimentation). These streams are typically located in forest habitats with large conifers, abundant moss and greater than 80 percent canopy closure. They are restricted to springs, seeps, small streams, waterfalls and margins of larger streams where they avoid open water and seek the cover of moss, rocks, and organic debris in shallow cold, percolating water. They are sensitive to desiccation and seldom venture away from saturated streamside areas, occurring within a relatively narrow range of physical and microclimatic conditions.

The project area contains 3,963 acres of low and high elevation Riparian Reserves primarily centered on the perennial Parks, Eddy, and South Fork Willow Creek drainages. Additional Reserves are in several small lakes, ponds wet meadow areas and springs in high elevation meadows that provide suitable habitat

for this species. This species, and no other sensitive amphibians, was not detected during the July 2014 surveys that were completed in accordance with *A Standardized Protocol for Surveying Aquatic Amphibians* (Fellers, G. & Freel, K., 1995). While there have been no observations of southern torrent salamander to date in the project area, there is suitable aquatic and mesic habitat within the lower reaches of the Parks and Eddy Creek Riparian Reserves within the project area for this species.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1 no project activities would be implemented. Alternative 1 (no action) would have no effect on the southern torrent salamander, as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to riparian and meadow habitats in the project area including meadow impacts from OHV and other motorized uses would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

Because of the species' strong affiliation with riparian habitats and streamcourses, there is the potential for individuals to be directly affected during implementation as project road and trail actions will intersect, cross and occur alongside streams. Individuals may be directly impacted through crushing or displacement by equipment use, hazard tree felling, and/or small tree and shrub removal; however, the probability is low and few, if any, individuals would be impacted.

Potential contributions of fine sediments to streams may occur, with short term increases in turbidity likely limited to the first season storm flows after implementation. The filtering effects of the duff layer, forbs and shrubs in the Riparian Reserves, combined with the RPMs and BMPs will limit increases in turbidity and substrate to levels that cannot be measured or detected over time.

Shrubs, other understory vegetation, and small trees that provide shade may be removed/felled during road and trail reconstruction, maintenance, storm proofing, stream crossing and ditch relief culvert installation/replacement, or road decommissioning activities. This vegetation is expected to grow back quickly after project activities are completed, though road and trail maintenance in Riparian Reserves would be ongoing after the primary activities are completed. These activities would occur in a narrow, linear area and are not considered a significant removal of habitat elements.

Disturbance to instream rocks/pools is expected to be minimal as stream crossing culverts would be replaced when streams are dry or flow would be diverted around the crossing through a clean water bypass. Hazard trees and snags would be directionally felled away from stream channels and maintained as coarse woody debris, or if felled into channels, would be retained (as safely feasible) as instream large woody debris that contributes to pool formation, cover and nutrients.

Project implementation will result in short-term, minimal disturbance to riparian vegetation, stream channel formation and composition, and streambanks; though project activities are not expected to result in bank destabilization or an increase in erosion hazard in the project area or downstream Riparian Reserves.

RPMs and BMPs for water quality will reduce the potential for adverse direct and indirect effects; no measurable or meaningful negative impacts to this species or its habitat is expected. Suitable habitat would not be removed, downgraded or significantly altered under any of the action alternatives.

Long-term beneficial effects are expected from improved water quality and reduced disturbance within Riparian Reserves from hydrologic stabilization of roads and trails and road decommissioning. Dispersal of aquatic and riparian species would also be improved through culvert upgrades.

Cumulative Effects

Cumulative effects bounding for southern torrent salamander consists of the 4,380-acre Riparian Reserve area. This bounding is appropriate as it accounts for the area where all project activities will occur and may influence suitable habitat for this species. It includes Riparian Reserve areas on private lands.

When combined with ongoing and reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself, none of the ongoing or future foreseeable federal actions significantly modifies or benefits habitat for this species. While Forest transportation system road, trail and facility maintenance activities do occur in riparian habitats and near/within streams, depending on level of work, the BMPs and RPMs prescribed on an annual basis for these maintenance activities limit disturbance to aquatic resources and riparian vegetation. While there are no specific guidelines in the Forest Practice Rules for this species, the watercourse and lake protection guidelines ensure that private timber operations do not cause significant adverse or site-specific cumulative effects to native riparian-associated species or beneficial functions of riparian zones that comprise the primary habitat for the southern torrent salamander.

Determination

Implementing any of the action alternatives may affect individual southern torrent salamanders, but would not cause a trend towards federal listing or a loss of viability for the species based on the following rationale:

- Road and trail actions will occur within Riparian Reserves of Parks, Eddy and South Fork Willow Creeks and their tributaries, near high elevation lakes, ponds and wet meadows. Activities would be near, will cross and may occur in perennial, intermittent and ephemeral streams.
- Under all action alternatives, ground disturbance and vegetation removal near streams, meadows, lakes and ponds, and at stream crossings; culvert upgrades/removals; and hazard tree/snag felling may result in localized direct and indirect effects such as crushing or displacement of individuals, and/or short term increases in turbidity during the first season storm flows after implementation.
- The project is not expected to result in filling of downstream pools or a measurable negative impact to streambanks, existing instream large woody debris, water quality or macroinvertebrates/prey species.
- The RPMs and BMPs incorporated into the project will significantly reduce the potential for direct and indirect negative effects. These include measures to:
    - Reduce sediment delivery during treatments (reconstruction, maintenance and decommissioning activities will occur when conditions are dry, as feasible);
    - Installation of temporary crossings if work cannot be completed when stream channels are dry (naturally occurring asbestos areas);

  - Minimize removal of riparian vegetation, directionally fall trees/snags away from stream channels, though where determined, may be felled instream to provide large wood debris, nutrients, shade and pool formation.

- Short-term direct negative impacts to species associated with riparian habitats are expected to be immeasurable and discountable. Both short- and long-term beneficial effects are expected from improved water quality, reduced sediment delivery and reduced ground disturbance within Riparian Reserves. Riparian habitats would retain their important habitat elements (stream shading, large woody debris, pools/riffles) and would remain intact.

Foothill yellow-legged frog (Rana boylii)

Existing Condition

Foothill yellow-legged frogs are highly aquatic amphibians, spending most or all of their life in or near streams, being most active during daylight. They use a variety of aquatic habitat types (depending on life stage and time of year) in forests, chaparral, and woodlands. This includes pools, riffles and runs within rivers and their smaller tributary streams with rocky substrate and open, sunny banks. They are sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools. Adults are found along the mainstem of rivers during spring when they breed in pools and then return to basking and foraging sites at stream tributaries. Elevation ranges from sea level to 6,700 feet. A wide variety of invertebrates including aquatic, terrestrial, and flying insects, spiders, snails, and grasshoppers make up their prey. Tadpoles consume algae and detritus from rock surfaces and vegetation.

While this species was not detected during the July 2014 surveys that were completed in accordance with the *Standardized Protocol for Surveying Aquatic Amphibians*, yellow-legged frogs were observed during the project's stream condition inventories in 2012 (USDA Forest Service, 2012). A review of Forest Records and the CNDDB indicate there are numerous other observations of foothill yellow-legged frog in the project area (USDA Forest Service, CNDDB, 2014).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1 no project activities would be implemented. Alternative 1 (no action) would have no effect on the foothill yellow-legged frog as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to riparian and meadow habitats in the project area, including meadow impacts from OHV and other motorized uses would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The direct and indirect effects for foothill yellow-legged frog from the action alternatives would be the same as those for the southern torrent salamander (see above).

Cumulative Effects

As with southern torrent salamander, the cumulative effects boundary for foothill yellow-legged frog consists of the 4,380-acre Riparian Reserve area. And as with southern torrent salamander, when combined with ongoing and reasonably foreseeable actions on federal and private lands, no adverse or

beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term.

For details regarding cumulative effects, see the cumulative effects discussion for southern torrent salamander, above.

Determination

As with southern torrent salamander, implementing any of the action alternatives may affect individual foothill yellow-legged frogs, but would not cause a trend towards federal listing or a loss of viability for the species. See the Alternatives 2, 3, and 4 determination for southern torrent salamander, above, for details on the rationale for this determination.

Cascades frog (Rana cascadae)

Existing Condition

The Cascades frog inhabits wet mountain areas (high altitude ponds, lakes, small streams, marshy areas, meadow pools and bogs) within open coniferous forests to near timberline from Washington to northern California. It is most typically found in water with no predatory fish at higher elevations, rarely below 2,000 feet elevation. In California, its historic range included fragmented populations from the northern Sierra Nevada range to Mt. Lassen, Mt. Shasta, the Marble Mountains and the Trinity Alps, as well as the upper Feather River system.

There have been numerous sightings in Siskiyou County, including the Colby Meadows area on the McCloud Ranger District and Lake Siskiyou and its perennial tributaries, approximately ten miles south of the project area. California Department of Fish and Wildlife surveys during 1990 found Cascades frogs were moderately to extremely abundant in lakes and ponded streams where few or no predatory fish were present. They have been documented in the Trinity Alps Wilderness Area.

This species was not detected during the July 2014 surveys that were complted in accordance with *A Standardized Protocol for Surveying Aquatic Amphibians.* However a review of Forest Records and the CNDDB indicate there are numerous observations of Cascades frogs in the project area (USDA Forest Service, CNDDB, 2014).

Environmental Consequences

Alternative 1

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1 no project activities would be implemented. Alternative 1 (no action) would have no effect on the Cascades frog as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to riparian and meadow habitats in the project area including meadow impacts from OHV and other motorized uses would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The direct and indirect effects for Cascades frog from the action alternatives would be the same as those for the southern torrent salamander (see above).

Cumulative Effects

As with southern torrent salamander, the cumulative effects boundary for Cascades frog consists of the 4,380-acre Riparian Reserve area. And as with southern torrent salamander, when combined with ongoing and reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term.

Determination

As with southern torrent salamander, implementing any of the action alternatives may affect individual Cascades frogs, but would not cause a trend towards federal listing or a loss of viability for the specie. See the Alternatives 2-4 determination for southern torrent salamander, above, for details on the rationale for this determination.

Western pond turtle (Clemmys marmorata)

Existing Condition

The western pond turtle occurs in a variety of habitat types associated with permanent or nearly permanent water and they are often concentrated in low flow regions of rivers and creeks, such as side channels and backwater areas. They normally inhabit permanent water bodies and adjacent mud banks; however, female pond turtles often climb hillsides, sometimes moving 500 meters or more from the stream side to nest during the spring or early summer. Nests and burrows are usually found in undisturbed areas of duff or mud, but pond turtles have been found nesting under mine tailings. They prefer creeks that have deep, still water and sunny banks. Hatchlings are poor swimmers and require shallow edge water areas with minimal current. Basking sites such as rocks and logs are important.

This species was not detected during the July 2014 surveys that were complted in accordance with *A Standardized Protocol for Surveying Aquatic Amphibians*. However, a review of Forest Records and the CNDDB indicate there are numerous observations of western pond turtle in the project area (USDA Forest Service, CNDDB, 2014).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1 no project activities would be implemented. Alternative 1 (no action) would have no effect on western pond turtle as no project activities would occur, and therefore, there are no direct, indirect or cumulative effects. Existing trends and impacts to riparian and meadow habitats in the project area including meadow impacts from OHV and other motorized uses would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

The direct and indirect effects for western pond turtle from the action alternatives would be the same as those for the southern torrent salamander (see above).

Cumulative Effects

As with southern torrent salamander, the cumulative effects boundary for western pond turtle consists of the 4,380-acre Riparian Reserve area. And as with southern torrent salamander, when combined with

ongoing and reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term.

Determination

As with southern torrent salamander, implementing any of the action alternatives may affect individual western pond turtles, but would not cause a trend towards federal listing or a loss of viability for the specie. See the Alternatives 2-4 determination for southern torrent salamander, above, for details on the rationale for this determination.

Shasta Hesperian (Vespericola shasta)

Existing Condition

The Shasta hesperian snail's distribution is entirely within the range of the northern spotted owl, up to 2,800 feet elevation. It is associated with deciduous vegetation and woody debris in moist areas, usually observed within 200 meters of riparian zones, springs, seeps, marshes and in the mouths of caves. While it may move away from streams/wet areas during wet weather, during dry conditions, it is strictly limited to the damp margins of streams, seeps and marshes where there is perennial dampness and cover. It inhabits damp ground at the margins of streams where it can find cover under loose rocks, woody debris, or decaying leaves. They are directly associated with rotten wood and food sources include fungal mycelia, lichen and small amounts of herbaceous vegetation.

The project area's lower elevation streams, seeps and meadows, and directly adjacent wooded areas, may provide suitable habitat for this species. There are no known caves in the project area. Surveys have not been completed to date in the project area and Stream Condition Inventory work completed in 2012 (USDA Forest Service, 2012), aquatic amphibian surveys in 2014, and other fieldwork completed for the project, did not result in any observations of this species. A review of Forest Records and a search of the CNDDB resulted in no reported observations in the project area (USDA Forest Service, CNDDB, 2014). Based on the presence of suitable habitat, occupancy is presumed.

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect, and Cumulative Effects/Determination

With Alternative 1 (no action), no project activities would be implemented. Alternative 1 (no action) would have no effect on the Shasta hesperian as no project activities would occur, and therefore, there would be no direct, indirect or cumulative effects. Existing trends and impacts to riparian habitats in the project area would continue.

Alternatives 2, 3, and 4

Direct and Indirect Effects

Under all action alternatives, project activities within the road and trail prism at the lower elevation reaches of Eddy and Parks Creeks may impact individuals and their suitable habitat. Activities may disrupt loose rocks, woody debris, or decaying leaves at or within the margins of streams or other wet areas. Ground disturbance and vegetation removal near streams and at stream crossings may result in localized direct and indirect effects such as crushing, and/or short term increases in turbidity during the first season storm flows after implementation. These activities would be limited to narrow, linear stretches

of roadway, short segments of trail (<500 feet) and discrete locations at stream crossing replacements and instream work (e.g., fords).

Coarse woody debris would be retained and disturbance to leaf litter minimized (see RPMs in Chapter 2 for details). Hazard trees and snags would be directionally felled away from streams as safely feasible, or left instream to contribute to large woody debris, nutrients, and pool formation. Outside of channels, felled trees/snags would be maintained as coarse woody debris. Stream crossings/culverts/fords would be repaired, cleaned, replaced and/or removed when streams are dry or stream flow would be diverted around the crossing using a clean water bypass. Water quality would be protected with BMPs. With RPMs in place, no measurable or meaningful negative impacts to this species or its habitat are expected. Suitable habitat may be disrupted over the short-term due to increases in turbidity (time of activity extending to at most, one season after implementation), but would not be removed, downgraded or significantly altered under any of the action alternatives.

Cumulative Effects

Cumulative effects bounding for the Shasta heperian consists of the 4,380-acre Riparian Reserve area. This bounding is appropriate as it accounts for the area where all project activities will occur and may influence suitable habitat for the Shasta hesperian and it includes Riparian Reserve areas on private lands.

When combined with ongoing and reasonably foreseeable actions on federal and private lands, no adverse or beneficial significant cumulative effects are anticipated from any of the direct or indirect effects of the action alternatives over the short or long term. While the project will have beneficial effects in and of itself for this species and maintaining and improving its habitat, none of the ongoing or future foreseeable federal actions significantly modifies or benefits habitat for this species. As Forest transportation system road, trail and facility maintenance activities do occur in riparian habitats and near/within streams, depending on level of work, the BMPs and RPMs associated with these annual activities limit disturbance to aquatic resources, riparian vegetation, woody debris and the duff/rock litter layer. Most work, aside from culvert cleaning, does not occur near or within the damp margins of streams, seeps or marshes. While there are no specific guidelines in the Forest Practice Rules for this, or similar aquatic species, the watercourse and lake protection guidelines ensure that private timber operations do not cause significant adverse or site-specific cumulative effects to native riparian-associated species or beneficial functions of riparian zones.

Determination

Implementation of any of the action alternatives may affect individual Shasta hesperian snails, but would not cause a trend toward listing or loss of viability based on the following rationale:

- The project area contains suitable habitat for this species and it is vulnerable to disturbance within its respective habitats; not being highly mobile or capable of avoiding disturbance.
- Treatments will occur in Riparian Reserves under all action alternatives, including ground disturbance and vegetation removal near streams and at stream crossings, that may result in localized direct and indirect effects such as crushing, and/or short term increases in turbidity during the first season storm flows after implementation.
- The project includes RPMs and BMPs that will result in continued maintenance, protection and benefits to microsite/habitat conditions and improved water quality.

Indicator Summary

Overall, there will be a larger benefit to aquatic, riparian and terrestrial wildlife species and their habitats from Alternative 3 when compared with Alternatives 2 and 4 (which have the same effects) through both

increases in habitat connectivity, reduced fragmentation, reduced noise disturbance, and reduced potential for fire starts from human activity. No suitable habitat for any of the 15 species discussed above will be removed, downgraded or degraded.

Table 32: Sensitive Wildlife Indicator Summary by Alternative

Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Miles of Roads and Motorized Trails Closed or Decommissioned in Riparian Reserves	0 miles	9.36 miles	13.53 miles	9.36 miles
Miles of Road Drainage Improved by Reconstruction Activities	0 miles	31.5 miles	25.5 miles	31.5 miles
Acre of Terrestrial/Aquatic Habitat Benefitted from Road Reconstruction Activities	0 acres	183 acres	148 acres	183 acres
Post-Project Open Road Density	1.31 mi/mi^2	0.97 mi/mi^2	0.74 mi/mi^2	0.97 mi/mi^2
Acres of Riparian Reserve Benefitted^	0 acres	928 acres	1,166 acres	928 acres
Estimated Acres of Terrestrial Habitat Benefitted by Road Decommissioning and Closure	0 acres	102 acres	176 acres	102 acres
Changes in Noise Levels from Motorized Vehicle Use in Sensitive Wildlife Habitats	No Change	Moderate Reduction	High Reduction	Moderate Reduction
Suitable Habitat Degraded, Downgraded or Removed for 15 Sensitive Species	0 acres	No Reduction in the Quantity or Quality of Suitable Habitat, though Elements may be Removed or Reduced		

^ The estimated acres of benefit were calculated by totaling the Riparian Reserve acres that contain road and trail actions and adding the downstream Riparian Reserve area within 0.25-mile of the lower extent of the proposed activities.

Fisheries – Listed, Sensitive and Management Indicator Species

This section summarizes the analysis of potential project effects to fish species and their habitat, including those listed under the federal ESA, those designated as Sensitive by the Regional Forester and fisheries management indicator species (MIS) identified in the Forest Plan. The comprehensive analysis of species occurrence, habitat, and potential effects is included in the following resource analyses, incorporated by reference:

- Biological Assessment and Evaluation (BA/BE) for Threatened, Endangered, Proposed and Sensitive Fish Species - Parks Eddy Watershed Restoration Project (Jordan, 2014)

- Fisheries Management Indicator Species (MIS) Report, Parks Eddy Watershed Restoration Project (Jordan, 2014a)

Indicators, Boundaries, and Analysis Methodology

Indicators

Project activities that could affect fish and their habitat indicators are assessed using the Analytical Process for Developing Biological Assessments for Federal Actions Affecting Fish within the Northwest Forest Plan Area or 2004 Analytical Process (USDA Forest Service, USDI National Marine Fisheries Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, 2004) (described further in the Methodology section below). The 2004 Analytical Process evaluates Project Elements (discrete activities) on habitat indicators and watershed conditions in terms of positive, negative or neutral effects. The detailed analysis of Project Elements and their anticipated effect on habitat indicators and watershed conditions, including those that have no causal mechanism for an effect to occur, is included in the Fisheries BA/BE.

Project Elements assessed:

- Road Use-Maintenance-Water Drafting
- Road Reconstruction-Realignment-Storm proofing-Streambank Stabilization
- Road Decommissioning and Storage-Closure
- Trail Reconstruction-Conversion of Roads to Trails-Dispersed Area Restoration
- Trailhead Improvements

The full range of habitat indicators and watershed conditions from the 2004 Analytical Process are assessed in the Fisheries BA/BE. Those with a causal mechanism to be affected by Project Elements are:

- Water Temperature
- Turbidity and Substrate
- Chemical Contamination
- Pool Quality
- Streambank Condition
- Change in Peak/Base Flow and Increase in Drainage Network
- Road Density/Location
- Disturbance History
- Riparian Reserves

Indicators that measure the issues (fully described in Chapter 2) for project alternatives include:

- Acres of Riparian Reserves benefitted
- Miles of road and trail improved and maintained within Riparian Reserves
- Miles of road decommissioned and closed within Riparian Reserves
- Post-project open road densities (measured in miles/square mile).

Boundaries

Spatial Bounding - Action Area and Project Analysis Area

The Action Area is defined for ESA purposes as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR 402). The fisheries Action Area is defined as where the Project Elements will occur, plus the anadromous (and resident fish)

habitat downstream to the confluence with the Shasta River. The fisheries Action Area is 41,206 acres (refer to Maps 1 and 2 in Appendix of the Fisheries BA/BE) and is the area assessed for cumulative effects under the ESA and NEPA. Additional information on instream and watershed indicators in the fisheries Action Area (e.g., water temperature, instream habitat structure, pool quality, Riparian Reserve conditions) are summarized below, and fully described in the Fisheries BA/BE.

There are approximately 17,913 acres of private lands in the fisheries Action Area, primarily within the Shasta Valley agricultural and rural residential areas. There are 23,293 acres of NFS lands in the fisheries Action Area, though proposed road and trail activities will occur on about six miles of road within private land ownership, increasing the project analysis area to approximately 23,323 acres. The project analysis area extends downstream of the furthest downstream site/area proposed for treatment for a distance of approximately 0.30 mile or 500 meters. This distance is based on both professional judgment and research conducted in similarly steep sites where road decommissioning and other treatments have occurred and detected project-related turbidity extending downstream for no more than 500 meters (Cook, C. & A. Dresser, 2007) (Harris, 2005) (Klein, 2003). This area and distance is also reasonable to assess as it includes all areas that may be impacted from potential increases in turbidity, substrate inputs, water temperature impacts and potential chemical contamination and includes all Riparian Reserves that may be affected by project activities. Beyond this distance, any project effects could not be meaningfully detected.

Both the project analysis area and fisheries Action Area are located within the headwater reaches of three 5th field watersheds (HUC5). These include the Upper Shasta River (1801020701), Parks Creek-Shasta River (1801020703) and Willow Creek (1801020704). Conditions in these watershed areas are fully described in the Willow-Parks Watershed Analysis (USDA Forest Service, 2014) and project level hydrology report (Bachmann, 2014).

Temporal Bounding

Temporal bounding for this analysis consists of both short- and long-term timeframes. Short-term consists of when project actions occur and effects on fisheries habitat are realized, usually within one storm event/one winter season to two years of a road or trail action occurring (Harris, 2005). Long-term effects extend for approximately five or more years after project actions occur. Direct effects are defined by the period that actions would be occurring in/near habitat (short-term). Indirect effects occur over both the short- and long-term.

Temporal bounding for cumulative effects of future state or private activities (under the ESA) and federal activities (under the NEPA) which are reasonably certain to occur within the fisheries Action Area includes the period when all of the proposed project activities are expected to be completed and when any effects from foreseeable future actions can be reasonably predicted and felt on the landscape in combination with the project's effects. Effects of past actions are included in the environmental baseline and existing condition in the fisheries Action Area as those conditions reflect the aggregate impact of all prior human actions and natural events that have resulted in the current environmental conditions and might contribute to cumulative effects. Temporal bounding for cumulative effects is 10 years given the predicted timeline to complete project activities and short/long term effects. This 10-year timeframe is considered adequate as it represents the time in which all project activities are expected to occur and overlap with any potential effects of reasonably foreseeable future State, private or Federal actions.

Methodology

As described above, project activities were assessed using the effects analysis procedure described in the 2004 Analytical Process document (USDA Forest Service, USDI National Marine Fisheries Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, 2004). The 2004 Analytical Process

facilitates and standardizes evaluations of actions and effects determinations for consultations under Section (§) 7(a)(2) of the ESA, but is also used for evaluating effects to Forest Service sensitive fish species. The 2004 AP evaluates the Project Elements on habitat indicators and watershed conditions in terms of positive, negative or neutral effects. Factor analysis describes the effect of each Project Element on each indicator by assessing proximity, probability and magnitude. If significant impacts are anticipated, additional factors are analyzed (distribution, frequency, duration, timing and nature). This analysis allows for determining if there are purely neutral and/or positive effects on habitat and watershed indicators, if negative effects are discountable or insignificant, or if effects are significant.

The analysis of potential effects was prepared using the best available scientific and commercial data available at the time. Potential project effects to individuals and habitat indicators were assessed for each fish species based on the species' current range; surveys, stream conditions and gradient; passage barriers; field reviews of habitat suitability; Stream Condition Inventories (USDA Forest Service, 2002) (USDA Forest Service, 2012)); existing research and literature; fish distribution maps; and the scope, scale, intensity and location of project activities. The distribution and conclusions regarding effects to anadromous fish and anadromous fish habitat (including Critical Habitat) within the fisheries Action Area, and project analysis area, are based on the data sources summarized above. It is also based on field review (June 11, 2013) and subsequent personal communications and technical assistance with NOAA's National Marine Fisheries Service biologist Catherine McGourty. William Brock (the Forest's fisheries program manager and biologist) and Bobbie Miller (the Klamath National Forest's fisheries program manager and biologist) were also consulted.

The fisheries analysis also refers to the Cumulative Watershed Effects analysis (Bachmann, 2014) as it fully assesses project effects on water quality and quantity. Fisheries habitat is integrally linked to watershed health, water quality and quantity, and therefore the analysis of these two resources is also linked.

Timing of the Project

Project implementation is estimated to start in fall 2014 and may take up to five years to be completed. Road and trail maintenance activities associated with the project, as well as regularly scheduled maintenance activities, are expected to occur beyond the five-year implementation timeline (depending on need) and would remain subject to the applicable RPMs.[46] Pre, during and post-project implementation monitoring include but are not limited to aquatic species surveys as well as soils, water quality and Best Management Practice implementation monitoring.

Existing Conditions

Species and Critical Habitat in the Action Area

The following Pacific salmonid Evolutionarily Significant Units (ESU) or Distinct Population Segments (DPS) and their habitat in the fisheries Action Area have special status under the ESA, are given special management consideration as Forest Service Sensitive or are Management Indicator species defined in the Forest Plan (page 3-11):

Endangered:

[46] Future maintenance on project-specific roads and trails is anticipated, as well as additional maintenance on NFS roads in the project analysis area. This work is typically addressed under 36 CFR 220.6(d)(4) and on an annual basis, the Management Unit reviews the proposed road and trail maintenance work and prescribes applicable RPMs to protect the fisheries resource and BMPs for water quality.

- None

Threatened:

- Southern Oregon / Northern California Coast (SONCC) ESU coho salmon (*Oncorhynchus kisutch*) and designated Critical Habitat
- Green sturgeon (*Acipenser medirostris*) and designated Critical Habitat
- Central Valley steelhead (*Oncorhynchus mykiss*) and designated Critical Habitat
- Winter-run Chinook salmon (*Oncorhynchus tshawytscha*) and designated Critical Habitat

Proposed:

- None

Sensitive:

- Klamath Mountains Province steelhead Distinct Population Segment (*O. mykiss*)

Management Indicator Assemblage Species:

- Winter-run steelhead
- Rainbow trout

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), in concordance with the Sustainable Fisheries Act of 1996 (Public Law 104-267) designated Essential Fish Habitat (EFH) for coho and Chinook salmon (Federal Register, Vol. 67, No. 12). The MSA defined EFH as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (Federal Register, Vol. 67, No. 12)." EFH for coho salmon and Chinook salmon in the fisheries Action Area is equivalent to critical habitat for coho salmon (see the Appendix C maps in the Fisheries BA/BE).

Habitat and Species Status in the Action Area

The environmental baseline that characterizes the health of the three 5th field watersheds in the fisheries Action Area is fully described in the Fisheries BA/BE and project hydrology report. These baselines are used to summarize habitat values for anadromous and resident fish using a combination of fisheries and hydrologic survey data, research, literature and professional judgment. The watershed and riparian conditions, and aquatic species and habitat information, are also fully described within the Willow Parks WA. This analysis, as well as numerous other reports, migration studies, study plans to assess the Shasta River for salmon and steelhead recovery and CDFG's Environmental Impact Report for the Shasta River watershed permitting program (California Department of Fish and Game, 2009) were used in combination with field review and SCI data to characterize the environmental baseline (USDA Forest Service, 2002) (USDA Forest Service, 2012).

Species status refers to the known or likely occurrence of anadromous or resident fish within the fisheries Action Area and project analysis area. The effects analysis only focuses on actual or assumed individuals likely to be affected by proposed activities.

The Willow-Parks watershed is located within the range of three native anadromous salmonid populations: Chinook salmon, coho salmon, and fall and winter steelhead trout. All three species inhabit the Shasta River and historically had the potential to utilize Parks, Eddy, Dale and South Fork Willow Creeks in the fisheries Action Area. These creeks originate in the vicinity of Mount Eddy and are

primarily fed by winter rainfall and spring snowmelt. During summer and fall, low baseflows are sustained by springs and seeps in most of the tributary drainages.

Streamflow in the headwaters is mostly not impacted by reservoirs or diversions. On the Shasta Valley floor routing of flow is more complex, where connectivity, water temperatures, and flows are limited. Historically, over 80,000 Chinook salmon returned annually to the Shasta River, making it the second most productive tributary to the Klamath after the Trinity River. Currently, less than 10 percent of the historic Chinook salmon numbers return and coho salmon are on the verge of extirpation. Low dissolved oxygen levels and high water temperatures have been as important factors contributing to the declines of listed coho and other salmonid populations in the Shasta River (NCRWQCB, 2006).

Dwinnel Dam, constructed in 1928 with no fish passage facilities, blocks migration on the upper portions of the Shasta River as well as Eddy and Dale Creeks. An additional dam and diversions on Eddy Creek also limit passage for resident fish (see Appendix D of the Fisheries BA/BE). South Fork Willow Creek is a perennial fish-bearing stream, however once it reaches the valley floor streamflow is rapidly depleted and the channel is usually dry by early summer. The water diversions associated with operating Dwinnell Dam have greatly changed the characteristics of flow and sediment regimes within the lower reaches of Parks Creek outside of the project analysis area, and in the Shasta River. Connectivity still exists within Parks Creek (dependent on flows) and juvenile steelhead have been observed rearing throughout summer months downstream of the project analysis area (Chesney, 2005). However, a culvert barrier and natural stream gradient preclude adult and juvenile anadromous and resident fish migration upstream of the Parks Creek crossing at the Stewart Springs Road (Siskiyou County Road 4L051) and Parks Creek Road intersection. The project does not include modification or replacement of this culvert under any of the action alternatives.

Freshwater native and non-native fish species present historically and/or currently in Parks and Eddy Creeks include brook and brown trout, bluegill, golden shiner and Klamath speckled dace (University of California, 2014). The high elevation alpine lakes in the project analysis area were stocked by the State Fish and Wildlife Department up until 1976. Currently, no fish stocking occurs within the watershed boundary.

Within the project analysis area, average stream temperatures in Parks and Eddy Creeks range from 8-16○C. Stream gradient ranges from 3-15 percent. Large boulders, riffles, runs, cascading drops and medium to small pools are present (see Appendix D of the Fisheries BA/BE for photos). Average pool depth is 2.5 feet and pools are frequent. Bank full widths range from 10-20 feet with average stream shading/canopy of 52 percent. Riparian vegetation is composed of willow, alder, western birch, dogwood and white/red alder mixed with Douglas fir, white fir, incense cedar, Jeffrey pine, ponderosa pine and sugar pine. Large woody debris is infrequent (≈90 pieces per 600 meter reach) though numerous large root wads are present. Pool tail fines average 2-4 percent. Average D50 (median grain size for sediment) and D84 (coarser size material) ranges from 77-109 mm and 154-384 mm, respectively.

Based on the information, the project's effects will be limited to Forest Service sensitive Klamath Mountains Province (KMP) steelhead, specifically their habitat elements, and two management indicator species; winter-run steelhead (same as KMP steelhead) and resident rainbow trout (California Fish 2014). These two species represent the anadromous commercial/recreation sportfish and inland coldwater sportfish assemblages. There will be no effect to EFH for coho or Chinook salmon as critical habitat will not be affected. These species and EFH will not be considered further in this EA.

The project addresses chronic and potential episodic erosion threats that the existing NFS road network/condition pose to sensitive KMP steelhead, resident fish and their habitat. The majority of the project analysis area where proposed road and trail actions are located are typified by steep to very steep

terrain, representative of the Parks, Eddy and South Fork Willow Creek watershed landscapes, where there are no listed, Sensitive or management indicator fish species but where other resident fish and sensitive amphibians and reptiles occur (see the Sensitive wildlife section of this EA). At the lower elevations and reaches of both Parks and Eddy Creeks, gentler slopes are present where proposed treatments may affect individuals and habitat for KMP steelhead, MIS species and other resident native and non-native fish. Road decommissioning, closure and maintenance activities in the South Fork Willow Creek drainage will have no direct effects on individuals, or measureable indirect effects on the lower fish bearing reaches, due to the distance from downstream fish habitat and the natural stream gradient that prohibits access to the higher elevation reaches that would be affected.

For Alternatives 2-4, the majority of all proposed work will be within the road and trail prism, and is not expected to measurably downgrade or remove suitable aquatic habitat (RPM WF-7). The proposed cutbank stabilization and road reconstruction activities located within a 0.25-mile of the Parks Creek stream crossing at the intersection of the Stewart Springs Road and Parks Creek Road will only occur during periods of low-flow (July 15 to October 15), and will be in accordance with all BMPs for reducing sediment delivery to Parks Creek (RPM WF-14). Actions to improve stream crossings (culvert replacements, installations, realignments) and spring habitats will be limited to periods when channels are dry, or flow will be diverted around work sites with a clean water bypass (RPM WF-11). No stream or spring flow will be diverted and the clean water bypass culvert or flexible pipe will isolate flow from potential sediment and chemical contaminants. Soil compaction and equipment/foot traffic disturbance to herbaceous vegetation, down woody debris, canopy cover and/or ground cover will be limited to the extent feasible (RPM WF-10). Equipment operators will minimize disturbance to existing vegetation and turning of equipment (RPM WF-1). Felled hazard trees or snags will be left in a position to not be a potential hazard to roads, trails, turnouts, or recreation use areas from rolling. As safely feasible, trees or snags will be directionally felled away from stream channels to reduce the potential for subsequent streambank erosion. If trees/snags are felled into channels for safety reasons, or as a needed per a biologist or hydrologist, they will be left in place as feasible to contribute to instream LWD, cover, bank stability, pool formation and nutrients (RPM WF-5). Reducing the removal of near-stream vegetation and trees >16 inches diameter at breast height to the extent needed to complete the project will maintain stream shade for the fisheries resource (RPM WF-7d).

Existing State, County and NFS roads will be utilized throughout the project to mobilize equipment and materials and access treatment areas. These roads cross Parks Creek, Eddy Creek and their tributaries, as well as the Shasta River. The State and County roadways outside of the project analysis area are surfaced and do not require any pre, during or post project maintenance to complete project activities. No project materials or equipment will be stored in a manner where they could potentially block road drainage facilities and cause culvert plugging. Disposal of fill material will be done in accordance with the 2000 Water Quality BMPs and will not degrade aquatic habitat (RPM WF-4). A water pollution control program for fuel storage, soil stabilization, sediment delivery and water quality will be developed and approved prior to project implementation (WF-15) and any hazardous spills will be immediately cleaned up and reported (WF-16).

Environmental Consequences

Alternative 1 (No Action)

Direct, Indirect and Cumulative Effects

With Alternative 1, no project activities would be implemented and there would be no effect to KMP steelhead or MIS species, or their habitat. As there would not be direct or indirect effects, there would be no cumulative effects.

Selection of this alternative would result in the existing conditions and trends to continue. While there would not be project effects, the distribution, diversity and complexity of watershed and landscape-scale features would remain static. No roads would be decommissioned, closed or reconstructed and existing poor drainage infrastructure, rutted road surfaces and chronic sediment sources (long ditches, eroding cutbanks, hillslope gullies and outboard fill faces) would persist, resulting in continued negative water quality and sedimentation issues. Connectivity of surface and ground water flows would continue to be influenced by roads and trails as no actions would be implemented to maintain or correct drainage problems. No benefits to riparian or aquatic systems would be realized and there would be no beneficial movement toward increasing instream flows.

In all likelihood, one or more of the road segments proposed for treatment would eventually cause one or more major erosional events, sending many cubic yards of fine-grained sediment downstream. Depending upon future storm frequency and magnitude, episodic erosion events (such as landslides, stream crossing failures and diversions, or mass wasting events) could occur numerous times, even in a single storm event. Chronic erosion of cutbanks, ditches, road surfaces and out board fill faces would continue. The no action alternative would likely result in either continued or worsening stream degradation over the long-term, regardless of any future routine road maintenance.

Alternative 2

Direct Effects

Direct effects in terms of mortality or disturbance during stream crossing replacements or water drafting activities are not expected. There are no project actions that would remove, replace or remediate stream crossing culverts within anadromous KMP steelhead or resident fish habitats. KMP steelhead and resident rainbow trout are prohibited from migrating upstream by the culvert on Parks Creek, located at the intersection of the Stewart Springs Road and Parks Creek Road. This crossing is not proposed for treatment. There is also no water drafting permitted at this location per RPM WF-12. Water drafting may occur at existing and pre-approved higher elevation locations (RPM WF-3), will adhere to the Forest's water drafting guidelines and will not reduce instream flows below 50 percent (RPMs WF-13a to 13c; GHS-3). Adhering to these drafting guidelines will assure that immediate downstream discharge is maintained at 1.5 cubic feet per second (CFS) or greater and that sufficient downstream flows will be sustained for KMP steelhead and resident rainbow trout.

KMP steelhead are not found in Eddy Creek, due to Dwinnel Dam. Improving crossing conditions at an existing ford on Eddy Creek may result in direct effects to resident rainbow trout and other resident fish. These effects are expected to be minor and not adverse due to completing work when the stream channel is dry (RPM WF-11), or if not feasible, rerouting flow through a clean water bypass.

All other road and trail actions that may affect stream crossings are not located in habitats that support KMP steelhead or rainbow trout due to natural stream grade and higher elevation position in the

watershed. Therefore, there would be no direct effects to individuals. Trailhead improvements or actions that improve accessibility and provide parking and information for users will not have any direct effects on individuals. Improvements in sanitation from constructing restroom facilities at the Parks Creek Trailhead will result in direct and indirect beneficial effects to downstream water quality by reducing the potential for water contamination.

Indirect Effects

Roads

There is a potential for KMP steelhead and resident rainbow trout habitat to be negatively affected by the following road-related Project Elements in the short-term:

- Road use-maintenance,
- Road reconstruction-realignment-storm proofing-streambank stabilization,
- Road decommissioning and
- Road storage-closure.

The RPMs and BMPs summarized above will prevent the possibility for adverse indirect effects. Activities associated with the road-related Project Elements include the following: grading, shaping or closing roads (outsloping, installing dips or waterbars, tilling/seeding, blocking the entrance, grinding existing pavement surfaces down to grade); upgrading road surfaces (rocking, chip-sealing, use of asphalt grindings); realigning short (<200-foot long) road segments out of sensitive areas (stream channels, meadows, unstable slopes); cleaning/repairing culverts; excavating, upgrading, installing new ditch relief and stream crossing culverts; cleaning/shaping ditches; excavating fill material (cutbank, outboard road surfaces, stream crossings); shaping and/or placing large rock or other actions to stabilize cutbanks, outboard fills, streambanks and dissipate water flow/energy at culvert outlets; enlarging existing or creating new turnout areas; storing and hauling of rock and spoils material; lopping, scattering and cutting of brush, trees, tree limbs to access work sites and improve sighting distance; and felling of hazard trees. All of these road-related activities may result in short-term effects to water quality and habitat indicators.

Trails

There is also the potential for KMP steelhead and resident rainbow trout habitat to be negatively affected by the trail reconstruction Project Element in the short-term. This effect may result from increases in substrate and turbidity and minor impacts to streambank condition during and after reconstruction of the Parks Creek trail near Stewart Springs. This action would occur over an estimated 2.25 miles of 10-foot wide trail prism within 25-100 feet of Parks Creek. This work would occur upstream of the culvert barrier at the lower reaches of the project analysis area. While trail reconstruction work would primarily be completed with hand tools, it may also employ heavy machinery. Sediment may be delivered to Parks Creek during trail tread widening, clearing, shaping; clearing of shrubs and brush; and hazard tree felling. This activity may also require blasting to remove portions of bedrock or large boulders that cannot be moved by hand tools or heavy equipment. Where the Parks Creek/Stewart Springs trail crosses streams, all efforts will be made to reduce removal of vegetation and directional felling will reduce impacts to streambanks. Where feasible for user safety, the trail will be constructed so that it is outsloped and dipped to drain and disperse rainfall, snowmelt and associated runoff along its length. All trail reconstruction activities would also adhere to the RPMs and BMPs summarized above. No other habitat indicators would be affected.

The short-term negative effects of the road and trail Project Elements described above include localized increases in water temperature from reducing stream shade at activity sites, introduction of sediment and

increased turbidity with subsequent reduced pool quality, the potential for chemical contamination from equipment and fuel spills, and minor impacts to streambank condition at stream crossings. Both short- and long-term beneficial effects from changes to peak/base flows, the drainage network, road density, disturbance potential and Riparian Reserve quality are expected.

Water Temperature

Alternative 2 would have short term negative effects on water temperature due to minor decreases in shrub, forb and tree cover at isolated locations near stream crossings and along streams where trail reconstruction work occurs. Residual streamside vegetation and trees in the Riparian Reserves at, upstream and downstream of crossings, and downslope/upslope of trail actions, will continue to function and provide stream shade. Removal of vegetation to complete project activities will not measurably impact the overall temperature regime of Parks or Eddy Creeks as the existing canopy cover will be retained at all other locations along these streams. The short-term effects of vegetation removal on the water temperature indicator are expected to be insignificant because decreases in stream shade at localized sites from minor vegetation removal would not result in any measurable increases in solar radiation reaching the stream and would not change the functional level of the water temperature indicator. Average stream temperatures are expected to remain at 8-16 degrees C in Parks and Eddy Creeks. Revegetation efforts at disturbed sites will result in increased stream shade at crossings, help stabilize roadfills and provide filtering effects in the long-term.

Turbidity/Sediment

The turbidity, substrate and pool quality indicators are grouped as they would be affected similarly by the road and trail Project Elements. Turbidity is used as an indicator of fine sediment suspended in the water and substrate is an indicator of fine sediment that settles onto the streambed. This analysis focuses on sediment supply as it relates to increases in turbidity, substrate and pool filling. Removal and displacement of fill material, surface material and vegetation near streams will loosen soil and destabilize isolated areas of stream banks and road/trail prisms. Vegetation/root material would not be placed in streams (with exception of hazard trees or snags that may be felled into stream channels to create instream habitat, or for safety reasons). These impacts to the road and trail prism/cutbank/outboard fills and ditch surface hydrology will have a short-term negative effect on water quality from increases in substrate and turbidity, altering processes that affect pool depth.

While there is no estimate for the total amount of road surface, cutbanks, and ditch or fill material that may be removed/replaced during these activities, the RPMs and BMPs will reduce the probability of increasing turbidity or substrate levels to detrimental levels within KMP and resident fish habitat. Increases in turbidity and substrate and the potential for sediment delivery to active streams will be reduced by:

- completing the work when stream channels are dry; or
- installing clean water bypasses prior to completing stream crossing work;
- using erosion control measures that reduce the amount of and filter out/trap fill or soil material, such as silt fencing, straw bales/waddles; and
- revegetation of disturbed sites.

The anticipated level of sediment delivery from stream crossing work near fish habitat is estimated at ~5 cubic yards per site from the start of construction through the first winter season as flows seal channel material and rainfall washes remnant material from rock slope protection and runoff from road fill and other disturbed areas. This estimate is based on professional judgment and past experience with stream crossing replacements in similar terrain.

Any soil that is flushed downstream at the beginning of the rainy season is expected to be immediately diluted, becoming indistinguishable from the elevated levels of sediment entering the stream channels from upstream reaches. The filtering effects of the duff layer, forbs and shrubs of the Riparian Reserves will also limit increases in turbidity or change in substrate to levels that cannot be meaningfully measured or detected. Turbidity and suspended sediment is not likely to occur further than 500 meters downstream from sites, and therefore would not affect KMP steelhead or MIS fish species habitat in any measurable adverse manner. When these short-term adjustments are completed, all potentially affected fish and fish habitats would benefit over the long-term.

Alternative 2 will have short-term negative effects on turbidity and substrate from all Project Elements by slightly increasing sediment supply from road and trail prism disturbance, but will not change the functional level of the turbidity and substrate indicators within Parks and Eddy Creeks. Additive effects are expected to be non-adverse due to spatial and temporal separation; the proposed stream crossing, road decommissioning, road reconstruction work would not be completed all at the same time. Furthermore, any turbidity or sediment that is generated will be distributed over a large watershed area with a highly diverse and complex drainage network.

Stream crossing upgrades and new installations will result in increased flow capacity that will be adequate to convey 100-year flows and associated bed load and debris, resulting in a long-term positive effect of reducing the potential for debris to plug culverts with subsequent stream diversion and erosion. Replacing old undersized stream crossing culverts placed at incorrect grades (or installing new crossings where needed) with new culverts that are properly sized and at natural stream grade will also increase water quantity by maintaining instream flow.

Alternative 2 will also have a short-term negative effect on pool quality downstream of road and trail work at/near streams for approximately 500 meters from the lowest site where treatments occur. The slight increases in sediment supply from road and trail prism disturbance (including stream crossing replacements/installations) will not change the functional level of pool quality, frequency, or large pools in Parks or Eddy Creeks as any deposited sediments are expected to be flushed out during the first winter season/rainfall event. No measureable long-term filling of downstream pools or degradation of downstream spawning substrate or a measureable impact to food resources (macroinvertebrates) is expected. The probability for long-term chronic erosion would also be reduced by road shaping and compaction and trail tread construction and compaction that places roads and trails in a more hydrologically neutral condition.

Chemical Contamination

All Project Elements have a common analysis for chemical contamination because the mechanism would be an accidental spill of a petroleum product used to fuel or lubricate equipment. Heavy and small diesel/gasoline-fueled equipment will operate directly adjacent to stream channels, springs and other aquatic habitats. Stream channel work will be completed when streams are dry, or flow will be routed through a clean water bypass to isolate it from potential contaminants. Equipment fueling, maintenance and storage sites will be located at flat staging areas at least 100 feet from any watercourse. Appropriate spill containment and cleanup equipment will be kept on site during implementation. Roadway surfacing with rock, chip seal or asphalt concrete will be isolated to the road surface, away from stream channels, springs and ditches. All applicable state and local regulations for application of such materials will be followed. A water pollution control program will address fuel storage (RPM WF-15) and spill prevention equipment will always be on site, with any hazardous spills immediately cleaned up and reported (RPM WF-16). The project may have insignificant, short-term negative effects to KMP steelhead and MIS fish habitat from chemical contamination in stream channels, but the probability of a spill affecting water quality is low given these RPMs and BMPs.

Stream Crossings/Streambanks

Project Elements that only affect stream crossings (culvert replacements/installations/removals for road decommissioning, ford treatments, water drafting sites) may result in short-term, localized negative effects on streambank condition from direct physical disturbance. A minor level of increased streambank instability at, and approximately 5 to 10 feet upstream and downstream of crossings may occur from vegetation removal. Directional felling will be used to minimize disturbance to streambanks and the probability that measurable adverse effects will occur is low. Replacing, installing or removing crossing culverts will occur directly within the stream channel, but disturbance to upstream/downstream banks beyond the 10-foot limit would be minimal to none. Erosion control measures and revegetation would be used to stabilize disturbed areas and stream crossing approaches may also be rocked to reduce runoff of fine sediment during precipitation events.

A minor level of increased streambank instability (with increases in turbidity) at the crossing is anticipated immediately after treatment. This disturbance at localized sites is not expected to result in any measurable adverse effects to the streambank condition at any watershed scale. At the treatment site scale, streambank conditions will be more stable over the long-term due to reduced potential for scour and crossing failures. The project will not change the functional level of the streambank condition indicator and the majority of streambanks upstream and downstream of treated crossings in Parks and Eddy Creeks will not be affected.

Water drafting will occur at, and has the potential to disturb, streambanks. Drafting sites are selected based on accessibility for water trucks. Some minor streambank disturbance will occur in an area of about 6-10 linear feet at each site. Vegetation disturbance and minor erosion can be expected while a drafting site is in service, though areas will revegetate quickly once the site is no longer used. Minor disturbance at several sites will not result in any measurable adverse effects to streambanks at any scale larger than the site scale. No water drafting is permitted at the lower Parks Creek stream crossing culvert barrier (RPM WF-12). Streambank disturbance from water drafting will be localized and will not affect the upstream or downstream streambank condition or result in accelerated erosion that could impact KMP steelhead or MIS fish species habitat.

There will be short- and long-term positive effects on peak/base flows, the drainage network and disturbance history and road density upstream of habitats that support KMP steelhead and MIS fish species. Road decommissioning, closure, and maintenance; road and trail reconstruction; and storm proofing and drainage improvements will improve peak/base flow, decrease the drainage network and result in a decreased potential for both chronic an episodic erosion disturbance within the Parks and Eddy Creek drainages. These combined effects will occur on approximately 108 miles of roads and trails under Alternative 2. Alternative 2 will also result in a decrease of road density by one mile per square mile compared to no action; going from 3.9 mi/mi2 to 2.9 mi/mi2. There is no new permanent road construction that will increase road density, though short segments (<200-feet long) may be constructed to reduce negative impacts on resources. As other road segments would be decommissioned, there would not be a net gain in permanent NFS roads or an increase in open road density.

Alternative 2 will directly affect Riparian Reserves by reducing impacts to water quality and aquatic and riparian habitats. Approximately 928 acres of Riparian Reserves will benefit from the aforementioned road and trail actions, with about 10 miles of roads decommissioned, and 17 miles of road and trails improved in Riparian Reserves. Road decommissioning activities will reduce road densities in the headwater reaches of the fisheries Action Area and restore natural drainage patterns. Road maintenance and reconstruction activities are designed to fix problems with existing infrastructure and reduce maintenance frequency over time, resulting in benefits to water quality and aquatic/riparian habitats. Canopy cover and soil stability will be reduced where vegetation is removed, but not to levels that will

measurably or adversely impact water temperature, turbidity and substrate, pool quality or increase erosion hazard ratings within Reserves. The RPMs and BMPs will eliminate the potential for adverse effects by restricting project activities to dry weather operations (though in areas of NOA, water may be used to dampen soil material), reducing impacts to ground cover, soils and riparian vegetation to the greatest extent possible, implementing during and post-treatment erosion control measures, and adhering to all BMPs for equipment use, fuel/lubricant storage and water quality maintenance. While all Project Elementss associated with Riparian Reserves may have minor, localized and short-term negative effects from road and trail prism disturbance and vegetation removal, all actions proposed under Alternative 2 will reduce other ongoing impacts related to in-stream sediment sources in the long term.

The short-term increases in water temperature and turbidity are not predicted to adversely affect individuals or instream habitat for KMP steelhead or MIS species as treatments will be localized to stream crossings and near-stream roads and trails. RPMs and BMPs will prevent significant amounts of sediment from being deposited on channel substrates. These measures will also minimize the length of channels experiencing turbidity. The potential for short-term and relatively minor levels of turbidity is likely to cease more than 500 meters downstream from treatment sites.

Important salmonid and resident fish habitat characteristics include food provision, shelter, spawning substrate and migration access up and downstream. These characteristics are not likely to be measurably affected during project implementation. The water quality constituents of color, oil and grease, pH, sediment, settleable material, suspended material, temperature and turbidity are not expected to be adversely affected as summarized above and described in the Fisheries BA/BE. As project-affected stream channels and banks adjust during the first storm season and future precipitation events, stream bank condition is expected to adjust to a minor extent. Similarly, Riparian Reserves affected by culvert installations and upgrades, and removals during road decommissioning activities, will need some time to adjust after disturbance. The limited removals or other disturbance of riparian vegetation (tramping by equipment, foot) will not adversely affect watershed ecosystem elements nor contribute to any change in adjacent stream course water temperature to any measureable extent that affects KMP steelhead or MIS fish habitat. Refer to the Fisheries BA/BE and hydrology report for the detailed analysis of all habitat indicators.

Positive indirect effects to downstream fish and their habitat are anticipated over the long-term, although they will be difficult to measure. Downstream water quality and quantity is expected to improve after road decommissioning and culvert upgrades. Chronically generated road, trail, cutbank, outboard fill slope and ditch surface erosion rates are expected to decrease as these surfaces will be more hydrologically neutral, dispersing flow out over a larger vegetated area rather than ‘channeling’ it to a few discharge points. The potential for, and number of, episodic mass soil movement/landslide events and stream crossing failures and diversions will also be reduced and are likely to be fewer over an extended period of time than what would occur without implementation of the project. Chronically generated soil surface compaction and displacement from OHV use in and within near-stream areas will also decrease, though beneficial effects would not be measureable in terms of improving sensitive or MIS fish or their habitat.

Given the location and high elevation of the Eddy Creek Meadow, Caldwell Lakes and West Parks Lakes trail reconstruction-conversion of roads to trails Project Elements, there would be no measureable effects on the KMP steelhead or resident fish habitat indicators, though all actions would benefit downstream water quality to a degree. The Tamarack Flat dispersed area restoration and other riparian OHV protection work would also have overall beneficial effects to water and soils in Riparian Reserves. The short- and long-term effects of these Project Elements (increases in substrate and turbidity into downstream ditches and stream channels from re-construction and re-routing of roads/trails; minor streambank condition adjustments from rock placement or other bank stabilization; and reduced soil compaction and riparian

vegetation impacts from blocking OHV access) would be most evident at the site locations; extending for a distance of 25 feet to 0.30 mile downstream. Therefore, the Project Elements would not influence downstream fisheries habitat.

As described for direct effects above, the trailhead improvements Project Element would not directly affect sensitive or MIS fish. Installing a concrete-cast vault toilet at the Parks Creek/Mt. Eddy trailhead is expected to result in both direct and indirect beneficial effects by reducing, if not eliminating, the potential for downstream water contamination.

Cumulative Effects – ESA and NEPA

The ESA defines cumulative effects in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities that are reasonably certain to occur within the Action Area of the Federal action subject to consultation." As stated in the temporal bounding section above, the existing condition represents the cumulative effects of all past actions and natural events in the fisheries Action Area (Connaughton, 2005). Private timber harvest has occurred within the fisheries Action Area over the last 10 years and those effects, though not considered here, are reflected in the existing condition. The vast majority of lands in all three 5th field watersheds are privately owned and managed and located downstream of the areas where project activities are proposed. With respect to water quality and improved fish habitats, implementation of any of the action alternatives will address water quality problems at their source (where they originate), providing a logical first step to addressing water quality issues in the Shasta Valley as described in the Shasta River TMDL (NCRWQCB, 2006), but will not change the land or water use patterns in the Shasta Valley or other private lands. There are no State-administrated lands in the fisheries Action Area.

At this time, using the best available data from the Forest and surrounding private lands, ongoing and reasonably foreseeable future actions on both federal and private lands in the fisheries Action Area include, but are not limited to: annual routine road and recreational site maintenance (including hazard tree felling), firewood collection, fire suppression activities, noxious weed monitoring, dispersed recreation, one Timber Harvest Plan,[47] other agricultural uses (farming/ranching) and rural residential development. Implementation of Motorized Travel Management and special use permit authorizations under previously completed NEPA are also ongoing on NFS lands. Some of these actions have the potential to increase sedimentation within the fisheries Action Area streams, possibly impacting fish habitat. However, activities would occur under the State Forest Practice Rules, Water Board and TMDL regulations, other local and regional regulations, RPMs and BMPs that include measures to protect riparian and stream habitat.

There are also numerous active water rights within the lower elevation reaches of the fisheries Action Area in the Shasta River basin, including a 14,000 acre-foot diversion on Parks Creek. Diversions can result in short-term negative effects to downstream fisheries and/or down slope habitats. Impacts include reduction and/or loss of instream flow(s); net increases of sediment delivery to channels and higher turbidity levels; alterations to riparian habitat including riparian canopy loss; increased water temperatures and low dissolved oxygen levels that can lead to a decrease in available fish habitat and potentially significant adverse effects on listed, sensitive and MIS fish species. The proposed federal action would have no influence on existing or any future diversions.

The Shasta-McCloud Management Unit's annual road maintenance projects include RPMs and BMPs within and near Riparian Reserves and aquatic habitats. Per the Forest's Fire Management Plan, the use of

[47]Based on a query of the Calfire THP database at http://www.fire.ca.gov/ResourceManagement/THPStatusUpload/THPStatusTable.html on March 13, 2014 and Personal Communication with Bobby Douglas, Biologist for Mich-Cal, on March 25, 2014.

MIST or Minimal Impact Suppression Tactics is anticipated to reduce the potential for significant direct and indirect effects from fire suppression activities. As a general rule, if a fire is larger than five acres, Resource Advisors assist in guiding suppression activities (e.g., making recommendations for dozer line placement). Firewood collection and noxious weed monitoring do not generally result in deleterious water quality effects. Dispersed recreation uses along streams, and OHV use has resulted in soil disturbance and compaction and bank impacts, contributing to the purpose and need for the proposed project.

Private industrial timberlands in the higher elevation reaches of the fisheries Action Area are owned and managed by Michigan California Timber Company (Mich-Cal). Past activities on an approximate 370 acres have included commercial thinning, salvage, clear-cutting and other forest stand treatments. Similar to treatments on NFS lands, the effects of these activities are reflected in the existing conditions. Mich-Cal currently has one planned THP that is submitted for approval within the fisheries Action Area (Dale Creek THP, 2-14-016-SIS). This THP is proposed on about 300 acres and includes tractor and cable yarding treatments. Mich-Cal's ongoing Deadfall THP (02-08-106-TRI) is located outside of the fisheries Action Area. The California Forest Practice Rules govern timber harvest on private lands and provide that no THP can be approved if it is likely to result in take of a federally listed species, unless authorized by a federal Habitat Conservation Plan. The watercourse and lake protection guidelines in the Forest Practice Rules ensure that private timber operations do not cause significant adverse or site-specific direct or indirect effects to native riparian-associated species or beneficial functions of riparian zones (2014 Forest Practice Rules, various pages). While future forest management actions on private lands may occur within the 10-year timeframe, reasonable effects cannot be evaluated in the absence of a proposed timber harvest plan. As suitable habitat indicators for fisheries will not be removed or downgraded, and critical habitat will not be affected, under the Parks Eddy project, it is not expected to contribute to significant or adverse cumulative effects on listed, Forest Service sensitive or management indicator fish species, or their habitats, in combination with the proposed THP.

Alternative 2 will not result in any measurable increase in Cumulative Watershed Effects in the fisheries Action Area or three 5th field watersheds (Bachmann, 2014). Cumulative watershed effects analysis using ERA modeling shows that Alternative 2 will not exceed the TOC within the three 5th-field watersheds or the smaller 8th-field subwatersheds. Watershed Condition Class would not change; it will remain at Condition Class I with an ERA less than 40 percent TOC. There will be no increase in the equivalent roaded area and this alternative will not result in the 8th-field subwatersheds exceeding TOC relative to existing conditions. Based on these results, the actions proposed will have positive effects on water quality, aquatic and riparian habitats located downstream and outside of the project analysis area at the smaller HUC8 scale and larger HUC5 scales.

Because no measureable direct effects, short- or long-term, are expected to occur to fish as a result of implementing Alternative 2, the only cumulative effects that could conceivably affect fish are those that may indirectly affect fish or fish habitat downstream of treatment areas. The direct and indirect effects summarized above, and fully described within the Fisheries BA/BE and MIS report, confirm that no adverse indirect effects to fish or fish habitats are likely. Therefore, no cumulative effects will result that could otherwise harm Sensitive KMP steelhead or MIS fish, or their habitat, as a result of Alternative 2. The Parks Eddy Project will result in short-term, discountable (insufficient probability) and insignificant (insufficient magnitude) increases in turbidity, substrate and pool filling and short-term changes in water temperature and streambank condition at localized stream crossing and water drafting sites. Individuals would not be measurably or adversely affected due to the distance of proposed treatments from occupied habitat, resource protection measures and BMPs. There would be long-term beneficial effects on all habitat and watershed indicators for sensitive KMP steelhead and resident MIS fish with no contribution to any incremental adverse direct or indirect ongoing or future foreseeable effects in the watersheds.

Alternative 3

Direct Effects

Direct effects are the same as described for Alternative 2.

Indirect Effects

The same actions and indirect effects closest to KMP steelhead and MIS fish habitat would occur under Alternative 3 as those described for Alternative 2 in terms of the: 1) proposed trail reconstruction work along the Parks Creek Trail, 2) the cutbank/road surface treatments near the lower reaches of Parks Creek, and 3) the ford crossing on Eddy Creek. The short-term negative effects from water temperature changes at stream crossings and near streams, increased turbidity and substrate, minor adjustments in pool filling, and effects to streambank condition would be the same within and near KMP steelhead and MIS fish habitat.

While implementation of Alternative 3 would result in these same indirect effects, an additional total 16.75 miles of road would be decommissioned, with 4.17 miles of this effect in Riparian Reserves. Decommissioning would occur either by active or passive means. The increase in overall road decommissioning would result in greater longer term beneficial effects to downstream water quality by reducing sediment delivery to streams via direct and indirect effects of reduced vehicle traffic on road surfaces. The majority of these benefits would occur in the West Parks and mainstem Parks Creek drainages (see alternative maps in Appendix F).

The combined effects of road decommissioning, closure, and maintenance; road and trail reconstruction; and storm proofing and drainage improvements will occur on approximately 102 miles under Alternative 3. While less mileage would be maintained and reconstructed compared to Alternative 2, there would be an increase of 16.75 total decommissioned road miles, resulting in slightly greater improvements to peak/base flow, a decrease in the drainage network and decreased potential for both chronic an episodic erosion disturbance within the Parks and Eddy Creek drainages from road use. Alternative 3 will decrease road density by about 1.7 mile per square mile compared to no action; going from 3.9 mi/mi^2 to 2.23 mi/mi^2. Alternative 3 directly affects Riparian Reserves in a similar manner to Alternative 2 with approximately 1,166 acres of Riparian Reserves benefits from increased road decommissioning with about 13.5 miles of roads decommissioned, and 13 miles of roads and trails improved in Riparian Reserves.

Cumulative Effects

Cumulative effects are the same as described for Alternative 2, though Alternative 3 results in the greatest cumulative effect from the proposed project in combination with other ongoing and future foreseeable actions. Benefits to downstream water resources and fisheries habitat at the project scale would be greater due to more road mileage being decommissioned and more Riparian Reserve acres restored in the watershed.

Alternative 4

Direct Effects

Direct effects are the same as described for Alternative 2 with the exception that there would be no improvements in sanitation at the Parks Creek Trailhead, and no direct beneficial effects to downstream water quality by reducing the potential for water contamination.

Indirect Effects

As described for direct effects, there would also be no indirect beneficial effects to downstream water quality by reducing the potential for water contamination. As the other project changes under Alternative 4 do not affect habitat indicators for KMP steelhead or MIS fish species, the remaining indirect effects are the same as that described for Alternative 2.

Cumulative Effects

Cumulative effects are the same as described for Alternative 2.

Effects Determinations

Threatened Species and Critical Habitat

The analysis of potential effects to habitat elements that support essential habitat types of freshwater habitat for listed anadromous salmonids and green sturgeon found there would be no direct or indirect effects to any listed species, and therefore no cumulative effects. Effects would not occur to listed species or their designated critical habitat due to the distance of suitable and critical habitat from where project actions and effects would occur.

Sensitive Species

Implementation of any of the action alternatives may impact habitat for the Klamath Mountain Province steelhead Distinct Population Segment in the short-term due to minor, discountable (insufficient probability) and insignificant (insufficient magnitude) increases in turbidity, substrate and pool filling and short-term changes in water temperature and streambank condition at localized stream crossing and water drafting sites. Individuals would not be measurably or adversely affected due to the distance of proposed treatments from occupied habitat, resource protection measures and BMPs. There will be long-term beneficial effects of improved water quality and quantity. Implementation of any of the action alternatives will not contribute to a trend towards Federal listing or loss of viability to the population. Implementation of Alternative 3 would result in greater beneficial effects on the watershed conditions that support this species, contributing to a greater extent toward a trend away from listing or loss of viability. There would be no effect to Upper Klamath-Trinity Chinook salmon, Pacific lamprey, McCloud River redband trout or Hardhead as the project analysis area and fisheries Action Area are outside their range.

Degree to Which the Alternatives Meet the Purpose and Need for Action as it Pertains to Threatened or Endangered Fish

The purpose and need for action is not specific to threatened and endangered fish species. However, the purpose and need includes improving road conditions and watershed health, which have beneficial effects on Sensitive Klamath Mountain Province steelhead and MIS fish species designated under the Forest Plan. All action alternatives are expected to result in long-term beneficial effects due to the predicted reduced disturbance after road decommissioning and road closures, and improvements in the transportation system that will allow for improved response times and more effective fire suppression activities. These two main beneficial effects are offset however, depending on the alternative selected. Alternatives 2 and 4 afford for greater protection of forested areas in the event of a fire due to decommissioning fewer road miles in LSR, while Alternative 3 reduces road sediment sources and the potential for human disturbances on a larger percentage of the landscape. Without action, the existing trends and impacts to water quality in the project area would continue.

Effects Relative to Key Issues as They Pertain to Threatened or Endangered Fish

While there are no key issues regarding specific effects to listed fish species, the issue of road and motorized trail construction and maintenance, and trailheads and recreation facilities having negative impacts on the general fisheries resource is assessed. Indicators to measure issues developed for project alternatives in terms of the fisheries resource include:

- Acres of Riparian Reserves benefitted,
- Miles of road and trail improved and maintained within Riparian Reserves,
- Miles of road decommissioned and closed within Riparian Reserves,
- Post-project open road densities (measured in miles/square mile).

These indicators are summarized in the table below and overall, there will be larger benefits to water quality from Alternative 3 when compared with Alternatives 2 and 4 (which have the same effects) through additional acres of Riparian Reserve benefits and roads decommissioned. No listed fish or designated critical habitat would be affected.

Table 33: Fisheries Indicator Summary by Alternative

Fisheries Issue Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Acres of Riparian Reserve Benefitted	0 acres	928 acres	1,166 acres	928 acres
Miles of road and trail improved and maintained within Riparian Reserves	0 miles	17.58 miles	13.29 miles	17.58 miles
Miles of road decommissioned and closed within Riparian Reserves	0 miles	9.36 miles	13.53 miles	9.36 miles
Post-project open road densities (measured in miles/square mile)	3.93 mi/mi^2	2.91 mi/mi^2	2.23 mi/mi^2	2.91 mi/mi2

Additional Compliance Topics

Management Indicator Assemblages – Wildlife

A Wildlife Management Indicator Assemblage report (Mapula, 2014) was completed for the project and is incorporated by reference. Information relevant to the decision is summarized below.

Management indicator assemblages are groups of wildlife associated with vegetative communities or key habitat components as identified in the Forest Plan (page 3-24). The effects of the project on the habitat of each potentially affected management indicator assemblage and how these effects to habitat may influence Forest-level trends were determined by examining the how direct, indirect and cumulative effects will change the quantity and/or quality of the assemblage habitat in the project area.

In order to accomplish the project objectives, it may be necessary to remove minimal amounts of roadside brush and to limb or remove smaller-diameter (typically <12 inches diameter at breast height) conifers to increase sighting distance, accommodate turnouts, improve drainage and drainage structures, or provide for safe parking at recreation or vista sites. All sites where vegetation removal is proposed are within or immediately adjacent to existing road prisms.

Removal of trees and brush may occur within riparian, late seral, opening and early seral, snag and down log, and hardwood assemblages. There will be no change in the quantity or quality of assemblage habitat for the representative species in the project area due to the linear and narrow extent of the proposed treatments (along existing roads/routes, trails); passive decommissioning; active decommissioning that may remove small amounts of brush and small trees; and a minimal amount of larger sized hazard tree and snag felling.

Elements of management indicator assemblage habitat would be affected in the short-term because the proposed activities may require removal of minimal amounts of small-diameter trees and shrubs along existing road prisms. Noise disturbance to representative species may also occur due to heavy equipment use along roads during maintenance activities. Since the project will not measurably or significantly change the quantity and/or quality of assemblage habitat within the approximate 27,700-acre project area, there will be no direct, indirect or cumulative effects to assemblage habitat. The proposed project would not influence Forest-level trends for management indicator assemblage habitat.

Management Indicator Species – Fish

A Management Indicator Species report for the fisheries resource was prepared and is incorporated by reference (Jordan, 2014). Information relevant to the decision is summarized below.

Implementation of any of the action alternatives may impact rainbow trout or winter-run steelhead habitat in the short-term due to minor, discountable (insufficient probability) and insignificant (insufficient magnitude) increases in turbidity, substrate and pool filling and short-term changes in water temperature and streambank condition at localized stream crossing and water drafting sites. Individuals would not be measurably or adversely affected due to resource protection measures and BMPs. There will be long-term beneficial effects of improved water quality and quantity. Implementation of Alternative 3 would result in greater beneficial effects on the watershed conditions that support these species.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), in concordance with the Sustainable Fisheries Act of 1996 (Public Law 104-267) designated Essential Fish Habitat (EFH) for coho and Chinook salmon (Federal Register, Vol. 67, No. 12). The Magnuson-Stevens Act defined Essential Fish Habitat as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (Federal Register, Vol. 67, No. 12)." Essential Fish Habitat for coho salmon and Chinook salmon is identical to designated critical habitat for these species. The effects analysis in the Fisheries BA/BE considers effects on coho and Chinook salmon and found that no project elements would affect Southern Oregon Northern California Coast coho salmon or Chinook salmon critical habitat. These species are not known or expected to be present, and their critical habitat is not designated, in the project analysis area. Based on this rationale, the project will not affect coho salmon or Chinook salmon essential fish habitat.

Late Successional Reserves

The Shasta-Trinity National Forest, Forest-Wide Late Successional Reserve Assessment (LSRA) was prepared as directed in the Forest Plan (Forest Plan page 4-37) to provide guidance for managing Late-

Successional Reserves (LSRs). The project activities are consistent with the LSRA under Miscellaneous Activities #1, 10, and 11 (Final EA pages 7 and H-1 through H-4; LSRA pages 203-208), which are considered neutral to the objectives of LSRs.

The general desired conditions for LSRs include Aquatic, Riparian Reserves, and Roads in LSRs. (LSRA Chapter 3, pgs. 170-171):

- For Aquatic desired conditions, watershed restoration activities, "It is desirable to minimize the negative effects of roading within the LSRs/MLSAs, including a reduction in the amount of road related sediment within the watershed." (LSRA pg. 170)
- For Riparian Reserves desired conditions, "Any actions concerning roads will consider impacts to Riparian Reserves and…be consistent with the standards and guidelines at NWROD, especially pages C-32 and C-33." (LSRA pg. 170)
- For Roads desired conditions, "The roads providing access to private lands should be maintained in a condition that minimizes aquatic resource damage. Where road impacts are a concern actions should be considered such as, redesign, reconstruction, and maintenance, or decommissioning to minimize resource affects while meeting the land management objectives." (LSRA pgs. 170-171)

The LSRA contains a partial list of a number of miscellaneous activities that are considered neutral to the objectives of LSRs:

- Miscellaneous activity #1 applies to preexisting facilities, such as the Parks Creek Trailhead. It states that "These facilities are in need of periodic maintenance and improvement to continue to provide safe service to the public" (LSRA pg. 203). Maintenance and improvements to the trailhead will improve safe service to the public by providing adequate (more organized) parking, improved sanitary conditions, and education about the area. Activities will not enlarge the size of the trailhead. And the trailhead activities will not affect late-successional habitat. The desired condition for Miscellaneous Activity #1 is continued management of existing facilities. It is consistent with NWROD, Developments (pg. C-17) and Recreational Uses (pg. C-18), and is neutral to the objectives of LSRs.
- Miscellaneous Activity #10 applies to existing roads in the project area that are in LSRs. It is important to note that roads in LSRs proposed for reconstruction activities are preexisting roads that are in need of repairs greater than what would be considered regular/routine maintenance (LSRA pg. 206). The reconstruction activities in LSR include realignment of short (<200-foot) sections on Eddy Creek Road to avoid sensitive areas, stream channels, and slumps, which will benefit watershed and riparian conditions. Reconstruction does not include road widening outside the existing road prism. They do include improved drainage facilities such as cross drains and ditch improvements, other drainage facilities, and rocking the road surface (all of which are stabilizing the road cut/fill) to reduce erosion, and the negative effects these stretches of road are having to water quality (which would be beneficial to the objectives of the LSR as noted in the trade-offs and effectiveness of Miscellaneous Activity #10). These actions will improve sensitive meadow habitats by restoring and enhancing natural drainage patters that may have been previously adversely impacted by the road. The reconstruction of 42N19 in Section 3 will improve erosion and drainage on this section of road for continued use. The reconstructed portion would be decommissioned (a road action specifically included in this miscellaneous activity) if a new alignment (re-routing a portion of the road on an existing private roadway outside LSR) can be acquired and implemented.

The turnouts to be constructed on Parks Creek Road are included in Miscellaneous Activity #10. They will be located in existing wider areas of the road prism that already exist and are not considered new construction (no new ground disturbance outside the existing road prism). Where they provide the opportunity to access cross-country hiking, they could be considered as providing for dispersed recreation.

Decommissioning roads within the LSR is included in Miscellaneous Activity #10, and the desired condition is that excess roads are removed from the system. The LSRA general desired condition for road density in LSRs is less than 3.0 miles per square mile. Although the project area is currently below that amount, Alternatives 2 and 4 would result in further reduction to 1.9 miles per square mile in LSR. Alternative 3 would result in open road density of 1.2 miles per square mile. All action alternatives are well below the LSRA desired condition of less than 3.0 miles per square mile.

Miscellaneous Activity #10 is consistent with the NWFP Record of Decision, Road Construction and Maintenance (pg. C-16) which states that "Road construction…generally is not recommended unless potential benefits exceed the costs of habitat impairment…" The potential benefits to water quality, meadow habitat enhancement, and reduced chronic erosion in LSR outweigh the "reconstruction" proposed with this project.

- Miscellaneous Activity #11 applies to managing dispersed recreation including constructing, reconstructing, re-routing, and maintaining trails (LSRA pg. 207). As noted in the Existing Condition (LSRA p.207), the forest is easily accessible from I-5 and 70 percent of the Forest use is dispersed recreation with use expected to rise with pleasure walking and pleasure driving among the top activities. The Desired Condition for this activity is to "Continue to provide quality opportunities for dispersed recreation compatible with protection of resources" and is specific to areas along roads, trails and bodies of water. The new trailheads for access to trails for West Parks Lakes and Caldwell Lakes are responsive to this increase in dispersed use and will be constructed in locations where there is room within the existing road prism to relocate existing trailhead parking (3-5 vehicles), and ground disturbance will be minimized and only include actions that reduce accelerated erosion and sedimentation. They are included under Miscellaneous Activity #11 as part of the trail systems with the intent of better managing safe road and trail use and reducing negative trail impacts to water quality.

  Miscellaneous Activity #11 desired condition is to continue providing opportunities for dispersed recreation compatible with protection of resources, and is considered neutral to the objectives of LSRs.

Within the project area there is a need to provide for public access and quality recreational opportunities (including motorized), as well as meeting the objectives of the LSRs. All action alternative activities have been determined to be consistent with the LSRA, will either be neutral to or benefit the LSR objectives, and will meet the LSRA desired conditions of providing opportunities for dispersed recreation compatible with resource protection.

Executive Order 13186 – Migratory Birds

A migratory bird report was completed (Mapula, 2014) for this project and is incorporated by reference. Information relevant to the decision is presented below.

The January 2000 USDA Forest Service (FS) Landbird Conservation Strategic Plan, followed by Executive Order 13186 in 2001, in addition to the Partners in Flight (PIF) specific habitat Conservation

Plans for birds and the January 2004 PIF North American Landbird Conservation Plan all reference goals and objectives for integrating bird conservation into forest management and planning.

Following EO 13186, a *Memorandum of Understanding between the USDA Forest Service* and the *US Fish and Wildlife Service to Promote the Conservation of Migratory Birds* was signed (2008 MOU that was updated in 2014). Within the National Forests, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales and ensuring that bird conservation is addressed when planning for land management activities. . Opportunities to promote conservation of migratory birds and their habitats in the project area were considered during development and design of the project in accordance with the 2008 (and 2014) MOU.

For the Shasta-Trinity National Forest, bird species of management concern are those species listed under the Endangered Species Act as Threatened or Endangered and those species designated by the Regional Forester as sensitive. Minimizing impacts to these species is a project priority. Limited operating periods, resource protection measures and best management practices to protect, maintain and enhance species' habitat were developed and will be adhered to throughout project implementation. Riparian and forest vegetation treatments may include hazard tree removal, shrub and brush clearing. Disturbed areas (e.g., cutbanks, reconstructed areas, inboard/outboard fill faces) will be revegetated where appropriate, providing hydrologic stability while helping to ensure that the project area will continue to provide habitat components necessary to maintain a diversity of species at the project and landscape scale.

A summary of vegetation impacts and the predicted effects is provided below:

- Minor amounts of existing vegetation (ranging from <1 inch to 20 inches diameter at breast height) will be felled and left in place, or, if necessary, removed from the road prism during project activities to enhance turnouts and improve sighting distance along roads.
- Vegetation removal may be required to excavate and replace existing culverts, and install culverts.
- Small trees, limbs, and shrubs will be lopped and scattered to improve safety at turnouts.
- Hazard trees or snags may be felled to provide for public safety, though they will be retained on the landscape where safe and in accordance with visual quality resource protection measures.
- Some vegetation may be removed/crushed in place in order to decommission or reshape/grade roads.
- Cutbanks and other disturbed areas, including staging areas, will be revegetated using the local seed source upon completion of the treatments with native grass, forbs, and mulch.

These impacts are considered immeasurable and insignificant given the linear and narrow extent of treated area and minor amounts of vegetation proposed for treatment. Potential impacts to migratory birds (primarily from noise disturbance) and their reproductive behaviors and habitats will be minimized through implementation of Limited Operating Periods within 0.25-mile of suitable northern spotted owl habitat and within 0.25-mile of northern goshawk nests.

Executive Order 12898 – Environmental Justice

As stated in Executive Order 12898, it is required that all federal actions consider the potential of disproportionate effects on minority and low-income populations in the local region. The principals of Environmental Justice require agencies to address the equity and fairness implications associated with Federal land management actions. The Council on Environmental Quality (CEQ) (Council on Environmental Quality, 1997) provides the following definitions in order to provide guidance with the compliance of Environmental Justice requirements:

- "Minority population: Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis..."
- "Low-income population: Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, agencies may consider as a community either a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect."

According to the American Community Survey and US Census data, it is suggested that the Native American population meets the Environmental Justice criterion as a minority population meaningfully greater than the general population of the states. Therefore decision makers should pay careful attention to the potential impacts of management actions on Native Americans.

The table below reports the number of individuals below the poverty level and poverty rates in 2000 and 2008. Siskiyou County has a higher poverty rate than the state, but experienced a slight decline between 2000 and 2008. These poverty rates suggest that a substantial proportion of the existing population should be considered as a low income group. Therefore, decisions regarding future management actions should carefully assess the effects on low income populations in the study area.

Table 32. Poverty Status by State and County, 2000 and 2008

	2008		2000	
	Number	Percent	Number	Percent
Siskiyou County	7,182	16.4%	7,235	16.7%
California	4,781,201	13.3%	4,304,909	12.7%

Source: www.census.gov

In cases where management decisions are expected to create jobs and income or affect visitor spending in the local economy, it is unlikely that there would be a disproportionate adverse effect on minority and low income populations. Individuals in these populations may benefit from any increase in jobs and income, or Forest visitor spending in the area.

Alternatively, future management decisions that may negatively impact local employment and income conditions or visitor spending should carefully assess the distribution of effects across population demographics, paying careful attention to Native American and low income populations in the study area.

Because the money spent by the Forest to implement any action alternative is likely to benefit local businesses, and unlikely to have a long-term effect on Forest visitors to the project area (hence visitor spending), no disproportionate adverse effects on low income or minority populations are expected as a result of implementing any of the Parks Eddy project action alternatives.

Survey and Management Botanical Species

A Compliance Report for Botanical Resources (Posey, 2014) was completed for the project and is incorporated by reference. The report includes Survey and Manage plant species.

Survey and Manage are a set of standards and guidelines associated with the 1994 Record of Decision (ROD) for Amendments to Forest Service (FS) and Bureau of Land Management (BLM) Planning Documents within the Range of the North Spotted Owl (Northwest Forest Plan or NWFP), which was

incorporated into the Forest Plan. The survey and manage guidelines are documented in the January 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines. These standards and guidelines are applicable to Forest Service and Bureau of Land Management lands in western Washington, western Oregon, and northwestern California and are intended to reduce or eliminate (mitigate) potential effects from agency actions to just over 300 flora and fauna species including mosses, liverworts, fungi, lichens, and vascular plants.

The Survey and Manage species analyzed for this project were clustered lady's slipper and mountain lady's slippers (see Botany section above). There is no habitat within the project area for Mingan moonwort, or mountain moonwort. No populations of clustered lady's slipper were found. One population of mountain lady's slipper was known to occur. No Pacific fuzzwort was known to occur in the project area and no populations were found during surveys.

There are no Survey and Manage plants, bryophytes, or lichen species, Categories A or C-F within the Parks Eddy project boundary. Predisturbance surveys were conducted for Pacific fuzzwort (Category A) in conjunction with other plant surveys. Surveys for Category B fungi are not required because old growth stands will not be affected by this project.

There is one known site for Category B fungi (2001) within the project boundary; *Nivatogastrium nubigenum*. It is located in a small drainage about halfway between Eddy Creek and Road 41N50A. This site is in an area that will not be disturbed by this project.

No Survey and Manage species will be affected by this project. Project activities under all action alternatives will not affect the Survey and Manage species. Field surveys were conducted in conjunction with sensitive plant surveys and no new sites were found. The one known site is not in an area where activities are proposed.

Positive effects include reducing road densities within LSR boundaries. Alternative 3 would decommission more roads than Alternatives 2 and 4. Alternative 3 would also eliminate motorized trails in the LSR possibly providing more protection to wetlands in the LSR. Overall, Alternative 3 would provide more positive effects than Alternatives 2 and 4.

Watch List Botanical Species

The Compliance Report for Botanical Resources (Posey, 2014) contains information regarding watch list plant species, and is incorporated by reference.

USDA regulation 9500-4 directs the Forest Service to manage habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species, and to avoid actions which may cause a species to become threatened or endangered. Forest Service objectives further state that viable populations of all species must be maintained in habitats distributed throughout their geographic range on National Forest System lands (Forest Service Manual [FSM] 2670.22).

The Shasta-Trinity National Forest includes any plant listed by the California Native Plant Society's Inventory of Rare and Endangered Plants of California and not occurring on the Forest Service Region 5 Sensitive Plant List as a Watch List Species. Watch list species are noted and potential effects mitigated where possible.

Six species of watch list plants are known to occur near or within activity areas for the Parks Eddy project: California lady's slipper, Siskiyou fireweed, Mt. Eddy buckwheat, Siskiyou buckwheat,

California pitcher-plant and Canadian buffalo-berry. Five of them may be in or within 100 feet of road repairs or improvements to the Parks Creek Trailhead (all but Canadian buffalo-berry). Most species can be flagged and avoided. Mt. Eddy buckwheat may lose a few individuals because of proposed improvements to the Parks Creek Trailhead, but most of the population will remain intact. California pitcher-plant may also lose a few individuals, but most populations will remain untouched. Overall, numbers of plants will remain basically the same.

Alternative 3 will provide more protection to California pitcher plant populations that Alternative 2 and 4 by reducing access by motorized vehicles to areas with habitat by decommissioning more roads in LSRs and converting the motorized trail to foot traffic only. There may be losses of individual plants from Alternatives 2 and 3 in the short term, but in the long term changes would be positive.

Ethnobotanical Species/Special Forest Products

Forest goals Ethnobotanical species/Special Forest Products is generally found under the "Biological Diversity" heading in the Forest Plan, see page 4-4. It says, "Integrate multiple resource management on a landscape level to provide and maintain diversity and quality of habitats that support viable populations of plants, fish and wildlife."

The Compliance Report for Botanical Resources (Posey, 2014) contains information regarding ethnobotanical plant species and special forest products, and is incorporated by reference.

Ethnobotanical and special forest products include habitats for edible fungi species (mushrooms) including boletes and morels.

Native Americans and settlers collected edible berries such as strawberries, currents and gooseberries. Manzanita flowers and berries were eaten and the leaves were used medicinally. Manzanita berries can also be used to make a sweetener when ripe. Many of these plants are still collected today by Native Americans and others. Most of these plants are common throughout the project area. Edible fungi species are being collected in the project area. Bear-grass or basket-grass is also known to occur in the project area. Bear-grass does not occur in any proposed activity areas. There are some populations of bear-grass upslope along Parks Creek Road.

Fungi are collected as a special forest product in the spring and fall. Boletes, morels and others are collected in the spring while boletes are also collected in the fall. Additional Special forest products collected in the project area include fire wood, plants for scientific study and Christmas trees. Ethnobotanical species/special forest products are not expected to be affected by this project.

No ethnobotanical species are expected to be affected by this project. Decommissioning roads may improve habitat for some species. This project is in compliance with laws, regulations and the Forest Plan for ethnobotanical species and special forest products. These species are not usually found growing in roadways, parking areas or trails.

Unique Habitats

Forest goals for unique habitats is also found under the "Biological Diversity" heading in the Forest Plan, see page 4-4. It says, "Integrate multiple resource management on a landscape level to provide and maintain diversity and quality of habitats that support viable populations of plants, fish and wildlife.

The Compliance Report for Botanical Resources (Posey, 2014) contains information regarding unique habitats, and is incorporated by reference.

Unique habitats in the project area include wet meadows, fen and seeps. The meadows in Caldwell Lakes Basin, West Parks Lakes Basin and Eddy Creek are interesting in that they are all dominated by different plant species and differences in topography. There are two meadows in Caldwell Lakes Basin; the first, Sundew Meadow, is dominated by California pitcher-plant and bog asphodel and goes from nearly flat to extremely steep with numerous seeps. The second, Bogbean Meadow, is dominated more by Carex and Juncus species with numerous pools containing floating vegetation such as *Menanthyes trifoliata* (Bogbean). Bogbean Meadow sits in a relatively flat area scooped out by glacial activity. It also contains fens.

West Parks Lakes Meadows change in species and topography as you climb in elevation. Pacific yew (*Taxus brevifolia*) was a common species found along the edges of creeks bordering some meadows. Upper Eddy Creek is dominated by *Darlingtonia californica* (California Pitcher-plant). These meadows cover large areas from steep to nearly level topography. They are very beautiful to look at with high species diversity with something different to see in each meadow throughout the blooming season.

Seeps are numerous in the project area and are easily seen along roads or just coming out of a side hill. Larger meadows have seeps which provide consistent water supply to them. Road building in the project area cut across many of these seeps and these are now causing multiple problems (erosion, sedimentation, stream capture, fill failure) along many roads. Seeps can be dominated by forbs such as *Darlingtonia californica* (California pitcher-plant) and *Hastingia alba* (white rush lily), or Carex and grass species. Both California lady's slipper populations are found growing in seeps. Canadian buffalo-berry is associated with a large seep area just upslope from Parks Creek Road.

There is a wide diversity of vegetation along stream corridors within the project area. Conifers are the dominant tree species with birch (*Betula*), willows (*Salix sp*.), *Rhodendron occidentalis* (western azalea) and *Frangula rubra* (Sierra coffeeberry) common along streams in the Eddy Creek Drainage. Pacific yew, western azalea and Labrador tea (*Rhododendron columbianum*) are common along the West Fork of Parks Creek.

Much of the project area is dominated by serpentine soils. Serpentine habitats can include forested areas, wetlands, riparian habitat, barrens and ridgetops. Serpentine barrens and semi-barrens (usually ridge tops or rocky areas where soils are thin) may include seeps where serpentine endemic forb species are found. Semi-barrens support chaparral vegetation types such as the western juniper type above or *Ceanothus cordulatus* (white thorn).These soils are limited in nutrients due to an imbalance in calcium and magnesium. Plants have had to adapt to living in serpentine and this provides the species diversity and unusually high number of endemic plants found in the area.

Juniper/sagebrush-curly-leaf mountain mahogany/blue bunch wheatgrass: This is an interesting habitat that is found scattered throughout the project area but is most noticeable in the Dewey Mine road area and Eddy Creek. This vegetation type is usually associated with the Great Basin. It can be found on both serpentine and non-serpentine soils throughout the Mt. Eddy area.

With the high number of unique habitats in the project area comes high species diversity. This diversity provides an amazing show of flowering plants throughout the growing season and brings many visitors the area. Alternative 3 would provide more protection for many of these plants than Alternatives 2 and 4 by decommissioning more roads in the LSRs and converting the motorized vehicle trail to foot traffic only. There may be losses of some individual plants in the short term from Alternatives 2 and 4, but in the long term changes would be positive.

Executive Order #11990 – Protection of Wetlands

Executive Order #11990 was established in 1977 to avoid adverse impacts associated with the modification or destruction of wetlands.

The Hydrology Report (Bachmann, 2014) and Compliance Report for Botanical Resources (Posey, 2014) discussion wetlands and impacts to wetlands, and are incorporated by reference.

The existing Forest transportation system and user created routes have affected hydrologic conditions in meadow, wetland and stream habitats. Intercepted runoff has diverted down roads and trails which degrades the surface and drains aquatic habitats located downslope of the diversion points. Evidence of OHV use occurring in wet meadow habitats has been observed during field reconnaissance. OHV use in wetlands and wet meadows can have negative impacts to meadow hydrology, soils and vegetation. Meadows and wetlands experiencing OHV use are located in the upper reaches of the Eddy and Parks Creek drainages.

With any action alternative, OHV impacts to wetlands will be reduced as the wetlands are blocked to OHV access. Trail alignments will be relocated to avoid wetlands (e.g. the Eddy Creek MeadowTrail will be realigned outside of wet meadows). Old OHV routes through wetlands will be rehabilitated.

ACS objectives 2, 4, 6, 7, and 8 contain wetlands in their objectives. All three action alternatives will meet the ACS objectives at the project scale and not prevent attainment of the objectives at the watershed scale.

Survey and Manage Wildlife Species

A Wildlife Survey and Management Report (Jordan, 2014) was written for the Parks Eddy project and is incorporated by reference.

Certain activities proposed under the Parks Eddy Watershed Restoration Project are exempt from the Survey and Manage standards and guidelines, as stipulated by Judge Pechman (October 11, 2006). All other activities are in compliance with the Survey and Manage program requirements in the 2001 Record of Decision and Standards and Guidelines for Amendments to Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines (USDA and USDI 2001).

Project activities that will: 1) replace culverts on roads that are in use and part of the road system, and remove culverts if the road is temporary or to be decommissioned; and 2) riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement of large wood, channel and floodplain reconstruction, or removal of channel diversions, fall under both Categories B and C of the 2006 “Pechman exemptions”. There are no known sites of any Survey and Manage wildlife species in the project area, though the project design and resource protection measures will employ management guidelines for the four terrestrial mollusks with suitable habitat. The project also contains measures for any new discoveries of great gray owl. This is consistent with the 2001 ROD. Refer to the project Environmental Assessment (EA) for further detail on the proposed action and action alternatives, resource protection measures, and best management practices for all proposed road and trail actions.

Consultation and Coordination

The Forest consulted with the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this Environmental Assessment:

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Tribes

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Quartz Valley Indian Reservation
The Klamath Tribes

Hoopa Valley Tribe
Karuk Tribe
Redding Rancheria

Works Cited

Amount of suitable habitat and viability of northern spotted owls. **Bart, J. 1995.** 1995, Conservation Biology 9(4), pp. 943-946.

Bachmann, Steve. 2014. *Hydrology Resource Report, Parks Eddy Watershed Restoration Project.* Redding, CA : USDA Forest Service, 2014.

Baldwin, B., D. Goldman, D. Keil, R. Patterson, T. Rosatti, D. Wilken. 2012. *The Jepson Manual Vascular Plants of California Second Edition.* Berkeley, CA : University of California Press, 2012.

Bielecki, C. and Bonivert, D. 2014. *Final Transportation Resource Report, Parks Eddy Watershed Restoration Project.* Mt. Shasta, CA : USDA Forest Service, 2014.

Bielecki, Chris. 2014. *Transportation Resource Report, Parks Eddy Watershed Restoration Project.* Redding, CA : USDA Forest Service, 2014.

California Department of Fish and Game. 2009. *Shasta River Watershed-Wide Permitting Program, Final Environmental Impact Report, Volume 1: Revisions to the Draft EIR Text.* s.l. : State of California, 2009.

California Department of Fish and Wildlife. 2009. *Shasta River Watershed-Wide Permitting Program Final Environmental Impact Statement.* Sacramento, CA : State of California, 2009.

CDFFP Resource Managment-Forest Practice Program. 2014. *Forest Practice Rules.* s.l. : California Department of Forestry and Fire Protection, 2014.

Chesney, W. 2005. Personnal Communication via Email with K. Carter (Regional Water Board Staff), Shasta River TMDL Report. 2005.

Connaughton, J. 2005. To: Heads of Federal Agencies, Guidance on the Consideration of Past Actions in Cumulative Effects Analysis. Washington, D.C. : Executive Office Of the President, Council on Environmental Quality, June 24, 2005.

Cook, C. & A. Dresser. 2007. Erosion and Channel Adjustments Following Forest Road Decommissioning, Six Rivers National Forest. San Diego, CA : USDA Forest Service, Pacific Northwest Research Station, 2007.

Council on Environmental Quality. 1997. *Environmental Justice, Guidance Under the National Environmental Policy Act.* Washington, D.C. : Executive Office of the President, 1997.

Courtney, S.P., J.A. Blakesley, R.E. Bigley, M.L. Cody, J.P. Dumbacher, R.C. Fleischer, A.B. Franklin, J.F. Franklin, R.J. Gutierrez, J.M. Marzluff, L. Sztukowski. 2004. *Scientific evaluation of the status of the northern spotted owl.* Portland, OR : Sistainable Ecosystems Institute, 2004.

Criss, S.L., L.J. Kerns. 1990. *Survey of Furbearer Presence on Managed Timberlands of Interior Northern California.* s.l. : Sierra Pacific Industries, 1990.

de la Fuente, Juan. 2014. *Geology Report, Parks Eddy Watershed Restoration Project.* Redding, CA : USDA Forest Service, 2014.

Demography of Northern Flying Squirrels informs Ecosystem Managment of Western Interior Forests. **Lehmkuhl, J.F., K.D. Kistler, J.S. Begley. 2006.** 2006, Ecological Applicatoins 16(2), pp. 584-600.

Distribution and biology of the spotted owl in Oregon. **Forsman, E.D., E.C. Meslow, H.M. Wight. 1984.** 1984, Wildlife Monographs 87, pp. 1-64.

Fellers, G. & Freel, K. 1995. A Standardized Protocol for Surveying Aquatic Amphibians. Davis, CA : United States Department of the Interior National Park Service Western Region National Biological Service Cooperative Park Studies Unit, 1995.

Glubczynski, Ann. 2014. *Socio-Economic Resource Report, Parks Eddy Watershed Restoration Project.* McCloud, CA : USDA Forest Service, 2014.

habitat Selection by Northern Spotted Owls in Mixed Coniferous Forests. **Irwin, L.L., D.F. Rock, S.C. Rock. 2012.** 2012, Journal of Wildlife Management 76(1), pp. 200-213.

Habitat selection by northern spotted owls: the consequences of prey selection and distribution. **Ward, J.Pl, R.J. Gutierrez, B.R. Noon. 1998.** 1998, Condor 100, pp. 79-92.

Harris, R. 2005. *Monitoring the Effectiveness of Road System Upgrading and Decommissioning at the Watershed Scale.* Salmon and Steelhead Trout Restoration Agreement No. P0210566, California Department of Fish and Game. Berkeley, CA : Center for Forestry, University of California Berkeley, 2005.

Haskins, D.M. 1983. *An overview of the use of cumulative watershed impact analysis, Shasta-Trinity National Forest.* s.l. : USDA Forest Service, 1983.

Havens, M. 2009. Personal commumnication between FWS wildlife biologist and project TEAMS wildlife biologist regarding threshold levels within cores and home ranges. October 13, 2009.

Identification and Taxonomic Status of Cordylanthus tenuis subsp. pallescens (Orbanchaeae). **Wilson, B., R. E. Brainerd, N. Otting, B.J. Knaus, J. Kierstead Nelson. 2014.** 2014, Madrono Volume 61, Number 1, pp. 64-76.

Influence of primary prey on home-range size and habitat-use patterns of northern spotted owls (Strix Occidentalis caurine). **Zabel, C.J., K.S. McKelvey, J.P. Ward, Jr. 1995.** 1995, Canadian Journal of Zoology 73, pp. 433-439.

Jordan, C. 2014. *Fisheries Management Indicator Species Report.* Mt. Shasta, CA : USDA Forest Service, 2014.

Jordan, C. and Mapula, J. 2014. *Biological Evaluation, Sensitive Wildlife and Aquatic Species.* Mt. Shasta, CA : USDA Forest Service, 2014.

Jordan, C. 2014. *Biological Assessment and Evaluation for Listed and Sensitive Fish - Parks Eddy Watershed Restoration Project.* McCloud, CA : USDA Forest Service, 2014.

—. 2014a. Fisheries Management Indicator Report for the Parks Eddy Watershed Restoration Project. *Unpublished report on file at the Shasta Trinity National Forest, SMMU.* McCloud, CA : s.n., 2014a.

—. 2014. Personal observation of barred owls at Deetz Meadow based on personal communications from retired FS wildlife biologist D. Derby. Mount Shasta, CA : s.n., March 2014.

—. 2014. *Wildlife Survey and Manage Report, Parks Eddy Watershed Restoration Project.* McCloud, CA : USDA Forest Service, 2014.

Joyce, Stephanie. 2014. *Visual Quality / Scenery Resource Report-Parks Eddy Watershed Restoration Project.* Redding, CA : USDA Forest Service, 2014.

Klein, R. 2003. *Erosion and Turbidity Monitoring Report Sanctuary Forest Stream Crossing Excavations in the Upper Mattole River Basin, 2002-2003.* 2003.

Kuhlman, C. 2010. *NCRWQCB Order No. R1-2010-0029, Waiver of Waste Discharge Requirements for Nonpoint Source Discharges Related to certain Federal Land Managment Activities on National Forest System Lands in the North Coast Region.* Santa Rosa, CA : North Coast Regional Water Quality Control Board, 2010.

Lee, Don. 2012. *Recreation Use in the Parks Eddy Watershed Restoration Project Area.* [interv.] Marcus Nova. September 2012.

Mapula, J. 2014. Management Indicator Brief - Parks Eddy Watershed Restoration Project. *Unpublished report on file at the Shasta Trinity National Forest, McCloud Ranger Station, McCloud CA. .* 2014.

—. 2014. Migratory Bird Report Brief-Parks Eddy Watershed Restoration Project. *Unpublished report on file at the Shasta Trinity National Forest, McCloud Ranger District McCloud CA.* 2014.

Mapula, Justin. 2014. *Biological Assessment for Terrestrial Threatened, Endangered and/or Proposed Wildlife, Parks Eddy Watershed Restoration Project.* McCloud, CA : USDA Forest Service, 2014.

Mitigation of habitat "take": application to habitat conservation planning. **Bingham, B.B., B.R. Noon. 1997.** 1997, Conservation Biology 11(1), pp. 127-139.

Modeling foraging habitat selection by California soptted owls. **Irwin, L.L., L. Clark, D. Rock, S. Rock. 2007.** 2007, Journal of Wildlife Managment 71(4), pp. 1183-1191.

Morgan, Esther. 2014. *Parks Eddy Watershed Restoration Cultural Resources Report.* McCloud, CA : USDA Forest Service, 2014.

Natal and breeding dispersal of northern spotted owls. **Forsman, E.D., R.G. Anthony, J.A. Reid, P.J. Loschl, S.G. Sovern, M. Taylor, B.L. Biswell, A. Ellingson, E.C. Meslow, G.S. Miller, K.A. Swindle, J.A. Thrailkill, F.F. Wagner, D.E. Seaman. 2002.** 2002, Wildlife Monographs 149, pp. 1-35.

NCRWQCB. 2006. *Action Plan for the Shasta River Watershed Dissolved Oxygen and Temperature Total Maximum Daily Load, Basin Plan Language.* s.l. : North Coast Regional Water Quality Control Board, 2006.

—. 2006. *Resolution No. R1-2006-0052. Amending the Water Quality Control Plan for the North Coast Region to Include the Action Plan for the Shasta River Watershed, a Major Tributary to the Klamath River, Temperature and Dissolved Oxygen, Total Maximum Daily Loads.* s.l. : California Regional Water Quality Control Board, North Coast Region, 2006. R1-2006-0052.

North Coast Regional Water Quality Control Board. 2006. *Resolution No. R1-2006-0052. Amending the Water Quality Control Plan for the North Coast Region to Include the Action Plan for the Shasta River Watershed, a Major Tributary to the Klamath Firver, Temperature and Dissolved Oxygen, Total Maximum Daily Loads.* 2006.

North State Resources. 2011. *Shasta River Headwaters Sediment Source Inventory and Roads Analysis Report.* s.l. : North State Resources, 2011.

North State Resources, Inc. 2010. *Scott Project, Forest Carnivore Surveys & Final Report.* Redding, CA : s.n., 2010.

Nova, M., J. Redman, J. 2014. *Recreation and Public Uses Resource Report, Parks Eddy Watershed Restoration Project.* Mt. Shasta, CA : USDA Forest Service, 2014.

Posey, R. 2014. *Compliance Report for Botanical Resources Including Survey and Manage, Watch List, Ethnobotanical, Special Forest Products Species and Unique Habitats.* Mt. Shasta, CA : USDA Forest Service, 2014.

Posey, Rhonda. 2014. *BA/BE for Botanical Species-Parks Eddy Watershed Restoration Project.* Mt. Shasta, CA : USDA Forest Service, 2014.

—. 2014. *Compliance Report and Weed Risk Assessment, Parks Eddy Watershed Restoration Project.* Mt. Shasta, CA : USDA Forest Service, 2014.

Resource Management. 2002. *Parks Creek Sediment Source Assessment.* s.l. : Resource Managment, 2002.

Rust, B. 2014. *Parks Eddy NOA Probability Hazard Rating Report.* Redding, CA : USDA Forest Service, 2014. On file at the Shasta-Trinity National Forest Supervisor's Office, Redding, CA.

Rust, Brad. 2014. *Preliminary Soils Report-Parks Eddy Watershed Restoration Project.* Redding, CA : USDA Forest Service, 2014.

Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. *A conservation strategy for the northern spotted owl: a report of the Interagency Scientific Committee to address the conservation of the northern spotted owl.* Portland, OR : USDA Forest Service, USDI Bureau or Land Managment, Fish and Wildlife Service, National Park Service, 1990.

Transient dynamics of invasive competitions: barred owls, spotted owls, habitat and the demons of competition. **Dugger, Kl, R. Anthony, L. Andrews. 2011.** 7, 2011, Ecological Applications, Vol. 21, pp. 2459-2468.

University of California, Division of Agriculture and Natural Resources. 2014. Pisces Database for Fish Species by Location in the Eddy Creek-Shasta River. *California Fish.* [Online] February 26, 2014.

USDA Forest Service. 2007. Existing Vegetation Layer for the Shasta-Trinity National Forest. Redding, CA : Remote Sensing Lab, Pacific Southwest Region, 2007. GIS Layer available in the Forest GIS library.

—. 1994. Final Environmental Impact Statement, Land and Resource Management Plan, (EIS, Appendix H). 1994.

—. 2014. Forest Service Outdoor Recreation Accessibility Guidelines. *US Forest Service.* [Online] 2014. [Cited: March 25, 2014.] http://www.fs.fed.us/recreation/programs/accessibility/.

—. 2013. *Forest Service Outdoor Recreation Accessibility Guidelines.* Washington, D.C. : USDA Forest Service, 2013.

—. 2013. *Forest Service Trail Accessibility Guidlines.* Washington, D.C. : USDA Forest Service, 2013.

—. 1995. *Landscape Aesthetics, A Handbook for Scenery Managment. Handbook Number 701.* s.l. : USDA Forest Service, 1995.

—. 2010. *Motorized Travel Managment Record of Decision.* Redding, CA : Shasta-Trinity National Forest, 2010.

—. 1976. *National Forest Landscape Managment, Volume 2, Chapter 1, The Visual Management System, California Region Landscape Character Types and Variety Class Criteria.* s.l. : USDA Forest Service, 1976.

—. 2013. Northern goshawk annual survey records: 1989-2013, Shasta-Trinity National Forest, On file at the Mt. Shasta Ranger Station. Mount Shasta, CA : s.n., 2013.

—. 2013. *Programmatic Agreement Among the USDA Forest Service, Pacific Southwest Region (Region 5), CA SHPO, NV SHPO, and the ACHP Regarding the Process for Compliance with Section 106 of the NHPA for Managment of Historic Properties by the Nat. Forests...* s.l. : USDA Forest Service, 2013.

—. 2011. *R5 FSH 2509.22 - Soil and Water Conservation Handbook; Chapter 10 - Water Quality Management Handbook.* 2011. 2209.22-2011-1.

—. 1986. *ROS Users Guide.* s.l. : US Government Printing Office, 1986.

—. 2014. *Shasta-Trinity National Forest 2014 Fire Managment Plan.* Redding, CA : USDA Forest Service, 2014.

—. 1995. *Shasta-Trinity National Forest Land and Resource Management Plan.* s.l. : USDA Forest Service, Pacific Southwest Region, 1995.

—. 2011. Shasta-Trinity National Forest Process for Road Stormproofing. Redding, CA : USDA Forest Service, 2011.

—. 2011. Shasta-Trinity National Forest, Forest Route Decommissioning Policy. Redding, CA : USDA Forest Service, 2011.

—. 1999. *Shasta-Trinity National Forest, Forest Wide LSR Assessment.* Redding, CA : USDA Forest Service, 1999.

—. 2012. *Stream Condition Inventory Data for Parks and Eddy Creeks.* 2012.

—. 2012. *Stream Condition Inventory Data for Parks and Eddy Creeks.* s.l. : USDA Forest Service, 2012.

—. 2002. *Stream Condition Inventory, Parks Creek.* McCloud, CA : Unpublished, 2002.

—. 2014. *Travel Analysis Process, Willow-Parks Watershed Analysis Area.* Mt. Shasta, CA : USDA Forest Service, 2014.

—. 2011. *Watershed Restoration Action Plan.* Mt. Shasta, CA : USDA Forest Service, 2011.

—. Various years. *Willow Flycatcher Survey Information: 1990-2013.* Mt. Shasta, CA : USDA Forest Service, Various years.

—. 2014. *Willow-Parks Watershed Analysis.* McCloud, CA : USDA Forest Service, Shasta-Trinity National Forest, 2014.

USDA Forest Service, CNDDB. 2014. *Review of species documentation within the four USGS 7.5 minute quadrangles encompassing the project area.* McCloud, CA : Unpublished report on file at the Shasta McCloud Managment Unit, McCloud Ranger Station, 2014.

USDA Forest Service, USDI Bureau of Land Managment. 2007. *Memorandum - Compliance with the Aquatic Conservation Strategy.* s.l. : USDA Forest Service, 2007.

—. 1994. *Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl.* Portland, OR : USDA Forest Service, 1994.

USDA Forest Service, USDI. 2001. *National Fire Plan, A report to the President in response to the wildlires of 2000, September 8, 2000: managing the impacts of wildfires on communities and the environment.* Washington, D.C. : USDA Forest Service, 2001.

USDA Forest Service, USDI National Marine Fisheries Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service. 2004. *Analytical Process for Developing Biological Assessments for Federal Actions Affecting Fish Within the Northwest Forest Plan Area.* 2004.

USDA Forest Service-USDI Bureau of Land Managment. 2004. *Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource*

Management Plans for Nineteen National Forests Within the Range of the Northen Spotted Owl. s.l. : USDA Forest Service, 2004.

USDI Fish and Wildlife Service. 2012. 50 CFR Park 17: Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl; Final Rule. *Federal Register Volume 77, Number 233.* December 4, 2012.

—. 1992. *Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls.* Portland, OR : s.n., 1992.

—. *Regulatory and S.*

—. 2009. *Regulatory and scientific basis for USFWS guidelines for evaluation of take for northern spotted owls on private timberlands in California's Northern Interior Region.* s.l. : Unpublished, 2009.

—. 2011. *Revised Recovery Plan for the Northern Spotted Owl (Strix occidentalis caurina).* Portland, OR : USDI Fish and Wildlife Service Region 1, 2011.

—. 2012. *Revision of the 2011 Protocol for Surveying Proposed Managment Activities that May Impact Northern Spotted Owls.* Portland, OR : USDI Fish and Wildlife Service, 2012.

Van Gosen, B.S. 2007. *The Geology of Asbestos in the U.S. and its Practical Applications.* s.l. : US Geological Survey, 2007.

Wilson, Joshua. 2010. *Shasta-Trinity National Forest Travel Managment EIS-Society, Culture, and the Economy.* Redding, CA : USDA Forest Service, 2010.

Appendix A. Wildlife Biological Assessment

Final
Biological Assessment
for Terrestrial Threatened, Endangered and/or Proposed Wildlife

Parks Eddy Watershed Restoration Project

Shasta-Trinity National Forest
Shasta-McCloud Management Unit

T 42N, R 6W, Sections 29, 31-33; T 41N, R 6W, Sections 2-17, 20-29, 33-36
T 40 N, R 6W, Sections 1-3, 10-12; and
T 40N, R 5W, Sections 6-8, 18-21, 28-32
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Table of Contents

Executive Summary i
I. Introduction 1
Species Dropped from Further Consideration 1
Revised Critical Habitat for the Northern Spotted Owl; Final Rule 3
II. Consistency with Resource Plans and Other Guidance 3
Shasta-Trinity National Forest; Forest Plan 3
Revised Recovery Plan for the Northern Spotted Owl 4
III. Consultation to Date 5
IV. Description of the Proposed Action 6
Location 6
Purpose and Need 7
Existing and Desired Conditions 8
Bounding and Analysis Methodology 8
Spatial and Temporal Bounding 8
Methodology 10
Interrelated and Interdependent Project Elements 11
Timing of the Project 11
Description of Alternative 2 (Proposed Action and Preferred Alternative) 11
Transportation System 11
Roads – General Actions 12
Roads – Specific Actions 13
Trails (as they are part of the NFS Transportation System) 13
Recreation Actions 15
Recreation Facilities 15
Dispersed Recreation 16
Alternatives 3 and 4 16
Project Design Features and Resource Protection Measures Specific to NSO 17
V. Species Status, Existing Environment and Past Influences on Existing Conditions 20
Species Status 21
Surveys 23
Existing Environment and Habitat Status 25
Nesting/Roosting Habitat 25
Foraging Habitat 26
Dispersal Habitat 27
Non-Habitat 28
NSO Prey Species 28
Habitat Quantification in the Action Area 29
Status of Predators and Competitors in the Action Area 34
Past Influences on Existing Conditions 35
Ongoing and Reasonably Foreseeable Actions 36
VI. Effects of Alternative 2 (Proposed Action and Preferred Alternative) 36
Indicators 37
Direct Effects 37
Limited Operating Periods 38
Effects from NSO Habitat Modification 39
Effects to Suitable and Dispersal Habitat 40
Road Maintenance 41
Road Reconstruction, Realignment and Stormproofing 41
Road Decommissioning and Closure 42

Trail Maintenance, Repair, Reconstruction and Realignment and Adding to the System 42
Prey Effects 43
Interrelated and Interdependent Actions..... 43
Rock Pit and Common Borrow Sites..... 43
Effects on Suitable and Dispersal Habitat in Owl Nest Cores and Home Ranges 43
Effects within the Action Area..... 46
Indicator Summary 48
VII. Critical Habitat..... 50
Effects at the ECS-3 Critical Habitat Subunit Scale 52
VIII. Cumulative Effects 53
IX. Determination..... 54
X. Management Recommendations..... 55
XI. Contributors..... 55
XII. Literature..... 55
Appendix 1: Species Lists 1
Appendix 2: Maps 5
Appendix 3: Project Actions Subject to LOPs 6
Appendix 4: NFS Road 42N17 Sample Actions 8

Tables

Table 1. Forest Plan land allocations and management prescriptions within the project area 4
Table 2. Project design features specific to NSOs..... 17
Table 3. Survey status and results of the NSO activity centers in the Action Area 23
Table 4. NSO habitat types within the Action Area 31
Table 5. Acreages of NSO habitat types within the project area..... 31
Table 6. Acres of NSO suitable and dispersal habitat within the defined treatment areas (Alternative 2) 31
Table 7. Acres of suitable NSO habitat within Action Area home ranges and cores..... 32
Table 8. Acres of NSO dispersal and non-habitat within the Action Area home ranges and cores 32
Table 9. Acres of NSO suitable, dispersal and non-habitat within the Eddy and Scott Mountain LSRs..... 34
Table 10. Summary of suitable, dispersal and habitat classified as non-habitat for all project spatial scales 34
Table 11. NSO activity center information for the Action Area 38
Table 12. Habitat acres affected by various road and trail treatment actions in the four NSO Activity Centers..... 40
Table 13. Road and trail actions within ST-014 (by miles)..... 44
Table 14. Road and trail actions within ST-015 (by miles)..... 45
Table 15. Road and trail actions within ST-016 (by miles)..... 45
Table 16. Road and trail actions within ST-019 (by miles)..... 45
Table 17. Critical habitat acres within the Action Area 50
Table 18. Acres of critical habitat PCEs affected by road and trail treatment actions under Alternative 2 50
Table 19. Mileage and acres of critical habitat affected by road and trail actions 51

Executive Summary

Through the analysis of the best available information, and in accordance with Endangered Species Act procedures, it is my determination that the Parks Eddy Watershed Restoration Project may affect, but is not likely to adversely affect, the northern spotted owl or its designated Critical Habitat, based on the following general rationale:

- Project actions may affect 2, 3 and 4 percent of the total dispersal, critical and suitable habitat within the Action Area, respectively.
- Effects to suitable, dispersal and critical habitat are expected to be both insignificant and beneficial in the short and long term.
- Though habitat elements such as trees, snags, shrubs and brush may be felled or lopped/scattered to complete project activities, the function of nesting/roosting, foraging and dispersal habitat will be maintained at all spatial scales.
- Suitable and dispersal habitat within activity centers ST-014, ST-015, ST-016 and ST-019 will not be measurably removed, downgraded or degraded; it will be maintained at all spatial scales.
- The function of critical habitat and its primary constituent elements (PCEs) within designated critical habitat Unit 8, Subunit 3 (East Cascades South [ECS-3]) will be maintained; there will be no significant reduction or removal of PCEs.
- Surveys, activity center stand searches, and/or spot checks will be conducted prior to and throughout implementation per agreement with the local Level 1 team and in accordance with the 2012 Revision to the Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls (USDI-FWS 2012). The project includes provisions for implementing limited operating periods to reduce disturbance to nesting northern spotted owls during the critical breeding period.
- In addition to the Forest Plan and Late-Successional Reserve Assessment standards and recommendations for retention of snags and coarse woody debris, project design features were developed to retain stand elements that contribute to northern spotted owl nesting, roosting, foraging and dispersal habitat while considering public safety.

I. Introduction

The purpose of this Biological Assessment (BA) is to analyze the potential effects of the Parks Eddy Watershed Restoration Project (project) on threatened, endangered or proposed terrestrial wildlife species, and/or their designated critical habitat, known or assumed to occur within the project area. This BA is prepared in accordance with the legal requirements set forth under Section 7 of the Endangered Species Act (ESA) of 1973, as amended [16 U.S.C. 1536 (c) *et seq. 50CFR 402*] (ESA), and its implementing regulations. It follows the standards established in the Forest Service Manual direction (FSM 2672.42; USDA-FS 1991) and the guidance provided in the Consultation Handbook (USDI-FWS and NMFS 1998). The Shasta-Trinity National Forest (Forest) accessed the list of threatened, endangered and proposed species for the 7.5-minute USGS quadrangles that comprise the project's Action Area[1] from the United States Fish and Wildlife Service (FWS) Arcata Field Office website species portal on March 17, 2014 (http://arcata.fws.gov). These lists are included as Appendix 1 (Document Nos. 971257988-15612, 971257988-15713, 971257988-15756 and 971257988-15833). In accordance with the ESA and regulatory guidance, only those organisms and critical habitat listed on the official species list in Appendix 1 are considered, and only those species under the regulatory jurisdiction of the FWS. Listed fish are addressed in the project's fisheries Biological Assessment and Evaluation. The species and designated critical habitat considered in detail in this BA are:

Endangered

- None

Threatened

- Northern spotted owl (*Strix occidentalis caurina*)
- Critical Habitat for the northern spotted owl (Unit 8, Subunit 3 (East Cascades South [ECS-3])

Proposed

- None

Species Dropped from Further Consideration

Ten species[2] are listed as threatened, endangered, proposed, or candidate on the lists contained in Appendix 1. Three listed wildlife species are dropped from further consideration because the project will have no effect on them, as described below. Four species are considered in the project fisheries Biological Assessment and Evaluation and are regulated by NOAA's National Marine Fisheries Service. The fisher (West Coast Distinct Population Segment) and the Western yellow-billed cuckoo are candidate species, and do not require consideration under this analysis. The Pacific fisher is analyzed as a sensitive species in the project Biological Evaluation. The project area is outside the known range of the Western yellow-billed cuckoo.

[1] The Action Area is based on a 0.25-mile radius of proposed project activities and is 19,812 acres; 84% on National Forest System lands and 16% on private lands

[2] Terrestrial wildlife, invertebrates and fish species

Vernal pool fairy shrimp (*Branchinecta lynchi*) – Threatened

Historically, the vernal pool fairy shrimp was only known to occur in vernal pools within California extending from Tulare County to Shasta County in the Sacramento Valley (USDI-FWS 2007, 2012b; Yolo National Heritage Program 2009). In 1998, it was also discovered in vernal pools in Jackson County, Oregon. Due to the absence of vernal pools, the project area does not provide suitable habitat for this species. Critical habitat for vernal pool fairy shrimp was designated by the FWS on August 11, 2005 and the project area does not contain critical habitat for this species. Therefore, this species and its critical habitat will not be affected by the Parks Eddy Watershed Restoration project and will not be considered further in this analysis.

Delta smelt (*Hypomesus transpacificus*) – Threatened

The Delta Smelt is a small, short-lived fish endemic to the upper San Francisco Bay Estuary; primarily the Sacramento-San Joaquin River Delta and Suisun Bay. In general, they prefer to rear in or near that area of the Delta where fresh and brackish water mix (the estuarine salt wedge). Their entire adulthood is spent in the mixing zone of the Delta, though they do move into sloughs and channels of the western Delta during spring spawning. Delta smelt prefer low salinity areas with tidal currents (Moyle 2002). They feed primarily on planktonic copepods, cladocerans, amphipods and to a lesser extent, insect larvae. The project area lies well outside the known and expected range of this species and contains no suitable habitat or critical habitat. Therefore, this species and its critical habitat will not be affected by the Parks Eddy Watershed Restoration project and will not be considered further in this analysis.

Gray wolf (*Canis lupus*) – Endangered

In February 2011, the Oregon Department of Fish and Wildlife radio-collared a single male gray wolf, designated OR7. Tracking data indicates OR7 entered California on December 28, 2011 and has travelled hundreds of miles within the state. As of February 2014, OR7 had returned to Oregon.[3] Future movements of OR7 are unpredictable and it is beyond the scope of this BA to predict whether OR7 will move back into California, remain in Oregon or travel elsewhere. Despite reports to the contrary, the California Department of Fish and Wildlife (CDFW) is not aware of any confirmed sightings of other wolves in the state (CDFW June 2013). All other "wolf" sightings reported in California have been determined to be coyotes, domestic dogs or wolf-dog hybrids. There is no scientific or verifiable evidence that wolves have occurred within the project area for over 100 years, though given the wide ranges of habitats used by wolves, they may travel through the project area. Wolves do have a broad habitat and prey base. The project does not propose use of any baiting or poison that could result in an adverse effect (this practice has been utilized by the USDA Forest Service during site preparation and reforestation/culture activities for controlling gophers in the past, but is no longer utilized), or other substance that may indirectly affect wolves. The project area does not currently have a permitted range allotment and while wolves may be drawn to project activities, direct and indirect effects are not anticipated based on the types of activities that are proposed and the duration of potential effects on prey

[3] California Department of Fish and Wildlife Species Information, accessed April 29, 2014: http://www.dfg.ca.gov/wildlife/nongame/wolf/

species. Therefore, this species and its critical habitat will not be affected by the Parks Eddy Watershed Restoration project and will not be considered further in this analysis.

Revised Critical Habitat for the Northern Spotted Owl; Final Rule

The FWS revised critical habitat for the northern spotted owl on December 4, 2012 and the Rule became final on January 3, 2013 (USDI-FWS 2012). The project area and Action Area contain critical habitat within Unit 8, Subunit 3 (East Cascades South [ECS-3]). Project activities may modify Principal Biological Features (PBFs) or Primary Constituent Elements (PCEs) within critical habitat but will not remove or appreciably reduce their function. The project area contains approximately 7,167 acres, and the Action Area contains approximately 5,677 acres, of critical habitat. Map 2 in Appendix 2 displays critical habitat in relation to the project area, Action Area and proposed road and trail actions.

II. Consistency with Resource Plans and Other Guidance

Shasta-Trinity National Forest; Forest Plan

The Forest is operating in full compliance with the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (NWFP ROD).[4] The Regional Forester approved the Forest's Land and Resource Management Plan (Forest Plan) on April 28, 1995 and it became effective June 5, 1995.[5] The Forest incorporated the NWFP ROD into its Forest Plan through reproduction of its Standards and Guidelines. The Forest Plan adopts the NWFP as the Federal contribution to the recovery of the northern spotted owl and the project is consistent with all Forest Plan and NWFP guidance. The Forest expects the network of areas, or land allocations, withdrawn from active timber management (e.g., wilderness, late-successional reserves, Riparian Reserves, and administratively withdrawn areas) along with standards and guidelines related to snag, log, and hardwood retention to provide habitat adequate to maintain viable, well-distributed populations of federally listed or proposed species.

Proposed project activities will occur in four land allocations in accordance with Forest Plan direction: Late-Successional Reserve (LSR), matrix, Riparian Reserves and administratively withdrawn areas. The project is located entirely within the Parks Eddy Management Area (Forest Plan, pp. 4-99 to 4-102). The distribution of land allocations and matrix prescriptions within the project area is displayed in Table 1. Refer to the project's Environmental Assessment (EA) for additional details regarding specific Forest Plan land allocations and applicable project direction.

[4] USDA Forest Service and USDI Bureau of Land Mgmt. 1994. Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl. Portland, OR. Attachments.
[5] USDA Forest Service. 1995. Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan)

Table 1. Forest Plan land allocations and management prescriptions within the project area

Forest Plan Land Allocation	Forest Plan Management Prescription	Acres	Percent of Total Area
Late-Successional Reserve	Late-Successional Reserves (VII)	13,644	59%
Matrix	Commercial Wood Products (VIII) Roaded Recreation (III) Wildlife Habitat Management (VI)	1,121 2,376 4,958	36%
Administratively Withdrawn	Un-Roaded Non-Motorized (I) Special Area Management (X)	160 131	1%
Riparian Reserves (overlaps other allocations and includes private lands)	Riparian Management (IX)	3,963	17%
Private Land	NA	903	4%
	TOTAL	**23,293**	

Revised Recovery Plan for the Northern Spotted Owl

In June 2011, the FWS released the Revised Recovery Plan (Recovery Plan) for the Northern Spotted Owl (USDI-FWS 2011). It replaced the 1992 Draft Recovery Plan which had been used as a foundation, in part, for the NWFP. While the Recovery Plan is not considered a regulatory document and is not required to be addressed as a part of consultation, the Forest Plan states that '*T&E species will continue to be managed under existing recovery goals identified in individual species recovery plans'* (Forest Plan, p. 3-28) and the Standards and Guidelines require the Forest to '*[M]aintain and/or enhance habitat for TE&S species consistent with individual species recovery plans*' (Forest Plan, p. 4-30). The Recovery plan identifies the three primary range-wide threats to northern spotted owls as competition with barred owls; ongoing loss of spotted owl habitat as a result of timber harvest, habitat loss or degradation from stand-replacing wildfire and other disturbances; and the loss and reduced distribution of spotted owl habitat due to past activities (USDI-FWS 2011 p. vii).

The project contains no nexus for effects that would influence any of the 33 Recovery Actions listed in the Recovery Plan, though it would improve both short and long term suppression response time for any wildfires that may occur within the project area through road reconstruction and maintenance activities. The project focuses on improving road conditions, reducing sediment sources, improving road drainage, and enhancing safety and recreation opportunities. It includes numerous project design features, including several developed in coordination with the FWS (see Table 2 below) to reduce impacts to northern spotted owls and their habitat.

The content of this BA complies with the legal requirements set forth under Section 7 of the ESA [19 U. S. C. 1536 (c), 50 CFR 402] and standards established in Forest Service Manual direction (FSM 2672.42). It uses the best scientific and commercial information available at the time of preparation to determine the likely effects of the proposed action on federally listed species.

III. Consultation to Date

The focus of this consultation is disturbance to northern spotted owls (NSOs) and effects to vegetation within suitable, dispersal and designated critical habitat. The life history of NSOs dictates the habitat characteristics and spatial scales considered in this analysis. Northern spotted owls occupy structurally complex forested habitats that provide nesting, roosting, and foraging opportunities. As a general rule, reproductive pairs require about 500 acres of fairly high quality habitat surrounding their nest sites. This nest core area (or core) is often approximated by a 0.5-mile radius circle centered on the nest. In addition to the nest core, NSOs use home ranges of approximately 3,400 acres (or a circle with a radius of 1.3 miles), about 40 percent of which is generally composed of mature forest, or other fairly high quality NSO habitat (fully described in the life history requirements of the NSO Recovery Plan and Final Rule for NSO Critical Habitat; USDI-FWS 2011 and 2012). They exhibit strong site fidelity (USDI-FWS 2012, pp. 71886 and 71912) and locations used by territorial NSOs are referred to as Activity Centers (USDI-FWS 2012a).

The Forest initiated streamlined consultation for the project on June 11, 2013 with Robert Carey, a wildlife biologist with the Yreka FWS Field Office. The following is a summary of the consultation process with the Yreka FWS office to date:

- June 11, 2013: Robert Carey attended a multiagency field trip to the project area. During this field trip, Forest Service representatives toured potential activity sites, discussed potential treatments and relayed the project's purpose and need while soliciting input from attendees.
- January 23, 2014: The Project Initiation Form (PIF) was discussed with Jan Johnson and John Morris, wildlife biologists with the Yreka FWS Field Office, Forest wildlife biologist Kelly Wolcott and SMMU wildlife biologist Christine Jordan during a project-specific conference call. The proposed action, current and historic activity centers, and specific habitat-effects information required to conduct a complete analysis (e.g., range of tree size classes and species which may be felled to improve safety and sighting distance and complete other project activities) were discussed.
- February 7, 2014: Jan Johnson and John Morris attended a project-specific meeting to review the habitat typing and survey history, to discuss current and develop additional Project Design Features (PDFs), and to assist in developing a list of roads for which Limited Operating Periods (LOPs) would be necessary.
- April 1, 2014: The draft BA was submitted to John Morris and Jan Johnson with subsequent updates and revised maps submitted on April 7, 2014.
- April 21, 2014: Comments on the draft BA were received from John Morris.
- April 29, 2014: A Final draft BA addressing the April 21st comments was submitted to John Morris of Yreka FWS, including revised maps.
- May 6, 2014: Final BA accepted by John Morris of Yreka FWS.

IV. Description of the Proposed Action

Location

The project is located on the Mt. Shasta District of the Shasta-McCloud Management Unit, Shasta-Trinity National Forest. The project treatments are wholly located within Siskiyou County, California, approximately eight miles west of the community of Weed and 30 miles south of Yreka. See Figure 1 below for the project vicinity map. The legal location is: Township 42 North, Range 6 West, Sections 29, 31-33; Township 41 North, Range 6 West, Sections 2 – 17, 20-29, 33-36; Township 40 North, Range 6 West, Sections 1-3, 10-12; and Township 40 North, Range 5 West, Sections 6-8, 18-21, 28-32 , Mt. Diablo Meridian. Elevation ranges from 3,500 to 8,500 feet.

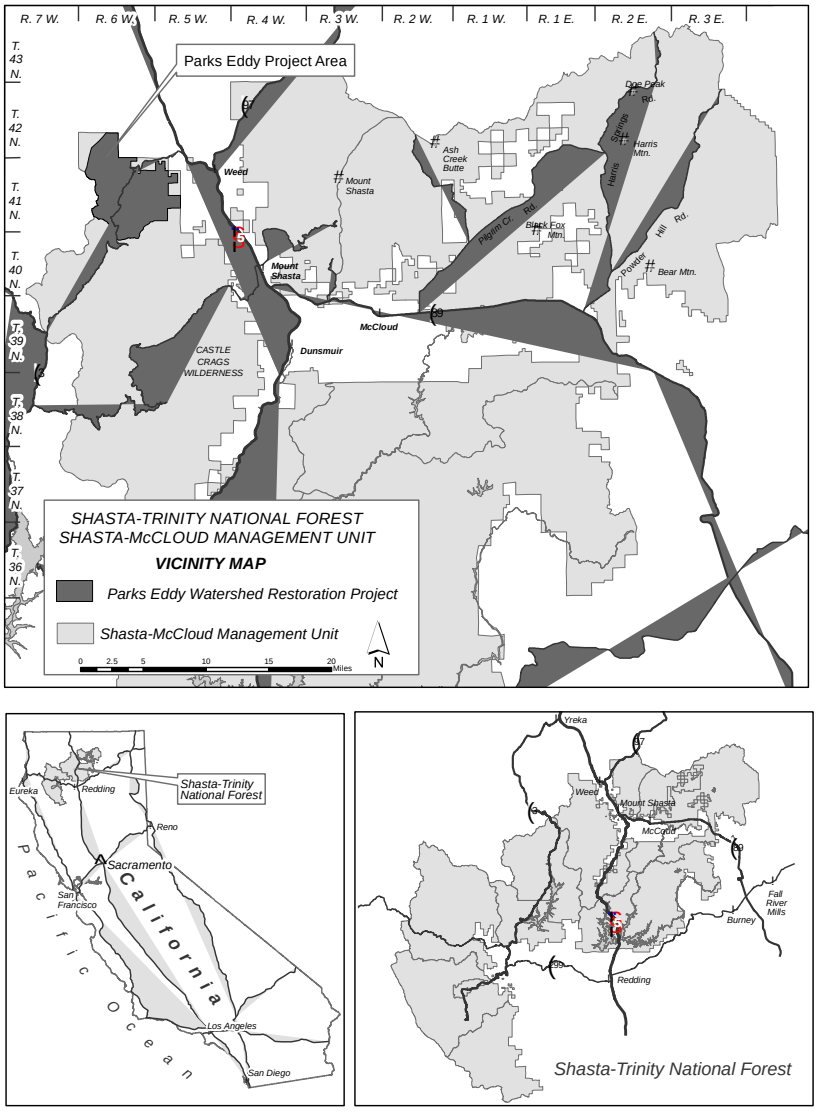

Figure 1: Parks Eddy Watershed Restoration Project Vicinity Map

Purpose and Need

Purpose and need for action is generated by identifying the departure of the existing condition from the desired condition. The purpose of the project is watershed restoration in the Parks and Eddy Creek watersheds to promote long-term ecological integrity while providing safe and efficient access for administration of National Forest System (NFS) lands and recreation opportunities. The existing and desired conditions, which are the basis for the needs for action, are described fully in the EA. In summary, a need exists for:

Watershed Condition Restoration

- Sediment Source Reduction: A need exists to reduce sediment sources to help restore riparian and aquatic habitats to improve and maintain water quality, in alignment with the Shasta-McCloud Management Unit's Watershed Restoration Action Plan[6] and Waiver of Waste Discharge Requirements.[7]
- Restoration and maintenance of aquatic and terrestrial ecosystems: A need exists to maintain the "properly functioning" status of the Parks Creek watershed into the foreseeable future. Aquatic Conservation Strategy Objectives (ACS) from the Forest Plan need to be attained or not prevented from future attainment in the Riparian Reserves.

Transportation System Operation and Management

- Transportation System Management: A need exists for an improved motorized and non-motorized National Forest Transportation System (NFTS) in support of watershed condition restoration, and for safe and efficient administrative and public access. Road maintenance levels should reflect access requirements. Maintenance Level (ML) 1 roads need to be properly stored (closed) for future use while protecting the environment. NFS roads and unauthorized routes not included in the System need to be permanently decommissioned or added to the System as appropriate. Necessary rights of way need to be acquired.
- Transportation System Maintenance: A need exists to maintain the NFTS to standard.

Recreation Facilities and Opportunity Enhancement

- Trailheads: A need exists for improved trailhead facilities including parking, turnarounds, visitor information and services to meet current demand and accessibility standards.
- Sanitation: A need exists for toilet facilities at high-demand locations in support of sanitation and water quality objectives.

[6] Parks Creek has been identified as one of two "priority" watersheds on the Forest (designated under the USDA Forest Service Watershed Condition Framework). Specific activities can be implemented on NFS lands that improve priority watershed conditions. In 2011, the Shasta-McCloud Management Unit completed a Watershed Restoration Action Plan, with implementation priorities for the Parks Creek watershed. See the Project Record.

[7] The North Coast Regional Water Quality Control Board (NCRWQCB) has established a Total Maximum Daily Load (TMDL) for temperature and oxygen in the Shasta River. The associated Waiver of Waste Discharge Requirements (Order R1-2012-0083, waiver) was adopted by the NCRWQCB on October 4, 2012.

- Trails: A need exists for improved trail access, tread and design (note that trails are part of the NFTS), and trails that are designed and located to be self-maintaining in order to reduce erosion and sediment (e.g., trails constructed with outslopes, dips, etc.).
- Dispersed camping: A need exists to protect access to dispersed camping opportunities to ensure that the public can easily access their National Forest and recreate.
- Scenery Viewing Opportunities: A need exists for improved scenic opportunity on the Parks Creek Road (Forest Road 42N17), a designated scenic byway.

Existing and Desired Conditions

For a description of the desired and existing conditions as they relate to roads and trails, refer to the detailed descriptions provided in the EA. Existing conditions for NSOs are described below in the **V. Species Status, Existing Environment and Past Influences on Existing** Conditions section.

Bounding and Analysis Methodology

Spatial and Temporal Bounding

The analysis of effects to threatened and endangered species is typically bounded by reasonable and agreed upon spatial and temporal boundaries. The ESA defines the spatial boundary for analysis as the Action Area, which includes "all areas likely to be affected directly or indirectly by the proposed action" (50 CFR §402.02). Additionally, effects analyses may occur across multiple analysis areas within the Action Area that are relevant to conservation concerns for listed species that can frequently overlap. For example, Critical Habitat Units/Subunits and areas within an LSR may partially overlap with the Action Area, but not be coincident, and may require separate evaluations, resulting in multiple scales of 'effect' and analysis. Similarly, a project activity may be within an LSR, an activity center and critical habitat and require separate evaluations of the treatment's effects relative to each of the conservation units. For purposes of this analysis, the following spatial scales are utilized:

Action Area – The Action Area bounds the spatial analysis of this BA and includes all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. For this analysis, the Action Area is defined by a 0.25-mile buffer on the proposed project activities (road, trail, and recreation facilities improvements). A 0.25-mile is considered the distance at which noise above ambient levels may harass NSOs by flushing an adult or juvenile from an active nest during the breeding period and/or precluding adult feeding of young. A review and synthesis of the scientific information regarding noise disturbance and avian species completed by the FWS indicates that the likelihood of noise-generating activities adversely affecting NSOs is a function of the activity and the noise it generates *relative* to the pre-project noise levels (USDI-FWS 2006). In other words, when project-generated noise levels reach or exceed a threshold above ambient noise levels, an adverse effect may occur. Because sound attenuates and different activities generate various levels of noise in an environment with different background noise levels, the distance at which a particular activity may

adversely affect NSOs should be considered on a case-by-case basis. NSO young in the project area typically fledge by July 10 and are mobile and responsive to environmental stimuli. Behaviors of young after July 10 are likely to be within the typical range of NSO responses to environmental disturbances (e.g., storms, proximity of predators or other animals). As a result, July 10 is generally accepted among the FWS, the USFS and research biologists as a reasonable threshold for a "not likely to adversely affect" determination relative to disturbance stressors.

The Action Area is approximately 19,812 acres; consisting of NFS lands (16,560 acres; 84%) and private lands (3,252 acres; 16%). Refer to Map 2 in Appendix 2. The Action Area encompasses all lands, regardless of ownership.

Project Area – The project area is approximately 23,293 acres and is described by legal locations of township, range, and sections. It is wholly located on NFS lands, though activities are proposed within NFS right-of-way on private lands. See Map 2 in Appendix 2.

Treatment Area – The treatment area is a subset of the project area that reflects the physical footprint where proposed road, trail, and recreation facilities improvement actions would occur and therefore, potential direct and indirect effects. For purposes of this BA, specific road prism widths are utilized for specific actions. The general average road prism width is 10 to 24 feet of centerline and varies depending on location within the project area (e.g., some roads have no cut/fill and some are extensive). The maximum 48-foot width is utilized for the analysis of all road reconstruction activities as work may extend well outside of the road surface to: realign portions of a road, remove/replace or install culverts, and stabilize cutbanks and/or outboard fill faces. For road maintenance and closure, a total width of 24 feet is utilized as work is expected to be limited to the road surface, though some hazard tree felling, cutting of shrubs and or small trees, and ditch maintenance may be completed. For road decommissioning, a total width of 36 feet is utilized as this activity may consist of active decommissioning that extends outside of the narrower road surface (typically 14 to 20 feet). This larger width is considered conservative, but active decommissioning may include removal of drainage structures and/or replacement of fill to return natural contours. For trail work, the average trail prism width is 6 to 10 feet, taking into account hazard trees that may be located off/away from the narrower trail tread. The aforementioned widths are utilized in conjunction with the areas of suitable, dispersal and critical habitat to estimate work completed and effects within each respective habitat type.

NSO Core and Home Range – The core represents an area surrounding the nest site used disproportionately by territorial NSOs, especially during the breeding season where effects of proposed actions are presumed to have relatively stronger influences on NSOs compared with areas located further from the nest (USDI-FWS 2009). For this analysis, habitat conditions in the core are evaluated within a 0.5-mile radius (~500 acre 'circle') centered on the last known nest site or cluster of detections. The core is surrounded by the larger home range. Habitat within a home range provides foraging and alternate nest/roost sites that support NSO occupancy, survival and reproduction. For this analysis, habitat conditions are evaluated within a 1.3-mile radius (~3,398 acre 'circle') centered on the most recent nest

site or cluster of detections (Thomas *et al.* 1990, USDI-FWS 2009). Actual NSO home ranges likely conform to the distribution of high-quality habitat, and while it is recognized that they are generally non-circular, this spatial analysis represents a reasonable approximation of the area within which territorial NSOs obtain resources (USDI-FWS 2009). There are four NSO home ranges/cores within the Action Area.

Eddy and Scott Mountain LSRs – As they serve as a management mechanism under the NWFP to provide for viable population of NSOs (and other late-successional species) throughout their historic range, an analysis of the project relative to its likely effects on NSO habitat quantity and quality in the Eddy and Scott Mountain LSRs is included. While not formally part of the regulatory process under the ESA, as participants in the NWFP the FWS has also typically shown an interest in LSR management and tracks effects within LSRs.

Maps of each spatial scale described above are included in Appendix 2.

Temporal bounding for this analysis consists of both short and long term timeframes. Short term consists of when project actions occur, usually within one season to one year of implementation. Long term effects extend for approximately five or more years after actions occur. Direct effects are defined by the period that actions would be occurring in/near habitat (short term). Indirect effects occur over both the short and long term. Maintenance activities are expected to occur beyond the five-year implementation timeline, depending on need, and would remain subject to the applicable project design features listed in Table 2 (and the project resource protection measures described in Chapter 2 of the EA).

Temporal bounding for the ESA cumulative effects of future State or private activities, not involving Federal activities, which are reasonably certain to occur within the Action Area, includes the period when all of the proposed project activities are expected to be completed and when any effects from foreseeable future State or private actions can be reasonably predicted and felt on the landscape in combination with the project's effects. NEPA cumulative effects are addressed in the project EA. Effects of past actions are included in the environmental baseline and existing condition for NSO in the Action Area, described later in this document. Temporal bounding for cumulative effects is 10 years given the predicted timeline to complete project activities and short/long term effects. NSOs also do not attempt to breed every year and the number of years varies between each attempt (Forsman *et al.* 1984). A 10-year timeframe is considered adequate to encompass several breeding attempts by NSOs, and potential disturbances to those attempts, and it represents the time in which all project activities are expected to occur and overlap with any potential effects of reasonably foreseeable future State or private actions.

Methodology

This BA was prepared using the best available scientific and commercial data at the time it was developed to determine the likely effects of all alternatives on federally listed species. This includes information such as data collected from NSO protocol surveys and activity center searches, aerial photos (2010 and 2012 National Aerial Imagery Photography) and the Forest's existing vegetation layer (USDA Remote

Sensing Lab 2007). The draft NSO Habitat EVEG model queries (described below), field surveys of habitat type and quality, research for noise disturbance on NSOs, the most recent and appropriate scientific research or species information from the NSO Recovery Plan (USDI-FWS 2011) and Final Rule for NSO Critical Habitat (USDI-FWS 2012) and direct observations in the Action Area were also utilized.

Interrelated and Interdependent Project Elements

Interrelated actions are those that are part of a larger action and depend on the larger action for their justification [50 CFR §402.02]. Interdependent actions have no independent utility apart from the proposed action [50 CFR §402.02]. Interrelated and interdependent activities include temporary rock and material storage, temporary re-routing of stream flow, and hauling of rock from outside sources outside of the project area via main, high use roads such as Interstate 5 and the Stewart Springs Road.

Timing of the Project

Project implementation is anticipated to start in fall 2014 and it is estimated to take up to five years for the road, trails, and recreation facility actions to be completed. Monitoring activities throughout and beyond this timeframe include but are not limited to: NSO surveys/spot checks/activity center searches, implementation monitoring with the FWS, and noxious weed, soils, water quality and Best Management Practice (BMP) implementation monitoring.

Description of Alternative 2 (Proposed Action and Preferred Alternative)

This BA considers Alternative 2, the Proposed Action and Preferred Alternative for which consultation is requested, in detail. The following proposed activities draw from management direction and recommendations which set the purpose and need for action, and identified desired conditions for watershed, transportation and recreation. It focuses on the existing impacts of the transportation system and recreation and identified needs for action:

Transportation System

The Motorized Travel Management Record of Decision (MTM ROD) allows for consideration of NFS road maintenance level changes, additions and decommissioning. The MTM ROD noted that the Forest would continue to analyze the existing National Forest Transportation System to look for opportunities for improvement; particularly to identify route decommissioning and new road and trail opportunities to enhance the recreation experience while protecting Forest resources (USDA-FS 2010). The Willow Parks Watershed Assessment (WA) and Travel Analysis Process (TAP) provided specific recommendations for the road system in the project area.

Each of the following activities may occur at some level within all four NSO home ranges; within suitable, dispersal and non-habitat; and within NSO critical habitat within the Action Area. Refer to Tables 6, 10, 17 and 19 for a summary of activities within each habitat type.

Roads – General Actions

- Road Decommissioning: Close and decommission approximately 21.5 miles of roads and unauthorized routes through hydrologic stabilization with waterbars, restored drainage patterns, tilling and seeding where needed to alleviate compaction and prevent erosion, and/or blocking the entrance. Remove decommissioned roads from the Forest Transportation System.
- Road Storage/Closure: Close and store approximately 3.25 miles of roads through hydrologic stabilization with waterbars, restored drainage patterns and/or blocking the entrance. Till and seed where needed to alleviate compaction and prevent erosion.
- Road Maintenance: Clean, repair and reestablish road drainage structures including rolling dips,[8] culverts and ditches on approximately 43.75 miles of roads. Clear roadside brush, resurface the traveled way, grade and fall hazard trees. Provide adequate signage for orientation and safety.
- Road Reconstruction: Improve road drainage (cross drain installation, ditch improvements) and spot rock road segments that are negatively impacting aquatic/riparian habitats on approximately 31.5 miles of roads. Restore meadow and riparian areas where the road alignment has encroached or road condition has resulted in damage.
- Storm Proofing: Storm proof the drainage system on roads by upsizing culverts, armoring and rocking existing rolling and critical dips,[9] installing rolling dips to break up water flow on the road surface and dissipate energy off-slope, outsloping road cross slopes, treating crossings for aquatic organism passage and large flow events. Storm-proofing generally occurs on spots or sections of the road, not on the entire length and is intended to put the road back into a hydrologically neutral condition.
- Realignment: Relocate roads and trail facilities outside of active areas such as debris flow channels, stream channels, landslides, rock slides, and also to avoid cultural resources. This activity may require blasting to remove portions of bedrock or large boulders that cannot be moved by heavy equipment.
- Stabilization: Stabilize creek banks and roads associated with the erosion of cultural resources.
- Road System Management: Change ML2 system roads to ML1 or decommission roads if they are already naturally closed by vegetation. Stabilize and storm proof as needed to assure resource protection. Incorporate existing routes into the NFS for access and dispersed camping needs where needed and resource objectives can be met. Install signage for trailer use.

[8] A rolling dip is a dip installed in the road surface that channels cutbank and/or road surface flow off of the roadway and is generally used in conjunction with outsloped roads/segments of road that do not have a ditch, reducing the need for culverts and other infrastructure.

[9] A critical dip is a dip installed at or near a stream crossing. In the event that a culvert fails, water diversion is reduced by the critical dip, maintaining the flow within its natural stream channel. Critical dips can significantly reduce the potential for extensive road surface/outboard fill failure and cascading culvert plugging.

Roads – Specific Actions

- Parks Creek Road Reconstruction – NFS Road 42N17: This activity will partially occur within the ST-014 and ST-019 NSO home ranges within dispersal habitat and critical habitat. Actions include: repairing, replacing or installing new drainage features to reduce concentrated flows that result in erosion and sedimentation; creating additional turnouts (approximately 26) in existing wide areas for safe traffic flow and scenery viewing options except where there are factors that would prohibit use, such as bedrock that would require blasting or unstable geology; clearing roadside brush, including removal of brush to improve sight distance for safety; repairing and stabilizing eroding cut and fill slopes, including the grade that climbs up left of the Parks Creek stream crossing from the intersection with the Stewart Springs road, and at the intersection with NFS Road 41N72. Rock armoring of ditches and installing energy dissipaters at drainage outlets is also proposed.
- Eddy Creek Road Reconstruction - NFS Road 42N26: This activity will occur within the ST-016 and ST-019 NSO home ranges and cores within suitable, dispersal and critical habitat as well as non-habitat. Based on long-term access and utilization needs for NFS lands, changing the Maintenance Level (ML) from ML3 for passenger vehicles, to a high clearance vehicle standard (ML2) is appropriate for this road. Actions include: establishing a more consistent surface by grinding paved patches down to level; storm proofing portions to address resource concerns and prevent further resource degradation; realigning short segments (less than 200-feet long) to avoid sensitive areas, stream channels and slumps; repairing or replacing drainage crossings to stabilize and reduce erosion; decommissioning user-created segments in the upper reaches of Eddy Creek that access meadow areas; and restoring the Eddy Creek Trail for non-motorized access.
- Dewey Mine Road - Right of Way and Realignment: This activity will occur within the northern extent of the ST-014 NSO home range, within and near dispersal and critical habitat. Actions include realigning a section of NFS Road 42N19 by decommissioning a section of this road within a hydrologic feature and rerouting it onto an existing bypass on adjacent private lands (see Map 1, T 42N R 6W Section 34). This action would require the addition of approximately 0.75 mile of existing private ownership road to the NFS, and a right-of-way agreement with the private landowner. Connected actions include acquiring right of way on all private land sections of the proposed re-alignment prior to implementation.

Trails (as they are part of the NFS Transportation System)

This activity will consist of reconstructing trails, clearing brush or downed trees from the trail prism, cleaning of waterbars, repairing trail tread, and/or realigning trails outside of sensitive areas and administrative action to add the trails to the National Forest Transportation System.

- Eddy Creek Trail Reconstruction: This activity will occur within the southwestern portion of the ST-019 NSO home range within foraging habitat and critical habitat. Actions include: reestablishing the historic trail alignment; realigning portions currently located within wet

riparian areas outside of these areas; restricting OHV access to the meadows; and revegetating the OHV created routes.

- Caldwell Lakes Trail Reconstruction and Realignment: This activity will not occur within any of the four NSO home ranges, suitable or critical habitat. It will occur in proximity to dispersal habitat. Actions include: maintaining the first 0.20 mile and decommissioning approximately 0.40 mile of NFS Road 41N74 (above its intersection with NFS Road 41N74A) and revegetating the old road prism; realigning approximately one mile of existing trail with steep grades and accelerated erosion; relocating the trail from the fall line alignment and decreasing the trail grade to reduce erosion and create a more conducive trail for the public; connecting the new trail segment to the existing trail above and the new parking area on NFS Road 41N74 below; and providing appropriate signage. This activity may require blasting to remove portions of bedrock or large boulders that cannot be moved by hand tools or heavy equipment.
- West Parks Lakes Trail Reconstruction: This activity will not occur within any of the four NSO home ranges, suitable or critical habitat. It will occur in proximity to dispersal habitat. Actions include: reconstructing the first 1.45 miles of the 41N73 road and maintaining the remaining 1.05 miles to a new parking area that can accommodate 3 to 5 vehicles and a trailhead at mile post 2.5 before the stream crossing; providing safe crossing of the stream channel to reduce sediment delivery and accommodate design traffic; restoring subsurface flows to the meadows through vegetative treatments (such as replanting with native stock and/or recontouring) on user created trails, unauthorized routes and routes identified for decommissioning to mimic natural hydrologic processes; decommissioning and converting approximately 0.33 mile of the 41N73 road past the trailhead/stream crossing, and the existing 41N73A spur, to motorized trail; constructing 0.13 mile of new motorized trail to connect the 41N73A to the 06W23A; and converting an additional 0.38 mile of the 06W23A to motorized trail with a turnaround at the upper end. Beyond this turnaround, construct 0.28 mile of new non-motorized trail to connect to an existing non-motorized trail (06W23). Other actions include decommissioning the 41N73 road beyond the junction with the "A" spur, and associated roads and trail spurs beyond that point. Motorized trails would be managed and designated as 'open' to motor vehicles less than or equal to 50 inches in width. This activity may require blasting to remove portions of bedrock or large boulders that cannot be moved by hand tools or heavy equipment.
- Parks Creek Trail Reconstruction (near Stewart Springs): This activity will occur within the very southeastern portion of the ST-014 NSO home range within/near dispersal habitat and critical habitat. Actions include: reconstructing the existing trail (on NFS lands only) that runs parallel to NFS Road 42N17, connecting Stewart Springs with NFS Road 41N72; and adding this trail to the NFS as a non-motorized trail. This activity may require blasting to remove portions of bedrock or large boulders that cannot be moved by hand tools or heavy equipment. No trailhead parking would be constructed.

Road and trail work would also include equipment staging and material stockpiling adjacent to work sites. These locations would be identified during implementation and would be consistent with Resource Protection Measures and approved by the FS resource specialists prior to use. Existing available space would be utilized to the maximum extent feasible to minimize additional disturbance and resource impacts. When conditions are dry, the road, trailhead, and trail work areas will be watered during implementation to minimize airborne dust when working in Naturally Occurring Asbestos (NOA) sites. Water will be drafted from pre-approved locations on Parks Creek and Eddy Creek (in accordance with the Resource Protection Measures listed in Chapter 2 of the EA), or water will be acquired from locations outside the project area.

Recreation Actions

Recreation Facilities

- Parks Creek-Mt. Eddy Trailhead Improvement (trail at the summit, not at Stewart Springs): This activity will not occur within any of the four NSO home ranges, suitable, critical or dispersal habitat. Install a trailhead information board and add signs along NFS Road 42N17 to improve visibility of the trailhead. Install a vault restroom (of concrete cast construction) to resolve health and safety issues and protect natural resources. Redesign and improve parking area to maximize parking space and provide accessibility to the restroom, trailhead and information boards. The parking area would be developed with a hardened surface to meet the ABA (Architectural Barriers Act which provides access and accommodation for persons with disabilities.
- Eddy Creek Trailhead: This activity will occur within the southwestern portion of the ST-019 NSO home range in proximity to foraging habitat and critical habitat. Restrict vehicle access past the end of NFS Road 41N26 into Eddy Creek meadow. Construct a parking area to accommodate 3 to 5 vehicles to meet the ABA accessibility standards and Forest Service Policy. Install an information board to provide Forest and trail information. Restrict OHV access to the meadows and rehabilitate the OHV created routes.
- Caldwell Lakes Trailhead: This activity will not occur within any of the four NSO home ranges, suitable or critical habitat. It is situated in proximity to dispersal habitat. Close NFS Road 41N74 near the intersection of NFS Road 41N74A. Construct a parking area to accommodate 3 to 5 vehicles to meet the ABA accessibility standards and Forest Service Policy. Install an information board to provide Forest and trail information. Install trailhead signs on NFS Road 42N17 to increase site visibility and identify the trailhead.
- West Parks Lake Road Access and Trailhead: This activity will not occur within any of the four NSO home ranges, suitable or critical habitat. It is situated in proximity to dispersal habitat. Maintain the first 2.5 miles of NFS Road 41N73, including drainage improvements, to the trailhead. Construct a trailhead including parking to accommodate 3 to 5 vehicles and a vehicle turnaround. Convert the middle 0.88 mile of the 41N73A road to an NFS motorized trail and reconstruct the last 0.75 mile to the lake as a non-motorized trail.

Dispersed Recreation

- Tamarack Flat Dispersed Camping Riparian Restoration: This activity will occur within the northeastern extent of the ST-019 NSO home range within dispersal habitat and outside of critical habitat. Stabilization of the streambanks and restricted vehicle access within the riparian area are proposed to reduce impacts to Parks Creek at dispersed campsites in Tamarack Flat. Install rock or other natural barriers along Parks Creek at the Tamarack Flat dispersed recreation site. The barriers would restrict vehicles from entering the riparian area, reducing resource damage to soils, water quality and vegetation. Place barriers to allow for continued non-motorized use of recreation sites without causing detrimental impacts to soil, vegetation and water quality.
- Riparian OHV Protection: This activity may occur where resource impacts are occurring to aquatic and riparian habitats such as wet meadows, seeps and springs previously impacted by vehicles. It would likely consist of placing large rock or other natural barriers to restrict and/or prohibit OHV access.
- Dispersed Camping: Where resource concerns do not warrant closing a dispersed area, incorporate spur-road access for appropriate sites into the NFS Motor Vehicle Use Maps (MVUM). Elsewhere, and to implement the MVUM, block dispersed campsites where vehicles have to park more than one car length from an NFS road to use the site.
- Viewing Opportunities (Vistas): Provide scenic overlook/pullout opportunities where safe and suitable on NFS Road 42N17 (see Parks Creek Road reconstruction details above). These vistas would be located in existing wide spots or turnout areas along the 42N17 road. Approximately one to five trees ranging from 1-inch to 18 inches diameter at breast height may be removed at each vista location (see Appendix 4).
- Cross-country Hiking: Provide parking pullouts along NFS Road 42N17 at approximately 4 to 5 locations to allow access for anticipated cross-country non-motorized travel opportunities. These parking pullouts will be combined with vistas and passing lanes where space is available.
- Signage: Provide interpretive and directional signage where needed for resource protection.

Alternatives 3 and 4

While this BA addresses Alternative 2 (proposed action and preferred alternative) in detail, the following information is provided for context of effects to NSOs and their suitable, dispersal and critical habitat discussed later in this BA, including several tables. Refer to the EA for a detailed description of alternative development.

Under Alternative 3, all roads within LSR allocation that are not primary connector roads, active cost share roads, or roads that access private property would be closed or decommissioned; approximately 40 miles total. No motorized trails would be constructed or reconstructed in LSR allocation. Approximately 38.25 miles of NFS roads would be decommissioned, 31.25 miles maintained and 25.5 miles reconstructed. No routes that lead to dispersed camp sites within LSR allocation would be added to the

National Forest Transportation System or MVUM. All other proposed road and trail actions (closure, decommissioning, maintenance, reconstruction, realignment) described for Alternative 2 remain the same.

Under Alternative 4, no trailheads, facilities or parking areas would be constructed for the trails that lead to Eddy Creek Meadow, West Parks Lakes or Caldwell Lakes and no trailhead improvements would be made at the Parks Creek-Mt. Eddy trailhead. All user-created vehicle routes that access dispersed camping sites that are located more than 30 feet from an NFS road would be decommissioned. All other proposed road and trail actions (closure, decommissioning, maintenance, reconstruction, realignment) described for Alternative 2 would remain the same.

Project Design Features and Resource Protection Measures Specific to NSO

For a complete list of Resource Protection Measures, refer to Chapter 2 of the EA. Those Project Design Features specific to the NSO, and its suitable, dispersal and critical habitat are described in Table 2 below.

Project activities associated with road grading/shaping, culvert excavation/installation, hauling of rock/spoils material, blasting, cutting of brush and/or hazard trees, and tree limbing may result in noise above ambient levels for short periods of time (2 to 8 hours in any one location). If conducted during the NSO breeding season, these activities have the potential to negatively affect NSO breeding success due to the loud and continuous noise disturbance. Since 6-visit protocol surveys for disturbance-only projects[10] have not been conducted to date within the Action Area, this analysis assumes NSO may be present in any or all un-surveyed suitable habitat. To avoid the potential for direct effects during the critical breeding period, a Limited Operating Period (LOP) is incorporated into the project design that prevents noise disturbance and habitat altering activities between February 1 and July 10 within 0.25-mile of suitable habitat, with a potential extension to September 15 depending on nesting status. Implementation of these LOPs is expected to reduce the potential for direct effects on NSO and 6-visit protocol surveys and activity center stand searches will be completed in 2014 and 2015, with potential for extension depending on funding and personnel.

The following site-specific temporal and/or spatial project design features were developed to minimize direct and indirect effects to NSOs, their prey species and their habitats.

Table 2. Project design features specific to NSOs

Resource (ID is from Chapter 2 of the EA)	Project Design Feature (PDF)
GHS-4	Existing wide spots on the Parks Creek Road (42N17) will be used where safely suitable and available for road widening, pullouts and vistas.
GHS-5	For stockpile and disposal sites, existing landings and disturbed road beds will be used as feasible. Where not available, field review by geology, heritage, botany, wildlife and engineering specialists will be conducted

[10] As described in the January 2012 NSO Survey Protocol

Resource (ID is from Chapter 2 of the EA)	Project Design Feature (PDF)
	during implementation and prior to use. Establishment of stockpiles or disposal sites will comply with all Resource Protection Measures/PDFs.
GHS-6	Road and trail re-alignments will be field evaluated by engineering, geology, wildlife, heritage, botany and hydrology specialists (as necessary) prior to and during implementation.
GHS-7	Repair, maintenance and upgrade activities for all existing drainage features such as culverts, inlet basins, trash racks, energy dissipaters, overside drains and surface features (e.g., stream fords, ditches, outboard road surface berms, water bars, rolling/critical dips) are limited to the road prism (top of the cut bank to the bottom of the fill) and the portion of channel bed affected by any stream crossing.
GHS-9	Minor amounts of brush and vegetation adjacent the road and or/drainage features may need to be trimmed or removed to complete project activities. Any vegetation that is removed or trimmed will either be masticated or hand trimmed and lopped and scattered off of the roadway, consistent with the Resource Protection Measures for other resources (e.g., heritage, botanical, wildlife).
VQ-1	Visual Quality Resource Protection Measures only pertain to the foreground views along the of the Trinity Heritage Scenic Byway (42N17 road) and the Parks Creek Trailhead: • Any trees along the roadway that are marked for removal with paint, (hazard trees, turnouts or vistas) will be marked on the backside of the tree (facing away from the roadway). • Tree stumps shall be no more than 6” high. • Fall trees out of view of the roadway, or, if less than 20” dbh, remove them from the site/out of view from the roadway. • Remove all slash (limbs) from the site or from view of the roadway. If rock material is needed to stabilize any cut banks on Forest Road 42N17, use rock that is the same or similar in type and color as found naturally on the site.
WF-1	Brief equipment operators on the need to minimize disturbance to existing vegetation within the road clearing limits, at stream crossings, and approved disposal sites to the extent necessary to restore hydrologic function (e.g., minimize turning of equipment, maintain trees, shrubs and existing coarse woody debris as safely feasible).
WF-2	Heavy equipment shall be in good working order with standard noise abatement devises attached.
WF-3	Rock and fill material sources (if located within the project area, though at this time, all rock is proposed from existing developed sources outside the project area) and water drafting sources will be identified with the assistance from the local district wildlife and fish biologists. These areas will be selected with consideration for proximity and potential effects to wildlife and fish species and their habitat.
WF-4	Disposal of fill material may occasionally be needed and will be done according to Best Management Practices. Disposal will not degrade suitable habitat. Such developments would involve the local district wildlife biologists

Resource (ID is from Chapter 2 of the EA)	Project Design Feature (PDF)
	(and other resource specialists) so that mitigations are implemented to minimize impacts to species and habitats of concern.
WF-5	As safely feasible, retain any felled hazard trees larger than 20 inches dbh on site and retain all snags felled on site to provide for coarse woody debris. Any felled tree/snag should be left in a position where it will not be a potential hazard to roads, trails, turnouts, or recreation use areas from rolling. Trees that are felled along the 42N17 road would be located off the road/out of site to meet Resource Protection Measure VQ-1 for the Trinity Heritage Scenic Byway. Also as safely feasible, trees would be directionally felled away from stream channels to reduce the potential for direct effects to individual aquatic species and the streambank, reducing the potential for crushing of individuals and subsequent streambank erosion. If trees are felled into stream channels either for safety reasons, or as a need is determined by a biologist or hydrologist, they would be left in place as safely feasible (e.g., so as not to potentially block a downstream culvert) to contribute to instream LWD, cover, bank stability, pool formation and nutrients.
WF-6	Hazard tree identification and felling along roads, trails, and near facilities will follow the 2012 Regional Hazard Tree Guidelines. Roads/routes will be reviewed prior to implementation to determine if potential nest trees for NSO (or northern goshawk, or rest/den sites for fisher/marten are occupied or will be affected). If occupied, implement the NSO nesting LOP until the nesting period ends. If unoccupied and felled, follow the measure to leave the felled tree/snag on site as described in PDF WF-5 above.
WF-7	For all activities described, no suitable terrestrial or aquatic habitat shall be downgraded or removed, as the majority of the work proposed will be within the road prism. Hazard tree felling and tree felling to improve sighting distance/enhance views may degrade suitable habitat for NSO (and sensitive wildlife species), depending on the stand structure and location of the trees/snags, though is not quantifiable in terms of acreage degraded.
WF-7a	The minor amounts of brush and vegetation adjacent to the roads and or/drainage features that may need to be trimmed or removed to complete project activities are not considered suitable habitat for NSO. Trees cut or limbed to improve sighting distance will be generally less than 10” dbh, though may be larger depending on the specified action (e.g., improving scenery vistas at established turnouts on the42N17 road).
WF-7b	Small groups of trees may be felled during trail reconstruction/re-alignment; borrow pit development (if needed within the project area, though at this time, all rock sources are located outside the project area at developed sites); blasting; turnout expansion; road reconstruction and road decommissioning.
WF-7c	When falling hazard trees or trees >16” dbh to improve sighting distance, turnout safety and/or vistas within NSO suitable and/or designated critical habitat, emphasis shall be given to maintaining primary constituent elements (canopy closure, snags, and coarse woody debris) while mitigating the hazard (e.g., fall trees in a manner that reduces damage to the surrounding stand structure as safely feasible and retains them on the landscape as coarse wood).

Resource (ID is from Chapter 2 of the EA)	Project Design Feature (PDF)
WF-7d	Reduce to the extent feasible the felling of trees >16" dbh with cavities and decadence, and hardwoods that NSO or sensitive species (e.g., fisher) may utilize for nesting/denning/resting.
WF-8	A limited operating period (LOP) for noise generating and suitable habitat altering activities will extend from February 1 to July 10 within a 0.25-mile of suitable NSO habitat. See Appendix 3 for a list of road and trail actions subject to the LOP.
WF-8a	This LOP may be lifted if year-of-action surveys and stand searches are current and negative (e.g., owls are not nesting within 0.25-mile of the proposed work).[11]
WF-8b	This LOP will be extended to September 15 if nesting NSOs are detected during any survey and/or stand search effort and noise-generating activities, and activities that modify suitable habitat, are proposed within a 0.25-mile of the nest.
WF-17	In the event that any newly listed, or additional Threatened, Endangered, or Sensitive species, are discovered within the project area during planning or implementation, the appropriate Forest Service resource specialist(s) will be notified and protective measures will be developed and implemented.
WF-18	Implementation monitoring will be conducted by the project biologist as appropriate to assure that all Resource Protection Measures are adhered to. FWS biologists may also participate in implementation monitoring.

V. Species Status, Existing Environment and Past Influences on Existing Conditions

Species status refers to the known occurrence or likely occurrence of NSOs within the project area and focuses on actual or assumed individuals likely to be affected by proposed activities. The larger biological and demographic issues of NSO status are best summarized in research literature, the NSO Recovery Plan and the Final Rule for NSO Critical Habitat but are briefly summarized here. The *existing environment* refers to the existing conditions and relevant conservation or analysis units within the Action Area (LSR, matrix, critical habitat). It is a component of the environmental baseline, which is maintained by the FWS. The environmental baseline includes "…the past and present impacts of all Federal, State, or private actions and other human activities in an action area, the anticipated impacts of all Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process." [50 CFR §402.02] The past and present impacts of all Federal, State and private activities in the Action Area, in combination with natural disturbance events and in-growth of vegetation represent the *existing condition*. The existing condition fully reflects the aggregate impact of all prior human actions and natural events that have influenced and contributed to the environmental baseline. The existing environment is the best

[11] As described in Section 9 of the 2012 Revision to the Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls; January 9, 2012. USFWS.

representation of the NSO biological baseline relative to assessing project effects and can include other aspects such as the known or possible presence of competitors or predators as relevant to species level effects as well as existing ambient noise levels (e.g., rivers, creeks, traffic). *Past influences* refer only to those events that may have occurred in the recent past that may still have some influence or effect on individuals. This may include disturbance to the same individuals which could reasonably aggregate to larger, or longer-term effects. Past influences exclude past vegetation management actions or natural events that individuals currently occupying the Action Area have either never experienced, or to which they have reasonably adapted. While past actions in the Action Area are not necessarily informative for the purposes of the ESA analysis of anticipated effects of the proposed activities, they have contributed to the *existing condition*. A summary of past Federal, State and known private actions within the Action Area is included in the **Past Influences on Existing Conditions** section below.

Species Status

The range of the NSO is partitioned into 12 physiographic provinces exhibiting different physical and environmental features extending from southern British Columbia, Canada, south to Marin County, California. The project is located within the California Cascades Province; the eastern extent of the NSOs range in California. This Province is generally characterized as having relatively gentle terrain, low annual precipitation and dry forest types; influencing the distribution and quality of suitable NSO habitat in the Province (USDA and USDI 1994). The Action Area is typified by serpentine ultramafic soils and dry climatic conditions. These conditions, combined with the natural fragmentation from brushfields, serpentine barrens and high elevation meadows, limit the capacity of the Action Area to provide contiguous areas of high-quality NSO habitat. Suitable nesting, roosting and foraging habitat is primarily located within the drainages of Parks and Eddy Creeks. Within these drainages, there is a higher proportion of mixed-conifer forest of Douglas and white fir, sugar pine and incense cedar mixed with Jeffrey and ponderosa pine and scattered hardwoods, including California black oak and riparian species such as mountain dogwood, willow and hazelnut.

The NSO was listed as Threatened under the ESA throughout its range “due to loss and adverse modification of suitable habitat as a result of timber harvesting and exacerbated by catastrophic events such as fire, volcanic eruption, and wind storms, and lack of adequate regulatory mechanisms to conserve the species” (USDI 1990). At listing, significant threats included low and declining populations, limited and declining habitat, poor distribution of habitat or populations, isolated provinces, predation and competition, a lack of coordinated conservation measures, and vulnerability to natural disturbance. Since listing, these threats persist, though loss of habitat from timber harvest has declined significantly, especially on federal lands as described in the NSO Recovery Plan (USDI-FWS 2011). The Recovery Plan lists the current three main threats as competition with the barred owl, habitat loss from stand-replacing fires and past and current habitat loss due to timber harvest and past activities. It recommends active management in the dynamic, disturbance-prone forests of the eastern Cascades, California Cascades and Klamath Provinces in a manner that reconciles overlapping goals of NSO conservation, and

response to climate change and restoration of the dry forest ecological structure, composition and processes, including wildfire and other disturbances (USDI-FWS 2011, p. III-20).

During 1985-2008, annual rates of NSO population change were declining on six of nine demographic study areas on federal lands administered under the NWFP, with rates on the other three areas currently stationary (Forsman *et al.* 2011). The average annual rate of population decline from 1985-2008 was 2.8 percent for the NWFP monitoring areas, with populations in Washington exhibiting the greatest declines. There are no study areas on the Shasta-McCloud Management Unit (SMMU), but when more intensive monitoring of NSO territories and surveys began in the late 1980s/early 1990s, there were approximately 35 known NSO territories on the combined Mt. Shasta and McCloud Ranger Districts.

Since that time, three territories on the Management Unit have shifted locations, presumably due to competition with barred owls, with the earliest presence of barred owls on the SMMU documented in 1997. Barred owl/NSO reproduction was documented in 2009 and 2013 at one territory. With respect to NSO, approximately 15 of the 35 territories have been confirmed to be consistently occupied by single, reproducing or non-reproducing pairs (USDA-FS 2013).[12] For the remainder of the territories, status is currently unknown due to lack of funding to complete surveys that are not project-specific, resulting in some incomplete information regarding NSO occupancy and reproduction on the Management Unit. Whether this constitutes a local population decline is unknown. An assessment of all historic territories on the SMMU is planned for 2014, and later years, to contribute to and inform Recovery Actions 1 and 3 (USDI-FWS 2011, p. III-4). Coordination with private land managers is also ongoing to determine larger population and reproductive status on the Management Unit.

There are currently four NSO activity centers within the Action Area: West Parks Creek (ST-014), Dewey Mine (ST-015), Lower Eddy Creek (ST-016) and Upper Eddy Creek (ST-019). These are also listed in the CDFW's NSO database as site numbers SIS0227, SIS0471, SIS0464 and SIS0465, respectively (CNDDB Spotted Owl Database 2012). Based on survey results (summarized below and in Table 3), ST-014 has not been occupied since 1990; ST-015 has not been occupied since 1989; in 2013, a reproducing pair occupied ST-016 and produced 2 fledglings; and ST-019 was occupied by a single male NSO in 2013. At this time and based on survey results and personal communications with adjacent private landowners, there are no barred owls known to occur in the Action Area.[13] The nearest confirmed barred owl detection to date is approximately 5 miles southeast of the project area near Deetz Meadow (Jordan 2014).

Primary natural threats to NSO habitat on the Shasta-McCloud Management Unit are tree mortality resulting from high stocking densities, black stain root disease in pine and white fir, *Heterobasidion* (annosus) root disease in white fir, white fir-mistletoe infection and subsequent bark beetle attacks occurring above endemic levels. These conditions, combined with fire suppression, create conditions for more extreme fire behavior and result in stands that are more susceptible to high severity fire effects and

[12] Based on years when surveys/activity center searches conducted between 1989 and 2013

[13] Despite the lack of barred owl detections to date, the project area and Action Area are presumed to be occupied based on the barred owl's general biology and wider use of habitat types, though 2014 and 2015 surveys will provide additional information.

NSO habitat loss. Nearly all NSO habitat lost due to high severity wildfire on the Forest over the past 20 years has occurred on the west side of the Forest and more recently, on a combination of the Shasta Lake and McCloud Ranger Districts during the 2012 Bagley Fire. The Eddy LSR (and beyond) did experience a high severity fire in 1939 and this LSR currently has a high fire risk/hazard rating (USDA-FS 1999). The inherent geology, soils, high elevation and climatic conditions that influence forest vegetation are the primary factors that limit a high density of NSOs (due to limited suitable and dispersal habitat) in the Action Area. The past fire and timber harvest activities in the Action Area are summarized in the **Past Influences on Existing Conditions** section below.

Surveys

From 1989 to 2013, surveys within portions of the Action Area and/or activity center searches for ST-014, ST-015, ST-016 and ST-019 have occurred (Table 3). Protocol surveys were completed using the 1992 (USDI-FWS 1992) or 2012 versions (USDI-FWS 2012). During spot calling in 2012, no detections occurred. The 2013 activity center searches conducted for ST-014, ST-015, ST-016 and ST-019 (two each) resulted in an observation of one reproducing NSO pair in the ST-016 activity center with two juveniles. Private land surveyors detected a single male at ST-019. No NSO pairs or individuals were detected during the ST-014 or ST-015 activity center searches. At this time, there are no other known NSO or barred owl home ranges/detections within the Action Area. Surveys, activity center searches and/or spot checks will be continued prior to and throughout project implementation as funding and personnel are available, in accordance with the 2012 NSO survey protocol and as discussed and agreed to with the local Level 1 team.

Table 3. Survey status and results of the NSO activity centers in the Action Area

Activity Center ID (State ID)	**Overall Status (most recent confirmation of pair or resident single status)**	**1989-2013 Survey Results and Comments** *Surveys were not conducted to protocol, unless indicated*
ST-014 (SIS0227)	Nighttime Response (1990)	2013 – No Detections during activity center searches (2012 Protocol) 2012 – No Detections during spot calling (2012 Protocol) 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – Not Surveyed 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Not Surveyed 2003 – Not Surveyed 2002 – Not Surveyed 2001 – Not Surveyed 2000 – Not Surveyed 1999 – Not Surveyed 1998 – Not Surveyed 1997 – Not Surveyed 1996 – Not Surveyed

Activity Center ID (State ID)	Overall Status (most recent confirmation of pair or resident single status)	**1989-2013 Survey Results and Comments** *Surveys were not conducted to protocol, unless indicated*
		1994 – Not Surveyed 1993 – Not Surveyed 1992 – Not Surveyed 1991 – Not Surveyed **1990 – Nighttime response** 1989 – No Detections
ST-015 (SIS0471)	Occupied Nest (1989)	2013 – No Detections during activity center searches (2012 Protocol) 2012 – No Detections during spot calling (2012 Protocol) 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – Not Surveyed 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Not Surveyed 2003 – Not Surveyed 2002 – Not Surveyed 2001 – Not Surveyed 2000 – Not Surveyed 1999 – Not Surveyed 1998 – Not Surveyed 1997 – Not Surveyed 1996 – No Detections (historical check) 1995 – Not Surveyed 1994 – Not Surveyed 1993 – Not Surveyed 1992 – Not Surveyed 1991 – Not Surveyed 1990 – Not Surveyed **1989 – NSO pair; one juvenile**
ST-016 (SIS0464)	Occupied Nest (2013)	**2013 – NSO pair; two juveniles during activity center searches** (2012 Protocol) 2012 – Not Surveyed 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – No Detections (1992 protocol) 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Daytime detection during activity center searches (historical check) 2003 – No Detections during activity center searches (historical check) 2002 – No Detections during activity center searches (historical check) 2001 – Nighttime response (historical check) 2000 – Not Surveyed 1999 – No Detections (historical check) 1998 – No Detections (historical check) 1997 – No Detections (historical check)

Activity Center ID (State ID)	Overall Status (most recent confirmation of pair or resident single status)	**1989-2013 Survey Results and Comments** *Surveys were not conducted to protocol, unless indicated*
		1996 – No Detections (historical check) 1995 – No Detections (historical check) 1994 – Not Surveyed 1993 – Not Surveyed 1992 – No Detections (1992 protocol) 1991 – Not Surveyed 1990 – Not Surveyed 1989 – Not Surveyed
ST-019 (SIS0465)	Single Male (2013)	**2013 – Single NSO male (private detection)** 2012 – Not Surveyed 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – No Detections during activity center searches (historical check) 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Presence T 41N R6W Sec 26 (historical check) 2003 – No Detections during activity center searches (historical check) 2002 – No Detections during activity center searches (historical check) 2001 – Nighttime detection (historical check) 2000 – Not Surveyed 1999 – No Detections (historical check) 1998 – No Detections (historical check) 1997 – No Detections (historical check) 1996 – Nighttime response (historical check) 1995 – No Detections (historical check) 1994 – Not Surveyed 1993 – Not Surveyed 1992 – NSO pair; one juvenile (historical check) 1991 – Not Surveyed 1990 – Not Surveyed 1989 – NSO pair; no reproduction

Existing Environment and Habitat Status

The distribution and quality of suitable and dispersal habitat in the Action Area is strongly influenced by local physiographic conditions, climate, elevation ranges, serpentine soils, topography, the extent of streams and Riparian Reserves and to a limited extent, past forest management on NFS and private lands. It is typically limited in distribution, fragmented, and structurally dependent on the aforementioned factors with the majority of the suitable habitat being located within the drainage bottoms of Parks and Eddy Creeks.

Nesting/Roosting Habitat

Forest structural features typically used to describe suitable NSO habitat include canopy cover, tree size and basal area; other attributes such as tree species composition, canopy layering, presence of edges and

small openings, and landscape position are also influential (Zabel *et al.* 1995, Ward *et al.* 1998, Irwin 2007, 2012). Nesting/roosting habitat is generally typified by a multi-layered, multi-species (including hardwoods) canopy dominated by large overstory trees; moderate to high canopy closure (70-90%); a high incidence of trees with large cavities and other types of deformities; numerous large snags; an abundance of large down logs; and open space within and below the upper canopy that allows for maneuvering (Thomas *et al.* 1990; USDI-FWS 2011, 2012).

Habitat quality within the Action Area is closely associated with topographic relief, soil types, slope, elevation and Riparian Reserves. Based on field review, the nesting/roosting habitat is primarily limited to areas within or adjacent to Riparian Reserves (within portions of Parks and Eddy Creeks, near springs and wet meadows; refer to Maps 1 and 2 in Appendix 2).

Foraging Habitat

Based on radio telemetry locations, Zabel *et al.* (1992) considered stands with at least 40 percent canopy cover to be suitable foraging habitat. Zabel and others (2003) have found that 18-40 percent of foraging locations occurred in stands with 20-39 percent canopy cover, and other studies have not found significant relationships with canopy cover (Irwin *et al.* 2007). Average tree diameters at foraging locations vary, with selection for medium to large trees (>20 inches) and considerable use (41-87% of locations) of smaller size classes (Zabel *et al.* 1992, USDI-FWS 2009). Regardless, the presence of trees ≥20-24" dbh is considered an important attribute of foraging habitat (USDI-FWS 2009, Irwin *et al.* 2007, 2012). While most studies suggest some degree of selection for higher basal areas (160-220 ft^2/acre) for foraging, a substantial amount of foraging (44%) occurred within stands with basal areas ranging from 80-160 ft^2/acre (Ibid.).

Foraging habitat in the Action Area consists of stands composed of Douglas and white fir, sugar pine, incense cedar, Jeffrey and ponderosa pine and minor amounts of red fir at higher elevations. The determinations of foraging habitat quality in the Action Area consider the size of a stand, its proximity to other habitat types that NSOs can utilize, such as dispersal habitat or early/mid seral habitat occupied by woodrats and other prey, and the distance to water, slope position, elevation and horizontal heterogeneity that also influence NSO use and habitat quality (Irwin *et al.* 2012). Another key factor influencing the use of foraging habitat, and subsequent evaluation of effects of treating such habitat, is its proximity and connectivity to nesting/roosting habitat. It is well documented that during the breeding season, foraging decreases with increasing distance from the nest stand, and therefore stands greater than one mile from suitable nesting/roosting habitat have a low probability of use by foraging NSOs (Bart 1995, Bingham and Noon 1997, USDI-FWS 2009, 2011). Based on the existing stand conditions within the Action Area, where it exists; the nesting, roosting and foraging habitat is considered to be moderate to lower quality in comparison to those habitats typically used by nesting, roosting and foraging NSOs. Within the Parks and Eddy Creek drainages, and areas near wet meadows and springs (as described above) there is a higher frequency of Douglas fir, incense cedar, sugar pine and hardwoods, including riparian species,

which contribute to higher canopy cover, snags/down wood, understory structure/layering and prey habitat.

Dispersal Habitat

Most of the project area and Action Area is not considered suitable NSO habitat due to the serpentine soil types that primarily support homogenous stands of incense cedar and Jeffrey pine with less than 40% canopy cover, serpentine barrens and high elevation meadow areas of lodgepole pine (USDA-FS 2013; Willow Parks Watershed Analysis). While individual trees may contribute to stand structure and species diversity within habitat used by NSOs, the species generally avoids forest stands with overstories dominated by ponderosa, Jeffrey or lodgepole pine and relative probability of NSO use declines with an increasing basal area of ponderosa pine (Irwin *et al.* 2007, 2012; USDI-FWS 2011). These stands also typically lack the multi-layered/multispecies composition of other mixed conifer or mixed conifer-hardwood stands, as well as the structural characteristics associated with the suitable habitats described above (Ibid.).

Dispersal habitat for NSO contributes to maintaining stable populations by filling territorial vacancies when resident NSOs die or leave their territories and providing adequate gene flow across the range of the species (USDI-FWS 2012). At a minimum, dispersal habitat consists of stands with adequate tree size and canopy cover to provide protection from avian predators and *minimal* foraging opportunities. It may include younger and less diverse forest stands than foraging habitat, but should contain some roosting structures for temporary resting and foraging habitat for dispersing juveniles (Ibid.) and be well-distributed across the landscape. For this analysis, dispersal habitat is quantified by the pine/mixed conifer stands with at least 40% canopy cover and trees averaging 11 inches dbh, but also includes consideration of proximity to suitable habitat.

Dispersal habitat is generally considered adequate if about 50 percent of the assessed landscape meets the 40% canopy/11-inch dbh tree conditions described above (Forsman *et al.* 2002; Thomas *et al.* 1990; USDI-FWS 2012). This is a very narrow definition in that it does not recognize that in order for NSOs to successfully move across a landscape, and eventually occupy a territory, dispersal habitat must also be in proximity to suitable foraging and roosting habitat (which also functions for ‘dispersal’). Population growth can only occur if there is adequate habitat in an appropriate configuration to allow for the dispersal of NSOs across the landscape. While habitat allowing for dispersal may currently be marginal or unsuitable for nesting, roosting, or foraging, it provides an important linkage function among blocks of nesting habitat; both locally and over the NSO’s range that is essential to its conservation (USDI-FWS 2011; 2012). Dispersal success is highest when dispersers move through forests that have the characteristics of nesting-roosting and foraging habitats and successful juvenile dispersal is likely dependent on locating unoccupied suitable habitats in close proximity to other occupied sites (LaHaye *et al.* 2001). Fledglings of both sexes generally disperse from nest cores from September to November (Forsman *et al.* 2002; Gutierrez 1985). Juveniles use temporary dispersal locations before acquiring a home range territory (Forsman *et al.* 2002). The median natal dispersal distance from fledging to

permanent settlement is about 10 miles for males and 15.5 miles for females (Ibid.). While large, non-forested areas (e.g., the Willamette Valley) are apparent barriers to dispersal, NSOs can and will disperse across a wide range of forest conditions and levels of habitat fragmentation (Ibid.). Where there are corridors of forest through fragmented landscapes, these areas serve primarily to support relatively rapid movement through such areas, rather than colonization (USDI-FWS 2011).

Dispersal habitat and connectivity within and outside of the Action Area is limited to the northwest by the higher elevations and lack of continuous forested habitat on ultramafic soils, and to the north and east by agricultural valleys, juniper/eastside pine dominated areas, open rangelands and rural residential areas. NSOs likely disperse south towards and beyond Dale Creek, and west/southwest into the Trinity River watershed (above Trinity Lake) and Trinity Alps Wilderness area where there is contiguous, lower to mid elevation mixed conifer forest, streams and rivers that provide suitable habitat.

Non-Habitat

Areas classified as non-habitat are not suitable for NSO nesting, roosting, foraging or dispersal. These areas include the pine-dominated stands in eastside pine vegetation types, juniper stands, lodgepole pine dominated stands, and early- and mid-seral/pole size stands with small diameter trees (1 to 8 inches) and low cover (<35%). This includes plantations and non-forested lands such as brushfields, grasslands, high elevation meadows, true hardwood stands and serpentine barrens.

NSO Prey Species

NSOs primarily select arboreal or semi-arboreal prey and primary species vary by geographic location and available habitat. Small mammals such as flying squirrels, dusky-footed woodrats and red tree voles are primary, with other mammals (deer mice), reptiles and insects generally being secondary (Courtney *et al.* 2004; Forsman *et al.* 1984; Gutierrez 1985). Flying squirrel abundance is positively correlated with the presence of mature and late-seral forests with a significant Douglas fir component and large diameter trees. Flying squirrels have been observed at lower densities in ponderosa pine dominated forest types (Lehmkuhl *et al.* 2006). They require large trees, snags, large down wood, water and arboreal lichen. Dusky-footed woodrats are associated with drier, early-seral mixed-conifer forest or open, late-seral forests (Courtney *et al.* 2004; Thomas *et al.* 1990; Ward *et al.* 1998) and occupy diverse habitats including shrubby openings and burned areas (Forsman *et al.* 2004, Wilson 2010, Manning *et al.* 2012). In areas where woodrats are the primary prey species, NSO are also more likely to use a variety of habitats, including younger stands, brushy openings in older stands, and edges between forest types in response to higher prey density in these locations (Sakai and Noon 1993; Carey *et al.* 1999; Sakai and Noon 1997; Franklin *et al.* 2000). The density of dusky-footed woodrats appears to be highest in 15 to 40 year-old sapling/brushy pole timber and in older forests that have openings with an abundant brushy understory (Hamm 1995; Raphael 1988; Sakai and Noon 1993; Carey *et al.* 1999; Hamm and Diller 2009). Within the Action Area, deer mice and voles probably constitute the bulk of NSO prey, with other minor species such as woodrats where early seral vegetation is available. The majority of the Action Area does not contain the habitat elements typical to support northern flying squirrel populations, and the

probability of this species occurring at high densities is low due to the overall smaller tree size and soil types that primarily support Jeffrey pine and incense cedar.

Habitat Quantification in the Action Area

The habitat typing within the Action Area was completed using a combination of surveys and field review of the four NSO territories and home ranges, field review of the roadways and treatment sites and adjacent private lands, the Forest activities (FACTS) database, the Forest's preliminary NSO EVEG habitat model,[14] 2010 and 2012 aerial photography from the National Aerial Imagery Program (NAIP), peer-reviewed literature and personal communications with other Forest Service and FWS biologists. The project biologist evaluated species composition, CWD sizes and levels, snags, structural characteristics, understory composition and canopy cover/closure in the Action Area to quantify (and qualify) suitable and dispersal habitat. Field reviews were conducted to review, validate and modify the NSO EVEG habitat model queries, described below.

The Forest's preliminary NSO EVEG habitat model and resultant layer (*NSO EVEG Habitat)* is based on a Northern Province habitat model to estimate NSO habitat suitability. It was developed by the VMS Enterprise Unit and the four Northern Province Forests,[15] using the 2007 Existing Vegetation layer from the USDA Forest Service Remote Sensing Lab (EVeg layer). The EVeg layer utilizes the Calveg classification system[16] to characterize vegetation types throughout the State, with crosswalks available to the California Wildlife Habitats Relationships (CWHR) system[17] and Society of American Foresters classification systems. For the classification of existing vegetation, the Forest Service has established standards and procedures at the national and regional levels. The Region 5 Calveg classification system conforms to these National Vegetation Classification Standards and the EVeg layer is currently the best available data on vegetation coverage in the Region. The EVeg layer is continuous between public and private lands and can be used to characterize species habitat across disparate ownerships. In an effort to inform NSO habitat suitability queries for the model, and resultant habitat layer, habitat within all NSO 0.5-mile cores for each of the Northern Province Forests was quantified and analyzed. Based on this information, combined with extensive field evaluation and input from Forest, District and FWS biologists on local habitat conditions for suitable (nesting/roosting/foraging [NRF]) habitat, and a review of the most current scientific literature on NSO habitat preferences, the attributes and metrics for queries were established. While queries were based on a range of factors, they primarily focus on vegetation type, total tree cover from above and stand quadratic mean diameter (QMD) at-breast-height for differentiating between nesting/roosting, foraging and dispersal habitat.

[14] GIS layers *SHF_Eastside_05092013_DRAFT* and (*SHF_Dispersal_05092013_DRAFT*, Project Record.

[15] VMS (Vegetation Management Services) Enterprise Unit is a Forest Service organized team of Forest Service professionals not associated with any particular Forest or Regional Office, available for internal contracting for typical analytical services. Northern Province National Forests include the Klamath, Mendocino, Shasta-Trinity and Six Rivers.

[16] For additional information on the Remote Sensing Lab's EVeg (Existing Vegetation) and Calveg layers, please go to: http://www.fs.fed.us/r5/rsl/projects/classification/system.shtml and http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelprdb5347192

[17] Note that the CWHR was not used during the development of the *NSO Habitat EVEG* queries as the CWHR attributes are too broad when describing vegetation types and inaccurate when describing size class and density.

As with all habitat models, accuracy is always subject to the source data and most are only able to approximate natural processes based on the source data. It is recognized that other site-specific abiotic factors not tracked in EVeg, such as slope position, aspect and distance to water, greatly contribute to habitat quality and use by NSOs. The *NSO EVEG Habitat* layer is meant to reflect a general representation of habitat suitability and while not exact, it is currently the Northern Province Forests' best attempt of predicting the use of an area by NSO. The layer is not intended to represent absolute values, but should be used in conjunction with field review of habitat suitability at the treatment area and project area scale[18] combined with aerial photograph and FACTS database interpretation. The draft queries and habitat type results for the eastside of the Forest were both office- and field-verified by the SMMU wildlife biologists, silviculturists, botanist, GIS specialists and planners between spring 2012 and spring 2013 with updates made to several queries based on what is known about NSO habitat use on the SMMU. For example, queries relating to Ponderosa Pine/White fir, Mixed-Conifer/Pine and Eastside Pine Regional Dominance types were further refined based on current, ongoing and completed NSO habitat typing within various project areas. Additional refinements and adjustments were also made, including tailoring elevation parameters to Regional Dominance types so that pine-dominated conifer stands were queried to exclude the hotter, drier sites while including the moister end of the pine forests within the somewhat higher elevations (USDA-FS 2013a).

The field reviews combined with the 2010 and 2012 NAIP imagery were utilized to further hand-edit the *NSO EVEG* Habitat layer for the Action Area. This allowed for capturing changes in the vegetation, primarily the consideration of any fire effects and stand conditions on private lands since the 2007 RSL EVeg data was developed, and to capture any errors in RSL vegetation classification. Based on the resultant habitat layer for the Action Area, NSO habitat (suitable, dispersal and non-habitat) acres were queried at the Action Area, project area, treatment area, home range, core and Eddy and Scott Mountain LSR spatial scales in order to report on the typical scale and extent of habitat types, develop a survey plan and provide an initial activity list for project LOPs (see Appendix 3).

Action Area: The 19,812-acre Action Area consists of NFS lands and private lands. Approximately 7% is suitable habitat (14% NR; 86% F); 25% provides dispersal habitat; and 68% is classified as non-habitat. Table 4 displays suitable, dispersal and non-habitat in the Action Area. There are 1,290 acres of suitable habitat on NFS lands, with approximately 5,034 acres of dispersal habitat (refer to Maps 1 and 2 in Appendix 2). About 32% of the Action Area currently provides dispersal habitat (inclusive of nesting/roosting and foraging habitat that also functions as dispersal) in addition to 'dispersal-only' habitat. While this is below the 50% level typically used to evaluate the dispersal capability of a landscape (Forsman *et al.* 2002; Thomas *et al.* 1990; USDI-FWS 2012), it is due to the natural conditions of the Action Area that limit development of dispersal and suitable habitat stands.

[18] Habitat within large-scale project areas, such as a prescribed fire in a wilderness area, Action Area, or NEPA cumulative effects analysis areas, cannot always be ground-verified and in these or similar cases, the results of the *NSO EVEG Habitat* model may be utilized to report out baseline habitat acres in these areas.

Table 4. NSO habitat types within the Action Area

Action Area	NSO Habitat Types			
	Nesting/Roosting	Foraging	Dispersal	Non-Habitat
19,812 acres	186	1,104	5,034	13,488
Percent	1%	6%	25%	68%

Within the Action Area, there are 5,677 acres of designated critical habitat on NFS lands (critical habitat is not designated on private lands).

Project Area: Approximately 6% of the project area is considered suitable habitat; 27% is dispersal (exclusive of NRF); and 33% is considered to function as dispersal habitat (inclusive of NRF). Approximately 67% of the project area is considered non-habitat given the elevation ranges, climate and soil conditions. Note that the project area is larger than the Action Area, given the bounding utilized for the Action area which is more biologically appropriate.

Table 5. Acreages of NSO habitat types within the project area

Project Area	Nesting/Roosting	Foraging	Dispersal (exclusive of NRF)	Total Dispersal (N/R, F, D)	Non-Habitat
23,293	322	1,133	6,215	7,670	15,623
Percent by Habitat Type	1%	5%	27%	33%	67%

Treatment Area: As described in the **Spatial and Temporal Bounding** section above, treatment areas are defined by the maximum extent of road and trail prism widths for certain activities. Table 6 displays the estimated acreage affected by the seven activities proposed within suitable or dispersal habitat.

Table 6. Acres of NSO suitable and dispersal habitat within the defined treatment areas (Alternative 2)

Treatment Area / Action	Nesting/Roosting acres	Foraging acres	Dispersal acres (exclusive of NRF)
Road Reconstruction	3.5	16.8	49.5
Road Maintenance	2.2	7.5	41.7
Road Decommissioning	1	15.3	24
Road Closure	0	0	5.5
Reconstruct Existing Non-Motorized Trail, Add To System	0	0	2.2
Reconstruct Existing Road as a Trail, Add to System as a Non-Motorized Trail	0	< 1 acre (0.11-acre)	<1 acre (0.91-acre)
Reconstruct Existing Non-Motorized Trail	0	<1 acre (0.91-acre)	0
TOTAL	**7**	**40**	**123**

NSO Cores and Home Ranges: All four home ranges fall at least partially within the Action Area (portions of all four home ranges fall outside of the Action Area, see Maps 1 and 2 in Appendix 2). Habitat conditions within each entire home range (and core) are reported and analyzed. Based on a summary of data from various studies and past consultations, the FWS concluded that NSO productivity and survivorship may be reduced when the combined amount of nesting/roosting and foraging habitat within the core falls below 400 acres. Within the home range area, the threshold is considered 1,336 acres of suitable habitat. These thresholds are not a required level of habitat to maintain for NSOs, but rather actual threshold levels that should prompt additional consideration of treatments within cores and home ranges that may downgrade or remove habitat (USDI-FWS 2009) or significantly affect its function. Table 7 summarizes the current amounts of suitable habitat within the four cores/home ranges.

Table 7. Acres of suitable NSO habitat within Action Area home ranges and cores

Activity Center ID	Acres of Habitat: 0.5 mi Core			Acres of Habitat: 1.3 mi Home Range		
	N/R	F	Total	N/R	F	Total
ST-014	35	97	132	35	131	166
ST-015	134	19	153	151	254	405
ST-016	13	65	78	13	217	230
ST-019	110	182	292	250	504	754

Table 8. Acres of NSO dispersal and non-habitat within the Action Area home ranges and cores

Activity Center ID	Acres of Habitat: 0.5 mi Core		Acres of Habitat: 1.3 mi Home Range	
	Dispersal	Non-Habitat	Dispersal	Non-Habitat
ST-014	172	331	650	2,748
ST-015	307	196	862	2,536
ST-016	255	248	1,434	1,964
ST-019	67	436	528	2,870

ST-014 Home Range and Core: This activity center is situated near West Fork Parks Creek within the Scott Mountain LSR and Critical Habitat. As displayed in Table 8, the home range includes about 650 acres of dispersal habitat and 2,748 acres of non-habitat (refer to Maps 1 and 2 in Appendix 2).

The 0.5-mile core is centered on the higher elevation lands of the Parks Creek drainage that provides more closed-canopy conditions of Douglas and white fir intermixed with ponderosa pine, incense cedar and Jeffrey pine. The core consists of mostly non-habitat and dispersal habitat, with areas of low-quality nesting/roosting and foraging habitat on the north-facing slope within the drainage. Generally, lands in the home range contain a large amount of low-density mixed conifers associated with ultramafic soils (incense cedar/Jeffrey pine/ponderosa pine). While there are interspersed mixed-conifer/pine and mixed-conifer/fir stands that contain suitable foraging habitat characteristics, most of the home range contains

more open canopy conditions, functioning as dispersal habitat and non-habitat. Approximately 5% of the home range currently provides suitable habitat and about 19% could be considered dispersal.

The ST-014 core and home range has not been occupied by NSOs since 1990 (Table 3). Road maintenance and decommissioning are proposed within the ST-014 core.

ST-015 Home Range and Core: This activity center is located near Dewey Mine along South Fork Willow Creek. Approximately 12% of the ST-015 home range currently provides NRF habitat, mainly within the Douglas and white fir stands along the north-facing slopes of the drainage and near springs. The remaining portion of the home range is considered dispersal or non-habitat with one small pocket of foraging habitat. The dispersal habitat (862 acres) and 2,536 acres of non-habitat are primarily influenced by the dry conditions and serpentine soils within the Action Area (see Table 8 and Maps 1 and 2 in Appendix 2). The ST-015 core and home range was last occupied in 1989, with a nesting pair and one juvenile observed (Table 3). Road maintenance is the only activity proposed within the ST-015 core.

ST-016 Home Range and Core: This activity center is located within the lower reaches of Eddy Creek. Approximately 7% of the ST-016 home range currently provides NRF habitat, mainly within the dense, mixed ultramafic conifer and pine stands along the lower, north-facing slopes of the Eddy Creek drainage. The remaining portion of the home range is considered dispersal or non-habitat. The dispersal habitat (1,434 acres) and 1,964 acres of non-habitat are primarily influenced by the dry conditions and serpentine soils within the Action Area (see Table 8 and Maps 1 and 2 in Appendix 2). The ST-016 core and home range was last occupied in 2013, with a nesting pair and two juveniles observed (Table 3). Road maintenance, decommissioning and road reconstruction are proposed within the ST-016 core.

ST-019 Home Range and Core: This activity center is located within the upper reaches of Eddy Creek. Approximately 22% of the ST-019 home range currently provides NRF habitat, mainly within the dense white fir stands adjacent to the creek. The remaining portion of the home range is considered dispersal or non-habitat. The dispersal habitat (528 acres) and 2,870 acres of non-habitat are primarily influenced by the dry conditions and serpentine soils in the Action Area (see Table 8 and Maps 1 and 2 in Appendix 2). The ST-019 core and home range was last occupied in 2013, with a single male NSO observed (Table 3). Road maintenance, decommissioning and reconstruction are proposed within the ST-019 core.

Eddy and Scott Mountain Late-Successional Reserves: Within the Eddy and Scott Mountain LSRs (RC-341 and RC-340) there are 56 acres (<1%) of nesting/roosting habitat, and 460 acres (4%) of foraging habitat. There are 3,315 acres of dispersal habitat (25%) and 9,229 acres are classified as non-habitat (71% of the total LSR allocation). The Scott Mountain LSR was primarily developed to provide a dispersal network and home range connectivity for marten at the higher elevations, and fisher at the lower elevations. This LSR has few large or contiguous blocks of late-successional habitat, is a lower growing site due to the ultramafic soils, and is not conducive to the development of suitable NSO habitat. There is a significant amount of mid-successional habitat on federal lands that does provide a beneficial dispersal corridor to the west and southwest of the Action Area. The Eddy LSR, which is situated between Eddy

Creek and Dale Creek (to the south), was established around a single pair of NSOs to provide habitat for this pair, and provide for dispersal to the south (USDA-FS 1999).

Table 9. Acres of NSO suitable, dispersal and non-habitat within the Eddy and Scott Mountain LSRs

Nesting/Roosting	Foraging	Dispersal	Non-Habitat	Total
56 acres	460 acres	3,315 acres	9,229 acres	13,060 acres

The areas of non-habitat within the two LSRs are primarily due to ultramafic serpentine soils and high elevations (USDA-FS 1999; 2013). Table 10 summarizes suitable, dispersal and non-habitat for NSOs at all project analysis scales.

Table 10. Summary of suitable, dispersal and habitat classified as non-habitat for all project spatial scales

Analysis Area	Total Acres	N/R	Foraging	Dispersal	Non-Habitat
Action Area	19,812	186	1,104	5,034	13,488
Project Area	23,293	322	1,133	6,215	15,623
Treatment Area	*170*	*7*	*40*	*123*	*Not Calculated*
ST-014 Home Range	3,398	35	131	650	2,582
ST-014 Core	503	35	97	172	199
ST-015 Home Range	3,398	151	254	862	2,131
ST-015 Core	503	134	19	307	43
ST-016 Home Range	3,398	13	217	1,434	1,734
ST-016 Core	503	13	65	255	170
ST-019 Home Range	3,398	250	504	528	2,116
ST-019 Core	503	110	182	67	144
Eddy and Scott Mountain LSRs (RC-341 and 340)	13,060	56	460	3,315	9,229

Status of Predators and Competitors in the Action Area

Great horned owls, northern goshawks and red-tailed hawks are common throughout the SMMU and may depredate and/or harass NSOs. Predation is the most frequent source of mortality among young owls. Avian predation includes that from goshawks and great horned owls and potentially barred owls (Forsman *et al*. 1984, 2002; Leskiw and Gutiérrez 1998). Other sources include mammalian predation, starvation and accidents (Forsman *et al.* 2002; Forsman *et al.* 1984). There are no historic northern goshawk (NGO) territories within the project area or Action Area (USDA-FS 2014, 2013b).

Due to similar dietary and habitat preferences, the barred owl is a serious competitor with the NSO, and a known predator (USDI-FWS 2011).[19] While details on habitat interactions are not well known to date, barred owls have a broader diet, may reduce NSO detectability and may occupy former NSO activity centers (Irwin *et al.* 2010, USDI-FWS 2011; Wiens 2012). As described in the **Species Account** section, barred owls currently pose a greater threat to NSO recovery than when the NSO was listed. NSO populations continue to decline in some areas of their range, even with maintenance and restoration of suitable habitat (USDI-FWS 2011). Consequently, recovery objectives for dry forests include maintaining sufficient NSO habitat in the short-term to allow NSOs to persist in the face of threats from barred owl expansion and habitat loss from wildfires (Ibid.). Appendix B of the Recovery Plan contains numerous references regarding known barred owl competitive interactions with NSOs and is hereby incorporated by reference. Also as described in the **Species Status** section, barred owls have been observed on the SMMU since 1997. They have not, to date, been detected during the FS activity center searches, historical nest checks and surveys, nor observed within the project area or Action Area during field work for the project or by private land surveys, though the area is presumed occupied based on the barred owl's wider range of habitat use. It is recognized that when barred owls and NSOs co-occur, a reduction in habitat availability and quality may exacerbate interactions between the two species. Dugger *et al.* (2011) suggest that in environments where the two species compete directly for resources, maintaining larger amounts of older forest (nesting/roosting habitat) may help NSOs to persist in the short term.

Past Influences on Existing Conditions

Existing forest stand conditions and NSO habitat within the Action Area were discussed in previous sections, and all past actions are included in the baseline NSO habitat conditions for the spatial scales described above. The following is a summary of past actions and natural events that have resulted in the current habitat and forest stand conditions within the Action Area.

NFS lands (16,560 acres) and private lands (3,252 acres) comprise the Action Area. Based on a review of the Willow Parks Watershed Analysis (USDA-FS 2013), there have been several timber and salvage sales on NFS lands in the watershed that took place in the 1970s and 1980s. These include the Eddy Creek Timber Sale (1985) which was 2,865 acres, the West Parks Timber Sale that was a 3,000 acre clear-cut (Esping 1979a), the Caldwell Salvage Sale, where 200 acres were cut (Vaughn 1985), the Eddy Timber Sale (a 2,020 acre clear-cut; Sundahl 1986) and the 154 acre South Willow Timber Sale (Hoertling and Sundahl 1987). Some of the timber units were located in what was considered old-growth stands that had limited historic harvesting for mine use (Hoertling and Sundahl 1987). Approximately 8,239 acres of NFS land were logged in the watershed during these timber sales.

Within the past 20 years there have been no large fires within the Action Area. The last recorded fire was the Parks Fire in 2012, which burned fewer than 20 acres. The Mussolini fire (2002) located within the

[19] Confirmed predation of spotted owls by barred owls is known from one direct observation and predation is not considered a significant issue. Note that competition is considered a significant threat per the Revised Recovery Plan for the Northern Spotted Owl.

northern portion of the watershed, just outside of the Action Area, contributes to the extensive areas of non-habitat and limited dispersal north of the Action Area. Prior to this time period the only large fire on record occurred in 1939 in the Eddy LSR, burning all of and beyond the current LSR boundaries (17,410 acres; USDA-FS 1999).

The sole land owner of private industrial timber lands within the Action Area is Michigan-California Timber Company (Mich-Cal), with approximately 369 acres. Conifer stands are typically intensely managed for timber production and mature forest is largely absent on these lands. Both Sections 919.9 and 939.9 of the California Forest Practice Rules (FPRs), which govern timber harvest on private lands in the state, provide that no Timber Harvesting Plan (THP) can be approved if it is likely to result in take of federally-listed species, unless authorized by a federal Habitat Conservation Plan (HCP). Private THPs are reviewed under section 9 of the ESA for the possibilities of prohibited take. In 1990, concurrent with the Federal listing of the NSO, the FPRs were amended to establish protections that would ensure that take of NSOs is unlikely. Measures include requirements for NSO surveys in suitable habitat, and retention of specified amounts of habitat near activity centers and within the 0.7-mile and 1.3-mile radii around activity centers.[20]

Ongoing and Reasonably Foreseeable Actions

At this time, using the best available data from the Forest and surrounding private lands, ongoing and reasonably foreseeable future actions on both NFS and private lands in the Action Area include, but are not limited to: annual routine road and recreational site maintenance (including hazard tree felling), firewood collection, fire suppression activities, noxious weed monitoring, dispersed recreation and two Timber Harvest Plans.[21] These actions have enough information from which to reasonably assess the potential for cumulative effects within the established spatial and temporal bounds for the project, and are discussed in more detail in the EA, with a subset discussed below in this BA for ESA cumulative effects.

VI. Effects of Alternative 2 (Proposed Action and Preferred Alternative)

Direct effects are the direct or immediate effects of a project activity on a species or its habitat; including effects of interrelated and interdependent actions. Direct effects are generally described as those that result in physical harm, death or the disruption of reproductive attempts during project implementation or near occupied habitat but also include direct effects to habitat structure/function. Indirect effects are those caused by the proposed action that occur later in time, but are still reasonably certain to occur [50 CFR §402.02]. For example, changes to habitat may affect a species later in time by affecting prey base,

[20] Refer to the Forest Practice Rules for additional guidance and regulations governing effects analysis to NSOs on private timberlands.

[21] Based on a query of the Calfire THP database at http://www.fire.ca.gov/ResourceManagement/THPStatusUpload/THPStatusTable.html on March 13, 2014 and Personal Communication with Bobby Douglas, Biologist for Mich-Cal, on March 25, 2014.

reducing the risk of habitat loss caused by a stand replacing wildfire or modifying habitat to the extent that allows predators to move in (e.g., significant reductions or removals of canopy cover). Cumulative effects under the ESA refer to those effects of future State or private activities, not involving Federal activities, which are reasonably certain to occur within the Action Area of the Federal action subject to consultation [50 CFR §402.02] and are described later in this document.

Factors considered when evaluating the types and significance of direct and indirect effects include the proximity of the action to NSOs or their habitat (e.g., if treatments do not occur in suitable or dispersal habitat or home ranges there is usually 'no effect') and the distribution or geographic area (spatial analysis scales) where a disturbance will occur. The timing of the actions (will actions occur during pair-bonding, breeding, fledging or dispersal periods) and the nature of the effect on elements required for the NSOs life-cycle, population size and/or distribution, and the duration of the effect are also considered.

Indicators

Potential direct, indirect and cumulative effects (as defined under the ESA) of Alternative 2 are evaluated using a combination of qualitative and quantitative indicators to address the factors listed above. These indicators are used to determine the degree to which project activities may affect individual NSOs and/or their habitat components. Descriptions of how the proposed treatments, including specific prescription elements and project design features, will reduce the potential for direct, indirect and/or cumulative effects (including long term beneficial effects) are assessed.

Indicators include:

- Potential for direct disturbance to breeding pairs, young, and/or dispersing individuals.
- Amount and quality of suitable habitat maintained, degraded, downgraded or removed within a core and home range.
- Amount of dispersal habitat affected in a core and home range.
- Amount of suitable and dispersal habitat affected at the Action Area scale.
- Amount of critical habitat affected at the Action Area scale.

Measurements for how project activities will inform the above indicators include:

- Distance to breeding pairs/individuals and location of project actions (i.e., proximity to nesting/roosting habitat or known consistent reproductive pairs).
- Miles/Acres of suitable, dispersal and critical habitat affected at the various spatial scales.
- Habitat variability and structural complexity remaining post-treatment, including understory layering, large trees, snags and coarse woody debris, that provide for nesting, foraging, prey base and dispersal.

Direct Effects

The project does not propose any silviculture, fuels treatment or smoke generating activities. Table 11 lists the closest proposed activities to the four activity centers. Surveys and activity center searches will

be continued prior to, and throughout, implementation (based on funding and personnel), under mutual agreement with the local Level 1 team and with methods described in the 2012 NSO Survey Protocol.

Table 11. NSO activity center information for the Action Area

Activity Center ID	Distance from Nearest Project Activities	Proposed Activity
ST-014	<0.25 mile	Road maintenance
ST-015	~0.3 mile	Road maintenance
ST-016	<0.25 mile	Road reconstruction
ST-019	<0.25 mile	Road decommissioning

During the intermittent surveys between 1989 and 2013, there were no other NSOs detected in the Action Area aside from the NSOs in ST-014, ST-015, ST-016 and ST-019, though surveys did not occur every year. There are currently no NSOs (single detections or activity centers) on private lands within the Action Area. Northern spotted owl presence was documented at ST-016 and ST-019 in 2013. For a complete summary of survey history, see Table 3.

The project includes multiple activities that may result in direct effects to NSO behaviors of breeding, feeding, sheltering and dispersing as a result of noise disturbance. The disturbance effects include noise from road decommissioning, maintenance and reconstruction activities on roads and trails including blasting to remove large rocks on trails or realign short (<200-foot long segments) of road; felling of hazard trees; felling of trees to improve sighting distance and safe travel conditions and scenic vistas along the 42N17 road; and trimming of brush/limbing of trees to improve sighting distance and safety as these activities may be completed with heavy equipment, explosives and/or chainsaws. Vegetation removal (shrubs, small and large trees), tree branch limbing/pruning and hazard tree felling may occur within the road prism to implement all of the aforementioned activities. While adult and sub-adult NSOs are highly mobile and able to move away from disturbances such as noise, these ‘stressors’ have a higher likelihood of affecting adult and juvenile NSOs during the breeding season when they are closely associated with the core. This is the period when juvenile owls are not yet able to fly and adults are closely defending their territories. The project includes provisions for a range of limited operating periods (see Table 2) that are dependent on specific conditions. The general LOPs are described below.

Limited Operating Periods

An LOP for noise-generating activities above ambient levels is required within 0.25-mile of suitable NSO habitat. The LOP will start on February 1:

- If nesting NSOs are detected, the LOP will extend through September 15th within 0.25-mile of the nest.
- If surveys/stand searches are completed, and nesting owls are not detected, the LOP may be lifted after July 9.

- If surveys/stand searches are not completed, the LOP would remain in effect until September 15.[22]

These LOPs are expected to minimize, if not eliminate, the likelihood that project activities will have direct effects on single and/or breeding NSOs and/or their young and dispersing individuals. While NSOs may disperse and forage within the Action Area, they are generally expected to avoid areas of treatment activity and not be measurably affected by noise generating activities during dispersal (~September to November). Appendix 3 lists the roads that will require the LOP for disturbance. All other roads that are not listed in Appendix 3 are not subject to the LOP.

While barred owls are not currently known to occur in the Action Area, they are recognized as a significant threat to the recovery of the NSO (USDI-FWS 2011). In environments where the two species compete directly for resources, maintaining larger amounts of older forest (nesting/roosting habitat) may help NSOs persist in the short term and reduce competitive interactions (Dugger *et al.* 2011). There are no treatments proposed that would measurably or significantly affect suitable or dispersal habitat and it is unlikely that the project will contribute to any competitive interactions between the two species.

Effects from NSO Habitat Modification

The proposed treatments have limited to no potential to affect the ability of NSOs to feed, breed, shelter or disperse by modifying habitat components required for these activities. Terms used to categorize the degree of predicted change in habitat function, and facilitate quantification of the area (acres) affected include:

Maintain/Beneficial: Indicates that changes in the habitat *may be neutral or beneficial to habitat function* even though habitat elements may be modified.

Degrade: Signifies when treatments have a negative influence on the quality of habitat due to the removal or reduction of NSO habitat elements but *not to the degree where existing habitat function is changed*.

Downgrade: Applies to treatments that reduce habitat elements *to the degree the habitat will not function in the capacity that exists pre-treatment*, but activities will not remove habitat entirely (i.e., downgrade an area from nesting/roosting to foraging habitat).

Remove: Pertains to treatments that reduce habitat elements *to the degree that habitat will no longer function as suitable* for NSO.

The determination of the significance of the habitat change resulting from project activities, and whether these changes are likely to adversely affect NSO, must be based on an analysis of the treatment and its scale-dependent factors. Potential effects to elements of nesting/roosting, foraging or dispersal habitat are based on a comparison between pre- and post-treatment conditions. All treatments under the proposed action and the two action alternatives will occur within very minor amounts of suitable and dispersal habitat along existing NFS roads, routes and trails and would be primarily limited to the existing road or trail prism (see Table 6). The ranges of treatments/scale approximated for this analysis are as follows: For

[22] At this time, year of action 6-visit protocol surveys and activity stand searches are proposed throughout implementation, but may change depending on staffing.

road reconstruction, a total width of 48 feet is utilized for the analysis of activities as work may extend well outside of the road surface to: realign portions of a road, remove/replace or install culverts, and stabilize cutbanks and/or outboard fill faces. For road maintenance and closure, a total width of 24 feet is utilized as most work is expected to be limited to the road surface, though some hazard tree felling and ditch maintenance may be completed. For road decommissioning, a width of 36 feet is utilized as this activity may consist of active decommissioning that extends outside of the narrower road surface (typically 14 to 20 feet). This larger width is considered conservative, but active decommissioning may include removal of drainage structures, replacement of fill to return natural contours. In many instances, decommissioning activities will consist of allowing the natural decommissioning that has occurred to continue, and there would be no active decommissioning (e.g., removal of drainage facilities, reshaping the road surface). For trail reconstruction work, the average trail prism width is estimated at 6 to 10 feet, taking into account hazard trees that may be located off/away from the narrower trail tread.

Effects to Suitable and Dispersal Habitat

Effects to suitable and dispersal habitat will include both short- and long-term reductions of live shrubs, small trees, larger hazard trees and snags within the road prism and along trails where needed to maintain sighting distance and safe travel/use conditions. While these habitat elements may be used by nesting, roosting or foraging NSOs, the treatment will not significantly or measurably alter the function of the habitat. Effects will be restricted to narrow, linear extents along existing roads, routes and trails and NSO habitat function will be maintained. The project design features will reduce the potential for adverse effects to NSOs and their habitat elements. District biologists will assess potential nest/roost trees as described in WF-6 of Table 2, and proposed road realignments (<200 feet long) prior to implementation. Beneficial effects will be realized through decommissioning by reducing the potential for noise disturbance and for fire starts. Road reconstruction and maintenance actions that improve driving conditions will also increase the response times for any future fire starts, lowering the chance of stand-replacing fires, notably within the Eddy LSR near ST-016 and ST-019. Trail maintenance and re-routing may fall hazard trees and remove down logs and brush from the trail tread and trail prism (estimated at a 6 to 10-foot width), but will also occur in a narrow, linear area and will not modify the function of the surrounding NSO habitat. Table 12 lists the affected acreage by activity center.

Table 12. Habitat acres affected by various road and trail treatment actions in the four NSO Activity Centers

Activity Center	Acres N/R habitat (0.5 mi)	Acres Foraging habitat (0.5 mi)	Acres N/R/F habitat degraded (0.5 mi)	Acres N/R habitat (1.3 mi)*	Acres Foraging habitat (1.3 mi)*	Acres N/R/F habitat degraded (1.3 mi)
ST-014	2.2	4	0	2.2	6.3	0
ST-015	0	0	0	0	0	0
ST-016	0.6	2.9	0	0.6	12.4	0
ST-019	2.1	6.7	0	3.85	12.2	0

*Acreage total includes acres within the 0.5-mile core

Road Maintenance

Road maintenance actions were described earlier in this BA. Considering Level 1 and 2 roads, maintenance occurs primarily on high use Level 2 roads. Level 1 and low use Level 2 roads are assessed for maintenance needs, but seldom are maintained except for specific projects or access needs (e.g., private access, existing easements). High-use Level 2 roads have ambient noise levels near those associated with Level 3 roads. Level 3 roads have fairly high ambient noise levels and most if not all maintenance activities that occur are within the ambient noise levels (see the EA for road maintenance level definitions). Under Alternative 2, road maintenance will occur in approximately 9.5 acres of suitable habitat for NSO and 42 acres of dispersal habitat (see Table 6). Appendix 3 lists the roads that will require the project LOP for disturbance. All roads not listed in Appendix 3 are not subject to LOPs.

Hazard trees and snags that contribute to potential nest sites, foraging habitat, and prey base habitat may also be felled to provide safe road/trail use conditions; improve vistas and enhance turnouts along the Parks Creek Road; and safely implement reconstruction, decommissioning, and maintenance activities on other roads and trails. Trees/snags that are felled will be retained on-site as coarse woody debris per PDF WF-5 (Table 2). The exception to this PDF is along the Parks Creek Road where trees/snags that are a hazard, or to improve vistas/turnouts, are felled. Along this road, these logs would be moved outside of the visible road prism to maintain visual quality along the Trinity Heritage Scenic Byway (see project design features VQ-1 and WF-5 in Table 2).

Very limited, dispersed suitable habitat (9.5 acres) will be affected by hazard tree felling from road maintenance activities. Project design features and LOPs are in place to assure that any snags/trees that may be used (or are being used) by NSO would be maintained until after the nesting season (see Table 2; project design feature WF-6).

Road Reconstruction, Realignment and Stormproofing

Road reconstruction, realignment and stormproofing work was described earlier in this BA and blasting may be utilized to clear large boulders or to realign road portions through areas of bedrock. The predicted short term effects may include noise disturbance from heavy equipment (excavators, graders, bulldozers, loaders), blasting, the use of chainsaws, vehicles and crews where noise may be above ambient levels for extended periods of time (2 to 8+ hours). Ambient noise is noise that normally occurs in an area and to which an animal is accustomed; for example: road noise, wind, water rushing in a stream or river, human-caused noise associated with road use, campgrounds and other Forest administrative sites. Project LOPs during the critical breeding period will eliminate the potential for noise disturbance within 0.25-mile of suitable NSO habitat. Some habitat and/or prey base components (small trees/shrubs, hazard trees/snags) may be felled but would not be removed. Short and long-term beneficial effects include increasing response time for fire suppression equipment and personnel, notably along the Eddy Creek Road (road 42N26) within the Eddy LSR, ST-016 and ST-019. Under Alternative 2, road reconstruction will occur in approximately 20 acres of suitable habitat for NSO and 49.5 acres of dispersal habitat (see Table 6). There

is no estimate of road realignment within suitable or dispersal habitat, but short spurs (<200 feet) may be needed to relocate roads outside of sensitive areas.

Very limited, dispersed suitable habitat (20 acres) will be affected by hazard tree or green tree felling from road reconstruction, realignment and stormproofing activities. There are no reconstruction points proposed within suitable habitat. Project design features and LOPs are in place to assure that any snags/trees that may be used (or are being used) by NSO would be maintained until after the nesting season (see Table 2; project design feature WF-6).

Road Decommissioning and Closure

Road/route decommissioning and closure work was described earlier in this BA and will involve both active and passive decommissioning/closure techniques. Where active decommissioning occurs, similar equipment types as described above for road reconstruction may be used. These activities would be subject to the project LOPs for disturbance. Decommissioning and closure is predicted to result in both short- and long-term benefits to watershed values as well as reducing the potential for human caused noise disturbance and fire starts. Indirect and long-term effects to NSOs are expected to be beneficial from increasing and restoring habitat connectivity. Decommissioning of roads/routes and revegetation will also increase habitat suitability for NSO prey species.

Under Alternative 2, road decommissioning will occur in approximately 16 acres of suitable habitat for NSO and 24 acres of dispersal habitat. Road closures under Alternative 2 would occur in approximately 5.5 acres of dispersal habitat, with no closures in suitable habitat (see Table 6).

Trail Maintenance, Repair, Reconstruction and Realignment and Adding to the System

This activity was described earlier in this BA and work will generally consist of the use of hand tools and chain saws for short periods of time, usually less than two days per quarter mile of trail, but may require the use of heavy equipment and blasting to remove large boulders/bedrock that cannot be treated by hand tools or heavy equipment. Due to accessibility, the vast majority of trail work is expected to occur after July and, therefore, areas that require the use of heavy equipment/chainsaws would generally occur in the later period of the breeding season. All activities would be subject to the LOP for disturbance if safe access to conduct trail work is permitted sooner (e.g., a low snow year).

The majority of trail work would occur within or in proximity to dispersal habitat. The effects of trail maintenance and reconstruction actions on shrubs, small trees, and hazard trees/snags are not expected to measurably influence NSO use or affect habitat suitability. None of the roads/trails that are being reconstructed as trails, realigned or added to the System are considered new trails and these actions are not expected to significantly change the level of trail use; they are existing roads or trails that are already in use, and all actions are intended to improve safe use of the trails while reducing current negative resource impacts.

Under Alternative 2, trail maintenance, repair and/or reconstruction will occur in approximately one acre of suitable foraging NSO habitat (the Eddy Creek trail), and approximately 3 acres of dispersal habitat

(portions of the lower Parks Creek, Caldwell Lakes and West Parks Lake trails). There is no trail realignment proposed within suitable habitat (see Table 6).

Prey Effects

Disturbance to and cutting of roadside understory plants, small diameter trees (<10 inches dbh), hazard trees/snags, herb and shrub cover, below-ground fungi, and movement of large coarse woody debris may reduce some prey forage/cover habitat components over the short-and long term (road and trail maintenance). These effects may be felt during the first season, and up to 3 to 5 years following implementation. While many species are positively related to the forage and hiding cover that these actions may influence, the effect will be restricted to narrow, linear areas along existing roads, routes and trails and the current densities of prey species in the Action Area, and where NSOs are more likely to forage, are not likely to appreciably decrease.

While a short-term decrease in prey habitat quality and microsite-availability may occur along roads, routes and trails, the scale and intensity of this effect is not considered significant as effects will be spatially and temporally separated. Prey species habitat located away from roads, routes and trails will remain available, including adjacent untreated early-, mid- and late-seral forest, shrublands and brushfields within the Eddy and Scott Mountain LSRs and the larger Action Area. Although local prey densities and distribution may experience a minor shift as a result of project activities, populations will not be measurably or significantly affected. Based on the rationale above, neither direct nor indirect adverse effects are expected to occur on NSOs from short-term, site specific changes in prey density or availability.

Interrelated and Interdependent Actions

Rock Pit and Common Borrow Sites

There will be no crushing or blasting within the project area or Action Area to develop rock sources, though this activity may occur for short road realignments (<200-feet long spurs) or trail work. Outside of the Action Area, the use of rock pits and borrow sites will be limited to work within the “foot print” of existing pits that are not situated within or near NSO habitat. Rock will be transported from these developed outside sources along existing roads that receive a relatively high level of consistent use (Interstate 5, the Stewart Springs Road). If rock pits/borrow sites are needed within the Action Area, the project LOPs, PDF WF-3 and WF-7b (see Table 2) are in place to assure that NSO and their habitats are not significantly affected. This activity is not expected to measurably influence NSO use or affect habitat suitability.

Effects on Suitable and Dispersal Habitat in Owl Nest Cores and Home Ranges

The four NSO cores and home ranges in the Action Area, ST-014, ST-015, ST-016 and ST-019, were

assessed for direct and indirect effects and potential changes to habitat resulting from Alternative 2. There are no silviculture or fuels treatments, or road actions that will measurably or signficantly affect the function of nesting/roosting, foraging or dispersal habitat or the nest cores of ST-014, ST-015, ST-016 and ST-019. Though habitat elements such as trees, snags, shrubs and brush may be felled or lopped/scattered to complete project activities, the function of suitable and dispersal habitat will not be removed, downgraded or degraded within any of the 0.5-mile cores or 1.3-mile home ranges. Habitat removed will be in a narrow, linear pattern along roads and trails, which represent open areas with relatively high levels of disturbance, and is therefore considered insignificant to maintenance of habitat function. The home ranges of each activity center, including suitable and dispersal habitat, road and trail actions proposed under Alternative 2, and 2012 NAIP imagery are displayed in Maps 1, 2 and 4 in Appendix 2.

A detailed account of existing conditions within the home range and core areas are described in the **Habitat Quantification in the Action Area** section of this BA. The areas classified as non-habitat in all four home ranges are largely due in part to the serpentine soils, topography, high elevation and dry site conditions. The better quality habitats are generally located within the core areas within isolated mixed-conifer/fir stands and/or near streams, wet meadows or springs.

ST-014: West Parks Creek Home Range

The 1.3-mile home range contains 166 acres of NRF (5%); 650 acres of dispersal (19%); and 2,582 acres of non-habitat (76%). At these levels, 24% of the area is providing for 'sufficient' dispersal function (inclusive of NRF). Activities in the core are limited to NFS road use/maintenance and decommissioning. Road and trail actions are summarized in Table 13 (activity miles within the core are included within the home range mileage).

Table 13. Road and trail actions within ST-014 (by miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Add Non-Motorized Trail	0	0	0	0.75	0	0.75
Keep/Maintain Road	0	0	2.10	7.25	0	2.10
Decommission Road	0	0	0.75	5.1	2.85	10.85
Close Road	0	0	0	0.50	0	0.50
Reconstruct Road	0	0	0	4	0	3.40
Add Existing Road to NFS	0	0	0	0.25	0	0.25

ST-015: Dewey Mine Home Range

The 1.3-mile home range of ST-015 contains 405 acres of NRF (12%); 862 acres of dispersal (25%); and 2,131 acres of non-habitat (63%). At these levels, 36% of the area is providing for 'sufficient' dispersal function (inclusive of NRF). Activities in the core are limited to NFS road use/maintenance and road closure. Road and trail actions are outlined in Table 14 (activity miles within the core are included within the home range mileage).

Table 14. Road and trail actions within ST-015 (by miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Keep/Maintain Road	0	0	1.15	4	1.15	3.25
Decommission Road	0	0	0	2.10	0	2.85
Close Road	0	0	0.25	0.35	0.25	0.35

ST-016: Lower Eddy Creek Home Range

The 1.3-mile home range of ST-016 contains 230 acres of NRF (7%); 1,434 acres of dispersal (42%); and 1,734 acres of non-habitat (51%). At these levels, 49% of the area is providing for 'sufficient' dispersal function (inclusive of NRF). Activities in the core are limited to NFS road use/maintenance, reconstruction and decommissioning. Road and trail actions are outlined in Table 15 (activity miles within the core are included within the home range mileage).

Table 15. Road and trail actions within ST-016 (by miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Keep/Maintain Road	0	0	0.25	5.75	0.25	4.90
Decommission Road	0	0	0.10	3.75	0.10	4.60
Reconstruct Road	0	0	2.10	5.35	2.10	5.35

ST-019: Upper Eddy Creek Home Range

The 1.3-mile home range of ST-019 contains 754 acres of NRF (22%); 528 acres of dispersal (16%); and 2,116 acres of non-habitat (62%). At these levels, 38% of the area is providing for 'sufficient' dispersal function (inclusive of NRF). Activities in the core are limited to NFS road use/maintenance, reconstruction and decommissioning. Road and trail actions are outlined in Table 16 (activity miles within the core are included within the home range mileage).

Table 16. Road and trail actions within ST-019 (by miles)

Treatment	Alternative 1		Alternative 2 and 4		Alternative 3	
	Core	*HR*	*Core*	*HR*	*Core*	*HR*
Keep/Maintain Road	0	0	0.5	3	0.5	2.5
Decommission Road	0	0	1.35	3.2	1.35	3.7
Reconstruct Road	0	0	1	3.15	1	3.15
Reconstruct - Convert to Motorized Trail	0	0	0	~500 feet	0	~500 feet
Reconstruct - Convert to Non-Motorized Trail	0	0	0	0.5	0	0.5

Summary of Alternative Effects within NSO Cores/Home Ranges

Activities in the four NSO cores are limited to NFS road maintenance (4 miles), road reconstruction (3.1 miles), road closure (0.25 mile) and road decomissioning (2.2 miles). Refer to Table 12 for the amount of acreage affected in each home range and core. Treatments proposed under Alternatives 2 and 3 within the ST-015, ST-016 and ST-019 cores are the same. Under Alternative 3, there would be zero miles of road kept/maintained in the ST-014 core with approximately 2.85 miles of road decommissioned.

There may be a short-term (one season to 5 years) reduction in individual prey item availability coinciding with vegetation treatments along roads, routes and trails in the cores/home ranges, though the surrounding untreated areas of early, mid and late seral stands and shrub habitats within these areas would continue to support prey species and a reduction in prey populations is not expected. No measureable or significant reduction in NSO habitat use, habitat quality or quantity is predicted at either scale. Project design features would maintain felled snags/hazard trees as CWD within suitable habitat within cores/home ranges.

The differences between Alternatives 2 and 3 at the home range scale include a reduction in roads being kept/maintained (20 miles under Alternative 2; and 12.75 miles under Alternative 3); and road reconstruction (9.35 miles under Alternative 2; and 8.75 miles under Alternative 3). These changes result in an additional 7.85 miles of road decommissioning within the four home ranges under Alternative 3 when compared to Alternative 2 (14.15 miles under Alternative 2; and 22 miles under Alternative 3).

Though minor in the ST-014 core, and all four home ranges, the increases in road decommissioning at both spatial scales contribute to beneficial effects of reduced disturbance (noise and potential fire starts) and increased habitat connectivity. See Maps 1 and 3 in Appendix 2 for a comparison of treatments within the four home ranges, cores and suitable/dispersal habitats between Alternative 2 and Alternative 3.

Under Alternative 4, all road actions would be the same as Alternative 2 with the exception that no trailheads (signage and parking enhancement) would be constructed for trails to Eddy Creek Meadow, West Parks Lakes or Caldwell Lakes. No trailhead improvements would be constructed at the existing Parks Creek/Mt. Eddy trailhead. None of the activities that would be dropped under Alternative 4 are proposed within suitable NSO habitat. In addition, all user-created vehicle routes for access to dispersed camping sites longer than 30 feet from a road would be decommissioned (total of approximately 0.2 miles at various locations).

Effects within the Action Area

The effects to nesting/roosting, foraging and dispersal habitat on NFS lands in the 23,293-acre project area are described above. Approximately 19,812 acres of NFS and private lands comprise the Action Area. As described in the **Existing Environment and Habitat Status** section, the distribution and quality of suitable and dispersal habitat in the Action Area is strongly influenced by local physiographic conditions. NSO habitat is typically limited in distribution, fragmented and structurally dependent on the

soil types, elevation ranges, slope/topographic position and water availability; and to a limited extent, past timber harvest on NFS and private lands.

The Action Area is located at the eastern edge of the NSOs range and the steep topography, dry uplands, and ultramafic soils do not support contiguous areas of high-quality/high value NSO habitat. The natural fragmentation and higher elevation brushfields, subalpine conifer species and serpentine barrens contribute to the Action Area's low amounts of suitable and dispersal habitat. Forest Service management actions, such as the one proposed, generally cannot alter the climate, elevation and topography that influence the spatial configuration, amount and quality of NSO habitat. Vegetation within the Action Area has been shaped by the landscape's ecological conditions, combined with the effects of past management and the higher value habitat for NSOs is primarily located on the lower slopes of the Parks and Eddy Creek drainages.

Critical habitat is designated within Unit 8, Subunit 3 (East Cascades South [ECS-3]) and is designated in conjunction with the four activity centers and better quality habitat in the Action Area. The primary function of the subunit is to "provide demographic support in this area of sparsely distributed high-quality habitat and Federal land and to provide for population connectivity between subunits to the north and south" (USDI-FWS 2012, p. 71931). While increasing and enhancing NSO habitat is important for providing connectivity between currently occupied areas to support the successful dispersal of NSOs, maintaining/protecting existing habitat is also important (Ibid., p. 71920). While the function of critical habitat PCEs will not be significantly modified or appreciably reduced by the project treatment actions, the proposed road decommissioning will ensure greater connectivity and reduced disturbances to habitat in the future. Road reconstruction, notably along Eddy Creek Road (identified as having a high hazard/risk rating for fire; USDA-FS 1999), within the Eddy LSR, ST-016 and ST-019, is expected to provide improved response times for fire suppression personnel and equipment by improving access in both the short- and long-term and affording greater protection to these areas designated as critical habitat.

The majority of the landscape in the Action Area is composed of a diverse mix of forest stands that, depending on age, species composition, and landscape position, may function as nesting/roosting, foraging or dispersal habitat for NSOs. The 3,252 acres of private lands within the Action Area provide limited to no NSO habitat. On NFS lands, ultramafic mixed conifer-fir and mixed conifer/pine of Jeffrey and ponderosa pine and incense cedar composition are the dominant forest vegetation types that provide suitable and dispersal habitat. As described in the **Existing Environment and Habitat Status** section of this BA, the likelihood of NSO use in these stands is strongly influenced by the availability of structure (snags, coarse wood, understory, canopy), water and species composition that serve to anchor territories and core use areas.

Alternative 2 would not change the quantity or quality of suitable or dispersal habitat within the Eddy and Scott Mountain LSRs as no alteration of habitat function will result from the proposed activities (nor would Alternatives 3 or 4). Because the project does not degrade, downgrade or remove suitable habitat, it is not likely to adversely affect NSO use in the LSRs or the Action Area. Dispersal habitat (inclusive of

NRF) covers about 25% of the terrain in the Action Area. The proposed road and trail actions are not expected to significantly reduce the function of dispersal habitat, or habitat connectivity, within any home range or the Action Area considering that actions either maintain, or improve, the function of dispersal habitat by increasing connectivity (through road decommissioning) and reducing the potential for disturbance. Furthermore, the smaller, improved road system proposed under Alternative 2 will likely reduce the potential for wildfire starts and improve the quality of roads used by firefighters in the event of a fire.

Though elements of suitable and dispersal habitat would be affected along the narrow, linear extents of road, route and trail prisms in the LSRs and the larger Action Area, the functionality of nesting/roosting, foraging, and dispersal habitat will be maintained and benefited in the short- and long-term. The project is consistent with a few of the dry forest restoration principles described in the NSO Recovery Plan (and the Final Rule for NSO Critical Habitat) in this disturbance-prone, dry forest region as it does not focus on vegetation management, but road and trail actions to improve watershed condition. These principles include retaining key structural components of NSO habitat such as large and/or old trees, snags, coarse wood (as safely feasible) and managing roads to address fire risk.

Indicator Summary

The following summarizes the measurements for how project activities may affect NSOs and their habitat:

Potential for direct disturbance to breeding pairs, young, and/or dispersing individuals

Disturbance will be minimized, if not eliminated by:

- Conducting NSO surveys/activity center stand searches prior to operations so that the status of previously known or new sites occupied by NSOs are accurately identified on the ground and can be avoided as necessary.
- Implementation of LOPs that will reduce the potential for disturbance and direct/indirect effects from noise and overall operations during the critical pair-bonding, breeding and fledging periods; lifting of the LOPs will be based on survey results.

The acres of suitable habitat (NRF) maintained, degraded, downgraded or removed within a core and home range; the Eddy and Scott Mountain LSRs; the project area; and the Action Area

- Nesting/Roosting habitat function will be maintained at all spatial scales.
- Foraging habitat function will be maintained at all spatial scales.
- Elements of suitable habitat (small trees, large trees, shrubs, ground cover, snags, coarse wood) may be affected within all spatial scales, but this removal will not measurably or significantly reduce the function of the habitat at any of the spatial scales due to the linear, narrow extent of effect. Treatments and effects would be primarily limited to the road and trail prisms.
- Approximately 47 acres of suitable habitat, or 4 percent of the available habitat in the Action Area, may be affected by road and trail actions. Individual NSOs and habitat would be benefitted

by decommissioning due to increased connectivity and prey base habitat, as well as a reduced potential for human disturbance within the four NSO home ranges. Road reconstruction treatments would result in short and long term beneficial effects due to providing safe, increased response times for fire suppression forces in the event of a wildfire.

Acres of dispersal habitat affected in a core and home range, the project area/Action Area and the Eddy and Scott Mountain LSRs

- Dispersal habitat will be maintained within the ST-014, ST-015, ST-016 or ST-019 cores; no dispersal habitat will be removed or downgraded.
- Dispersal habitat will be maintained within the project area and Action Area; no dispersal habitat will be removed or downgraded.
- Dispersal habitat will be maintained within the Eddy and Scott Mountain LSRs; no dispersal habitat will be removed or downgraded.
- Approximately 123 acres of dispersal habitat, or 2 percent of the available habitat in the Action Area, may be affected by road and trail actions. As with suitable habitat, treatments are expected to be beneficial over the short and long term in terms of increasing habitat connectivity through road decommissioning, and improving fire suppression response time through road reconstruction activities.

Miles/acres of critical habitat affected in the Action Area

- Approximately 35.5 miles of road related activities (161 acres) would occur in critical habitat.
- Approximately 2.7 miles of trail work would occur in critical habitat (3.25 acres).
- This represents approximately 3 percent of the total critical habitat within the Action Area.
- Approximately 7 acres of PCE2, 26 acres of PCE3 and 66 acres of PCE4 would be affected by treatments (see Table 18 below)

Habitat variability and structural complexity post-treatment, including understory layering, large trees, snags and coarse woody debris

- While suitable, dispersal and prey base habitat elements (small trees, large trees, shrubs, ground cover, snags, coarse wood) may be affected within all spatial scales during implementation of road and trail actions, this will not measurably or significantly reduce the function of the habitat due to the linear, narrow extent of effects. All treatments would be primarily limited to the road, route and trail prisms.
- Project design features would minimize disturbance to existing vegetation during implementation (WF-1), would maintain felled trees as coarse wood (WF-5 and WF-6), would be implemented to reduce impacts on suitable and critical habitat while mitigating hazards (WF-7c) and would reduce the felling of trees >16” dbh with cavities and decadence, and hardwoods that NSOs may utilize for nesting (WF-7d).

VII. Critical Habitat

Revised Critical Habitat for the Northern Spotted Owl; Final Rule (Final Rule) was issued on December 4, 2012 and became effective January 3, 2013. Within the 23,293-acre project area, critical habitat is designated on 7,167 acres, including approximately 164 acres within the road and trail prism areas proposed for treatment under Alternative 2.

All designated critical habitat is within Unit 8, Subunit 3; East Cascades South (ECS-3). The 112,179-acre ECS-3 subunit consists entirely of National Forest System lands on the Klamath, Modoc, and Shasta-Trinity National Forests. For this analysis of effects on designated critical habitat, the Action Area is defined as a 0.25-mile radius around the proposed road actions. The Action Area is 19,812 acres and is comprised of approximately 16,560 acres on the Shasta-Trinity and Klamath National Forests and 3,252 acres on private lands. Critical Habitat is only designated on NFS lands. Table 17 displays suitable, dispersal and non-habitat designated as critical habitat in the Action Area and Table 18 displays the estimated amounts of PCEs 2, 3, and 4 affected by road and trail actions.

Table 17. Critical habitat acres within the Action Area

Critical Habitat	Within the Project Area	Within the Action Area*
Nesting/Roosting (PCE 2)	304 acres	185 acres
Foraging (PCE 3)	774 acres	690 acres
Dispersal (PCE 4)	3,045 acres	2,439 acres
Non-Habitat^	3,010 acres	2,363 acres

* 14 acres are located on the Klamath National Forest and are not designated as Critical Habitat
^ Serpentine barrens, shrublands, plantations

Table 18. Acres of critical habitat PCEs affected by road and trail treatment actions under Alternative 2

Treatment Area / Action	PCE2	PCE3	PCE4 (exclusive of NRF)
Road Maintenance (Keep / Maintain)	2.2	5.2	19.6
Road Reconstruction	3.4	8.4	37.2
Decommission Road	1	11.8	8
Reconstruct Existing Road, Convert to Motorized Trail	0	0.3	0
Reconstruct Existing Non-Motorized Trail, Add To NFS as Trail	0	0	1.5
TOTAL	**~7**	**~26**	**~66**

Table 19 displays all treatment types within designated critical habitat, regardless of whether it is providing nesting, roosting, foraging or dispersal function, with the approximate affected acres. The approximate 65.25 acres of Critical Habitat not accounted for in Table 18 is situated within non-suitable and non-dispersal habitat for NSO.

Table 19. Mileage and acres of critical habitat affected by road and trail actions

Treatments	Approximate Miles of Treatment Actions within Critical Habitat			Approximate Acres of Critical Habitat Affected*		
	Alternative 1	Alternative 2 / 4	Alternative 3	Alternative 1	Alternative 2 / 4	Alternative 3
Road Maintenance (Keep / Maintain)	0	12	5	0	35	15
Road Reconstruction	0	16	15.40	0	93	90
Decommission Road	0	7.50	16.50	0	33	72
Reconstruct Existing Road, Convert to Motorized Trail	0	0.09	0.09	0	0.10	0.10
Reconstruct Existing Non-Motorized Trail	0	2.60	2.60	0	3.15	3.15
TOTAL APPROXIMATE MILES and ACRES	**0**	**38.20**	**39.60**	**0**	**164.25**	**180.25**

*Based on an average road and trail prism widths described in this BA

There are approximately 11 site-specific actions on the Parks Creek Road (NFS Road 42N17) within designated critical habitat. These actions primarily consist of enhancing safety at existing turnouts and wide spots. The range of tree sizes in these areas that would be affected is < 1-inch to 18 inches dbh, and species consist primarily of ponderosa pine, Jeffrey pine and incense cedar with a minor Douglas fir component. While tree and shrub removal within critical habitat would occur at these sites, the linear, narrow extent of treatments, the distribution across the larger Action Area and placement outside of high quality habitat and owl use areas result in this being a non-significant removal of connected or critical habitat. See Appendix 4 for a sample of representative treatment locations along the 42N17 road, including areas within critical habitat.

Important habitat elements will be retained, and in combination with project design features, adverse effects to critical habitat over the short and long term would not occur. No old growth trees would be removed and trees with characteristics desirable for wildlife, such as cavities, flat, broken tops, and/or deformed limbs would be retained, or felled and left on site as logs (or out of view of the 42N17 road) if they are a defined safety hazard. Per project design feature WF-7c, when falling hazard trees or removing trees >16” dbh to improve sighting distance, turnout safety and/or vistas within designated critical habitat, emphasis shall be given to maintaining primary constituent elements (canopy closure, snags, and coarse woody debris) while mitigating the hazard (e.g., fall trees in a manner that reduces damage to the surrounding stand structure as safely feasible and retains them on the landscape as coarse wood). There would be no measureable reductions in canopy cover, large trees/small trees, large snags and logs, and vertical and horizontal complexity that contribute to PCE 2, PCE 3 and PCE 4 within the four NSO cores/home ranges, LSRs or Action Area.

Overall, PCE 2 and PCE 3 will not be removed. Though individual components may be reduced or variously affected by treatments (approximately 4 percent of the total combined PCE2 and PCE3 in the Action Area), it would not be at a scale that would significantly reduce their value in critical habitat, or the overall ability of the PCEs to function. Important habitat components of nesting/roosting and foraging will be retained over the short and long term, and beneficial effects from increased fire suppression abilities and reduced potential for fires starts would result in greater assurances of protecting critical habitat.

Treatments are not expected to significantly or appreciably reduce the function of PCE 4 given the small degree of change, or significantly affect the ability of NSO to disperse across the landscape in the Action Area. Treatments affect approximately 3 percent of the total PCE 4 in the Action Area. The landscape-level availability of dispersal habitat and the degree of forested habitat/connectivity within the Action Area and surrounding landscape to the west, south and southwest is expected to remain intact and functional, pending a disturbance event. As described in this BA, connectivity and dispersal to the north, northwest and east is limited by juniper/eastside pine, previously burned areas, agricultural valleys and rangelands and rural residential areas.

The potential effects of treatments on critical habitat function were based on an evaluation of the magnitude, intensity and duration of treatment effects on PCE 1, and the amount and quality of existing nesting/roosting (PCE 2), foraging (PCE3) and dispersal (PCE 4) habitat that may be affected. Impacts to NSO habitat, such as the reduction in large trees, small trees, prey base habitat, canopy cover, coarse wood and snags along roads, routes and trails were given substantial consideration during development of the project and the project design features. Treatments will not preclude the current function of these habitats, but may remove elements of suitable habitat and modify dispersal habitat as a result of the reductions of, or changes to, individual habitat components. While elements will be affected by the project, they will not be significantly reduced in their value and the current function of suitable, dispersal and critical habitat to support nesting, roosting, foraging and dispersing NSOs will be retained at the core, home range, project area, LSR and Action Area scales.

Effects at the ECS-3 Critical Habitat Subunit Scale

The function of subunit ECS-3 is to provide demographic support in this area of sparsely distributed, high-quality NSO habitat and Federal land, and to provide for population connectivity between subunits to the north and south (Final Rule, p.71931). Effects to stand components of PCEs are expected to be minor and insignificant in the short term with both short and long term benefits in regards a reduced risk of losing quality habitat from human disturbance (fire starts, etc.) and protection (improved fire suppression access). Approximately 164 acres of combined PCE 1, PCE 2, PCE 3 and PCE 4 within the East Cascades South Unit 8, subunit ECS-3, may be affected by treatments (see Table 19). Given that treatments will not significantly nor appreciably affect the ability of NSOs to nest, roost, forage or disperse across the Action Area or any other smaller scale, the Parks Eddy Watershed Restoration project

will not result in any measurable change in the ECS-3 subunit's ability to provide the functions for which it was designated.

VIII. Cumulative Effects

Under the ESA, cumulative effects include "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR 402.02). It should be noted that the definition of cumulative effects under ESA is different from cumulative effects as interpreted under the National Environmental Policy Act and the two should not be confounded or confused.

In accordance with the Council of Environmental Quality (2005), past actions and their effects are reflected in the existing condition and baseline habitat because those conditions reflect the aggregate impact of all prior human actions and natural events that have resulted in the current environmental conditions and might contribute to cumulative effects. A reasonable attempt to list potentially relevant past, present and reasonably foreseeable future actions within the Parks Eddy watershed that surround the project was made, however. Refer to the EA for a comprehensive review of the past, ongoing and reasonably foreseeable future activities on federal and private lands within the relevant Parks Eddy Watershed Restoration project spatial scales for various resources.

There are no State-administrated lands in the Action Area. Private lands are owned and managed by rural residents or Mich-Cal in the Action Area. Activities on the 369 acres owned and managed by Mich-Cal include commercial thinning, salvage, clear-cutting and other forest stand treatments. Similar to treatments on NFS lands, the effects of these activities are reflected in the existing conditions. Private timber harvest plans are reviewed under section 9 of the Endangered Species Act for the possibilities of prohibited take and private take of threatened NSO is prohibited under California State law and prosecutable under both Federal and State law. As described above, THPs are subject to the California Forest Practice Rules (Sections 919.9 and 939.9) that were modified shortly after the NSO was listed in 1990 to create a process that when implemented correctly by the State, will avoid unauthorized 'take' of NSOs unless authorized by a federal Habitat Conservation Plan or HCP. This process includes incorporating survey results into THPs, comparing those results with the State NSO database and ensuring that adequate amounts of habitat are retained around NSO activity centers. While the FWS does not review individual THPs in many cases, it will provide Technical Assistance when requested to do so by CALFIRE and or the CDFW.

Temporal bounding for the ESA cumulative effects analysis is defined by the timeframe when proposed actions on private lands are reasonably certain to occur along with the likely effects of the proposed federal action. As the project is expected to begin in 2014, and take up to five years to implement, the temporal bounding for private actions that could contribute to cumulative effects, known at the time of this analysis, is 10 years. To determine future forest management actions on private lands within the Action Area within that timeframe, a review of THPs submitted for approval was conducted by querying

the Timber Harvest Plan database and through personal communications with Mich-Cal.[23] There is currently one ongoing THP, and one planned THP submitted for approval within the Action Area. The ongoing Deadfall THP (02-08-106), located southwest of the project area, includes units that are partially within the Action Area, not yet reflected in the existing condition. The THP includes clear-cutting and meadow restoration treatments outside of suitable habitat. The submitted but currently unapproved Dale Creek THP (2-14-016-SIS) is proposed on 297 acres of adjacent private timberland directly southeast of the project area, partially within the Action Area. It includes tractor and cable yarding within suitable habitat in the Action Area not yet reflected in the existing condition.

As suitable and dispersal habitat function will not be removed under the federal action, cumulative effects would not occur and the Parks Eddy Watershed Restoration project is not expected to contribute to significant or adverse cumulative effects on the NSO or its habitat, as defined under the ESA. Timber harvest plans require similar disturbance LOPs as that prescribed for the federal action, and other measures to maintain suitable habitat levels within/near NSO cores. The ongoing Deadfall THP is located within the outer portions of the ST-019 home range, and the proposed Dale Creek THP is not located within a current/known NSO home range. While future forest management actions on private lands may occur within the 10-year timeframe, reasonable effects cannot be evaluated in the absence of a proposed timber harvest plan. There are no cumulative effects to critical habitat because there are no activities proposed within critical habitat under Alternative 2 (or any alternative) that would modify its function, and critical habitat is not designated on private lands within the Action Area.

IX. Determination

Given that:

- Removal and reductions of habitat elements (snags, large trees, small trees, shrubs) along existing roads, routes and trails that may contribute to suitable, dispersal and critical habitat for NSOs may occur during project activities; the extent of effects from project activities is linear and narrow, and will be limited to the existing road and trail prisms that range from 6 feet to 48 feet wide.
- Nesting/Roosting habitat function will be maintained at all spatial scales.
- Foraging habitat function will be maintained at all spatial scales.
- Activities within suitable habitat are estimated at 47 acres, or 4 percent of the total suitable habitat in the Action Area.
- Dispersal habitat function will be maintained at all spatial scales.
- Activities within dispersal habitat are estimated at 123 acres, or 2 percent of the total dispersal habitat in the Action Area.

[23] THP query conducted on March 13, 2014 and Personal Communication with Bobby Douglas, Biologist for Mich-Cal, on March 25, 2014.

- The function of PCEs within critical habitat Unit 8, Subunit 3 (East Cascades South [ECS-3]) will be maintained at all spatial scales, with treatments affecting 4 percent of PCE 2 and PCE3, and 3 percent of PCE4 within the Action Area.
- Activities within all designated critical habitat are estimated at 164 acres, or 3 percent of the total critical habitat in the Action Area.
- The project includes provisions for implementing LOPs to reduce noise and habitat disturbance during the critical breeding period. Surveys and activity center stand searches will be conducted prior to and throughout implementation, as funding and personnel permit.
- Road decommissioning and road reconstruction will result in short and long term beneficial effects to NSOs through reduced potential for human-caused disturbance and improved access and response times for fire suppression personnel and equipment, notably within the Eddy LSR.

It is my determination that Alternative 2 of the Parks Eddy Watershed Restoration Project may affect, but is not likely to adversely affect, the northern spotted owl or designated critical habitat for the northern spotted owl.

X. Management Recommendations

If circumstances surrounding the project design or information used to evaluate project effects should change during the implementation period, the project biologist will coordinate with the local Level 1 team and evaluate the need for reinitiating consultation under the provisions of the ESA.

XI. Contributors

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XII. Literature

Bart, J. 1995. Amount of suitable habitat and viability of northern spotted owls. Conservation Biology 9(4):943-946.

Bingham, B.B. and B.R. Noon. 1997. Mitigation of habitat "take": application to habitat conservation planning. Conservation Biology 11(1):127-139.

Carey, A.B., J. Kershner, B. Biswell, and D. Dominguez. 1999. Ecological scale and forest development: squirrels, dietary fungi, and vascular plants in managed and unmanaged forests. Wildlife Monographs. 142: 1-71.

Courtney, S.P.; J.A. Blakesley; R.E. Bigley; M.L. Cody; J.P. Dumbacher; R.C. Fleischer; A.B. Franklin; J.F. Franklin; R.J. Gutiérrez; J.M. Marzluff; and L. Sztukowski. 2004. Scientific evaluation of the status of the northern spotted owl. Sustainable Ecosystems Institute, Portland, OR.

Dugger, K. M., R. G. Anthony and L. S. Andrews. 2011. Transient dynamics of invasive competitions: barred owls, spotted owls, habitat and the demons of competition presented in Ecological Applications. 21 (7):2459-2468.

Forsman, E.D., R.G. Anthony, K.M. Dugger, E.M. Glenn, A.B. Franklin, G.C. White, C.J. Schwarz, K.P. Burnham, D.R. Anderson, J.D. Nichols, J.E. Hines, J.B. Lint, R.J. Davis, S.H. Ackers, L.S. Andrews, B.L. Biswell, P.C. Carlson, L.V. Diller, S.A. Gremel, D.R. Herter, J.M. Higley, R.B. Horn, J.A. Reid, J. Rockweit, J. Schaberl, T.J. Snetsinger and S.G. Sovern. 2011. Population demography of northern spotted owls: 1985-2008. Studies in Avian Biology. Cooper Ornithological Society.

Forsman, E.D., R.G. Anthony, E.C. Meslow, and C.J. Zabel. 2004. Diets and foraging behavior of northern spotted owls in Oregon. Journal of Raptor Research. 38(3):214-230.

Forsman, E.D., R.G. Anthony, J.A. Reid, P.J. Loschl, S.G. Sovern, M. Taylor, B.L. Biswell, A. Ellingson, E.C. Meslow, G.S. Miller, K.A. Swindle, J.A. Thrailkill, F.F. Wagner and D.E. Seaman. 2002. Natal and breeding dispersal of northern spotted owls. Wildlife Monographs 149:1-35.

Forsman, E.D., E.C. Meslow and H.M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. Wildlife Monographs 87:1-64.

Franklin, A.B., D.R. Anderson, R.J. Gutiérrez, and K.P. Burnham. 2000. Climate, habitat quality, and fitness in northern spotted owl populations in northwestern California. Ecological Monographs 70(4): 539-590.

Gutierrez, R. J. 1985. An overview of recent research on the spotted owl. In Ecology and management of the spotted owl in the Pacific Northwest. ed. Gutierrez, Ralph J. and Andrew B. Carey, Chap. General Technical Report PNW-185, 39-49. Portland, OR: U. S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station.

Hamm, K.A. 1995. Abundance of dusky-footed woodrats in managed forests of north coastal California. M.S. Thesis, Humboldt State University, Humboldt, California. 46 p.

Hamm, K.A. and L.V. Diller. 2009. Forest management effects on abundance of woodrats in northern California. Northwestern Naturalist. 90(22):97-106.

Havens, M. 2009. Personal communication between FWS wildlife biologist and project TEAMS wildlife biologist regarding threshold levels within cores and home ranges. October 13, 2009. Consultation record.

Irwin, L. L., Rock, D. F. and S.C. Rock. 2012. Habitat Selection by Northern Spotted Owls in Mixed Coniferous Forests. In Journal of Wildlife Management 76 (1): 200-213.

Irwin, L.L., D. Rock and S. Rock. 2010. Adaptive management monitoring of spotted owls: annual progress report. Forthcoming. National Council for Air and Stream Improvement, unpublished report.

Irwin, L. L., L. Clark, D. Rock, and S. Rock. 2007. Modeling foraging habitat selection by California spotted owls. Journal of Wildlife Management 71(4):1183-1191.

Jordan, C. 2014. Personal observation of barred owls at Deetz Meadow based on personal communications from retired FS wildlife biologist D. Derby. March 2014.

LaHaye, W.S., R.J. Gutiérrez and J.R. Dunk. 2001. Natal dispersal of the spotted owl in southern California: Dispersal profile of an insular population. Condor 103:691-700.

Lehmkuhl, J. F., Kistler, K. D. and J.S. Begley. 2006. Demography of Northern Flying Squirrels informs Ecosystem Management of Western Interior Forests. Ecological Applications 16(2): 584-600.

Leskiw, T., and R.J. Gutiérrez. 1998. Possible predation of a spotted owl by a barred owl. Western Birds 29:225-226.

Manning, T., J. C. Hagar, and B. C. McComb. 2012. Thinning of young Douglas-fir forests decreases density of northern flying squirrels in the Oregon Cascades. Forest Ecology and Management 264 (2012): 115-124.

Moyle, P.B. 2002. Inland Fishes of California. University of California Press.

Raphael, M.G. 1988. Long-term trends in abundance of amphibians, reptiles, and mammals in Douglas-fir forests of Northwestern California. In: Proceedings of the symposium; Management of amphibians, reptiles, and small mammals in North America. General Technical Report RM-166. U.S. Forest Service, Fort Collins Colorado; pp. 23-31.

Sakai, H.F., and B.R. Noon. 1993. Dusky-footed woodrat abundance in different-aged forests in northwestern California. Journal of Wildlife Management. 57(2): 373-382.

Sakai, H.F., and B.R. Noon. 1997. Between-habitat movement of dusky-footed woodrats and vulnerability to predation. Journal of Wildlife Management. 61(2): 343-350.

Thomas, J. W., E. D. Forsman, J. B. Lint, E. C. Meslow, B. R. Noon, and J. Verner. 1990. A conservation strategy for the northern spotted owl: a report of the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA, Forest Service; USDI, Bureau of Land Management, Fish and Wildlife Service, and National Park Service, Portland, OR.

United States Congress. 1973. Endangered Species Act. In: Congress US, editor. 16 U.S.C. Sections 1531-1544, as Amended 1976-1982, 1984 and 1988.

USDA Forest Service and USDI Bureau of Land Mgmt. 1994. Record of Decision for Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl. Portland, Or. Attachments.

USDA Forest Service. 2014. Biological Evaluation for the Parks Eddy Watershed Restoration Project. Shasta-Trinity National Forest. Unpublished report on file at the Mt. Shasta Ranger Station, Shasta-McCloud Management Unit, Shasta-Trinity National Forest. McCloud, CA.

USDA Forest Service. 2013. Northern spotted owl annual survey records; 1989 to 2013. Shasta-Trinity National Forest. On file at the Mt. Shasta Ranger Station, Shasta-McCloud Management Unit. Mt. Shasta, CA.

USDA Forest Service. 2013a. Summary of Northern Spotted Owl Habitat for the East Cascades South subunit (ECS-3) on the Shasta-McCloud Management Unit – May 16, 2013. Unpublished report on file at the McCloud Ranger Station, Shasta-McCloud Management Unit, Shasta-Trinity National Forest. McCloud, CA. 7p.

USDA Forest Service. 2013b. Northern goshawk annual survey records; 1989 to 2013. Shasta-Trinity National Forest. On file at the Mt. Shasta Ranger Station, Shasta-McCloud Management Unit. Mt. Shasta, CA.

USDA Forest Service. 2012. Hazard Tree Guidelines for Forest Service Facilities and Roads in the Pacific Southwest Region. Unpublished report on file at the Regional Office (R5). Vallejo, CA.

USDA Forest Service. 2013. Willow Parks Watershed Analysis. Unpublished report on file at Shasta Trinity National Forest. Redding, CA.

USDA Forest Service. 2000. California Baseline: Assessment of Northern spotted owl habitat completed by the Shasta-Trinity, Klamath, Six-Rivers and Mendocino National Forest. Redding, CA.

USDA Forest Service. 1999. Shasta-Trinity National Forest, Forest Wide LSR Assessment. Redding, CA.

USDA Forest Service. 1995. Shasta-Trinity National Forest Land and Resource Management Plan (Forest Plan).

USDI Fish and Wildlife Service and USDI National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook - Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. In: U.S. Department of the Interior and the U.S. Department of Commerce, editor. Washington, DC. 371p.

USDI United States Fish and Wildlife Service. 2012. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl; Final Rule. Federal Register Vol. 77, No. 233. December 4, 2012.

USDI United States Fish and Wildlife Service. 2012a. 2012 Revision of the 2011 Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls. Portland, Oregon. January 9, 2012. 42p.

USDI United States Fish and Wildlife Service. 2012b. Species Profile for the Vernal Pool Fairy Shrimp (*Branchinecta lynchi*). 5p.

USDI United States Fish and Wildlife Service. 2011. Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*) Region 1 Portland, Oregon. June 28, 2011.

USDI. Fish and Wildlife Service 2011. Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls. Portland, OR. February 2, 2011.

USDI United States Fish and Wildlife Service. 2009. Regulatory and scientific basis for USFWS guidelines for evaluation of take for northern spotted owls on private timberlands in California's Northern Interior Region. Unpublished report in: U.S. Fish and Wildlife Service, editor. 78p.

USDI United States Fish and Wildlife Service. 2007. Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) 5-year review summary and evaluation. Sacramento, CA. 74p.

USDI Fish and Wildlife Service. 2006. Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California. Report in: U.S. Fish and Wildlife Service, editor. 12p.

USDI Fish and Wildlife Service. 2005. Northwest Forest Plan Section - 7 Consultation Effects Tracker. In: U.S. Department of the Interior, editor. Portland, OR.

USDI United States Fish and Wildlife Service. 1992. Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls. Portland, OR.

USDI United States Fish and Wildlife Service. 1992. Endangered and threatened wildlife and plants: determination of critical habitat for the northern spotted owl. Federal Register 57:1796-1838.

USDI United States Fish and Wildlife Service. 1990. Endangered and threatened wildlife and plants: determination of threatened status for the northern spotted owl. Federal Register 55: 26114-26194.

Ward, J. P., R. J. Gutierrez, and B. R. Noon. 1998. Habitat selection by northern spotted owls: the consequences of prey selection and distribution. Condor 100: 79-92.

Wilson, T. 2010. Limiting factors for northern flying squirrels (*Glaucomys sabrinus*) in the Pacific Northwest: a spatio-temporal analysis. Dissertation Union Institute and University, Cincinnati, Ohio.

Yolo Natural Heritage Program. 2009. Draft Species Account Vernal Pool Fairy Shrimp (*Branchinecta lynchi*) Technology Associates 14p.

Zabel, C. J., J. R. Dunk, H. B. Stauffer, L. M. Roberts, B. S. Mulder, and A. Wright. 2003. Northern spotted owl habitat models for research and management applications in California (USA). Ecological Applications 13:1027-1040.

Zabel, C. J., K. S. McKelvey, and J. P. Ward, Jr. 1995. Influence of primary prey on home-range size and habitat-use patterns of northern spotted owls (*Strix occidentalis caurina*). Canadian Journal of Zoology 73:433-439.

Zabel, C. J., G. N. Steger, K. S. McKelvey, G. P. Eberlein, B. R. Noon, and J. Verner. 1992. Home-range size and habitat-use patterns of California spotted owls in the Sierra Nevada. Pages 149-174 In: Verner, J., K. S. McKelvey, B. R. Noon, R. J. Gutierrez, G. Gould, Jr. and T. W. Beck. 1992. The California spotted owl: a technical assessment of its current status. Gen. Tech. Rep PSW-GTR-133. Albany, CA: Pacific Southwest research Station, Forest Service, U.S. Department of Agriculture.

Appendix 1: Species Lists

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Listed/Proposed Threatened and Endangered Species for the SOUTH CHINA MTN. Quad (Candidates Included)

March 17, 2014

Document number: 971257988-15713

==========

KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type		Scientific Name	Common Name	Category	Critical Habitat
Invertebrates					
		Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish					
	*	*Acipenser medirostris*	green sturgeon	T	Y
		Hypomesus transpacificus	delta smelt	T	Y
	*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
	*	*Oncorhynchus tshawytscha*	winter-run chinook salmon	E	Y
Birds					
		Coccyzus americanus	Western yellow-billed cuckoo	C	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

==========

Listed/Proposed Threatened and Endangered Species for the CHINA MTN. Quad (Candidates Included)

March 17, 2014

Document number: 971257988-15612

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type		Scientific Name	Common Name	Category	Critical Habitat
Invertebrates					
		Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish					
	*	*Acipenser medirostris*	green sturgeon	T	Y
	*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
Birds					
		Coccyzus americanus	Western yellow-billed cuckoo	C	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

==========

Listed/Proposed Threatened and Endangered Species for the MOUNT EDDY Quad (Candidates Included)

March 17, 2014

Document number: 971257988-15833

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type		Scientific Name	Common Name	Category	Critical Habitat
Invertebrates					
		Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish					
	*	*Acipenser medirostris*	green sturgeon	T	Y
		Hypomesus transpacificus	delta smelt	T	Y
	*	*Oncorhynchus mykiss*	Central Valley steelhead	T	Y
	*	*Oncorhynchus tshawytscha*	winter-run chinook salmon	E	Y
Birds					
		Coccyzus americanus	Western yellow-billed cuckoo	C	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

==========

Listed/Proposed Threatened and Endangered Species for the WEED Quad (Candidates Included)

March 17, 2014

Document number: 971257988-15756

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type	Scientific Name	Common Name	Category	Critical Habitat
Invertebrates				
	Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Birds				
	Coccyzus americanus	Western yellow-billed cuckoo	C	N
	Strix occidentalis caurina	northern spotted owl	T	Y
Mammals				
	Canis lupus	gray wolf	E	Y
	Martes pennanti	fisher, West Coast DPS	C	N

Appendix 2: Maps

Map 1: Action Area with NSO Habitat and Proposed Actions - Alternatives 2 and 4

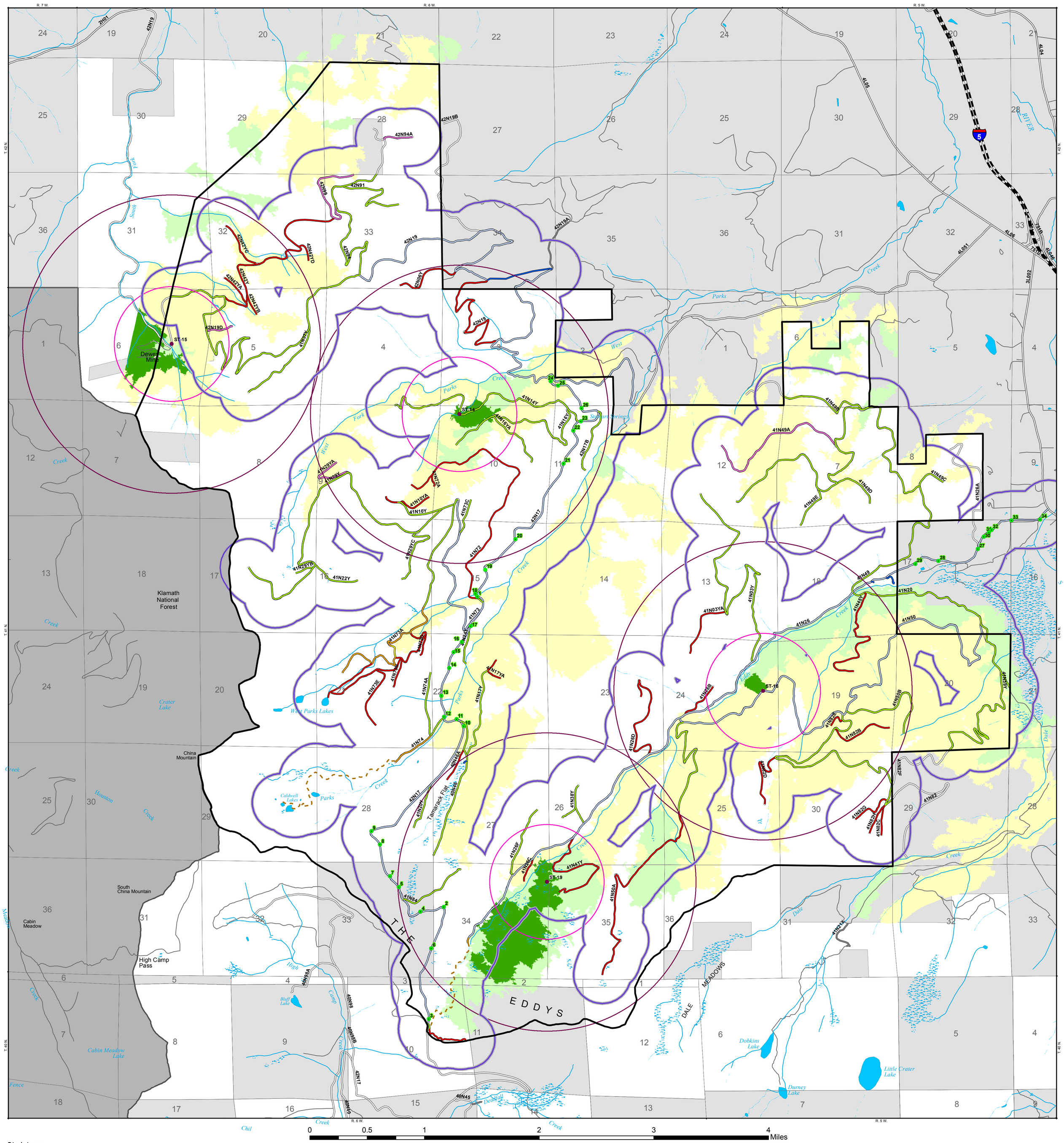
Map 2: Action Area with NSO Habitat, Critical Habitat, LSR Allocation and Proposed Actions - Alternatives 2 and 4

Map 3: Action Area with NSO Habitat and Proposed Actions - Alternative 3

Map 4: Action Area with NSO Habitat and Proposed Actions with 2012 NAIP Imagery

NOTE: The proposed trailhead facilities at West Parks Lake, Caldwell Lakes and the Parks Creek/Mt. Eddy trailheads (improved parking areas, signboards) are not displayed on any of the maps. These facilities will not be situated within suitable NSO habitat or Critical Habitat, but may occur adjacent to or within NSO dispersal habitat. Under Alternative 4, these trailhead facilities would not be constructed.

MAP 1: PARKS EDDY WATERSHED RESTORATION - NSO HABITAT - PROPOSED ACTION & ALTERNATIVE 4



Disclaimer:

The Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. Data may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results.

The Forest Service reserves the right to correct, update, modify, or replace, GIS products without notification. For more information, contact:

Shasta-Trinity National Forest
3644 Avtech Parkway
Redding, CA 96002

April 29, 2014 ALN

DRAFT

PROJECT BOUNDARY
NSO ACTION AREA
NSO NEST SITE
NSO HOME RANGE
NSO TERRITORY
NESTING/ROOSTING HABITAT
FORAGING HABITAT
DISPERSAL HABITAT

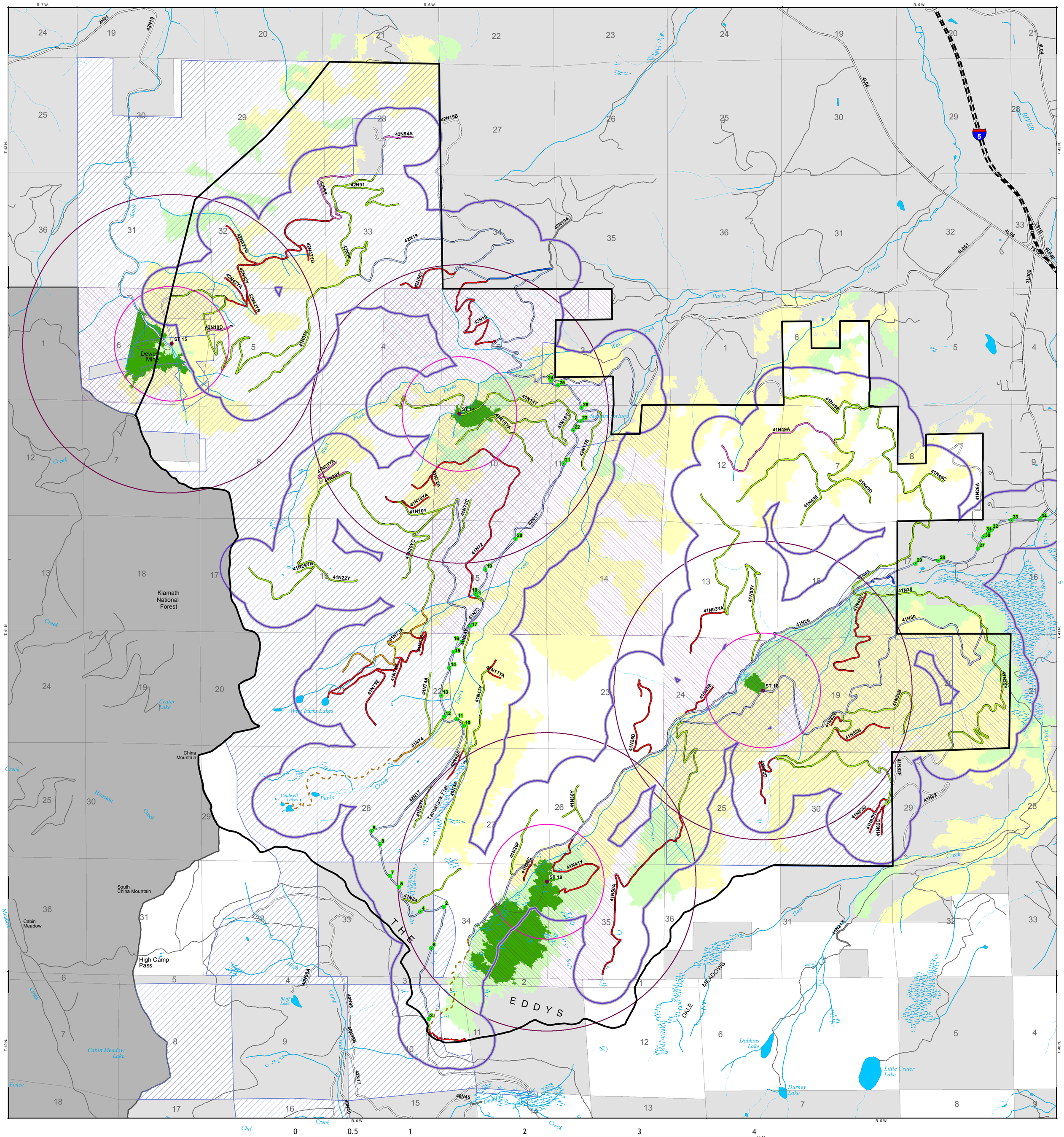
PROPOSED ROAD ACTIONS

ADD
RECONSTRUCT, ADD NON-MOTORIZED TRAIL
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL
RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION

RECONSTRUCTION POINTS
CLOSED ROADS
OPEN ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

MAP 2: PARKS EDDY WATERSHED RESTORATION - NSO/LSR/CHU - PROPOSED ACTION & ALTERNATIVE 4



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Redding, CA 96002

April 29, 2014 ALN

DRAFT

PROJECT BOUNDARY
NSO ACTION AREA
NSO NEST SITE
NSO HOME RANGE
NSO TERRITORY
NESTING/ROOSTING HABITAT
FORAGING HABITAT
DISPERSAL HABITAT
LATE SUCCESSIONAL RESERVES
CHU 2012

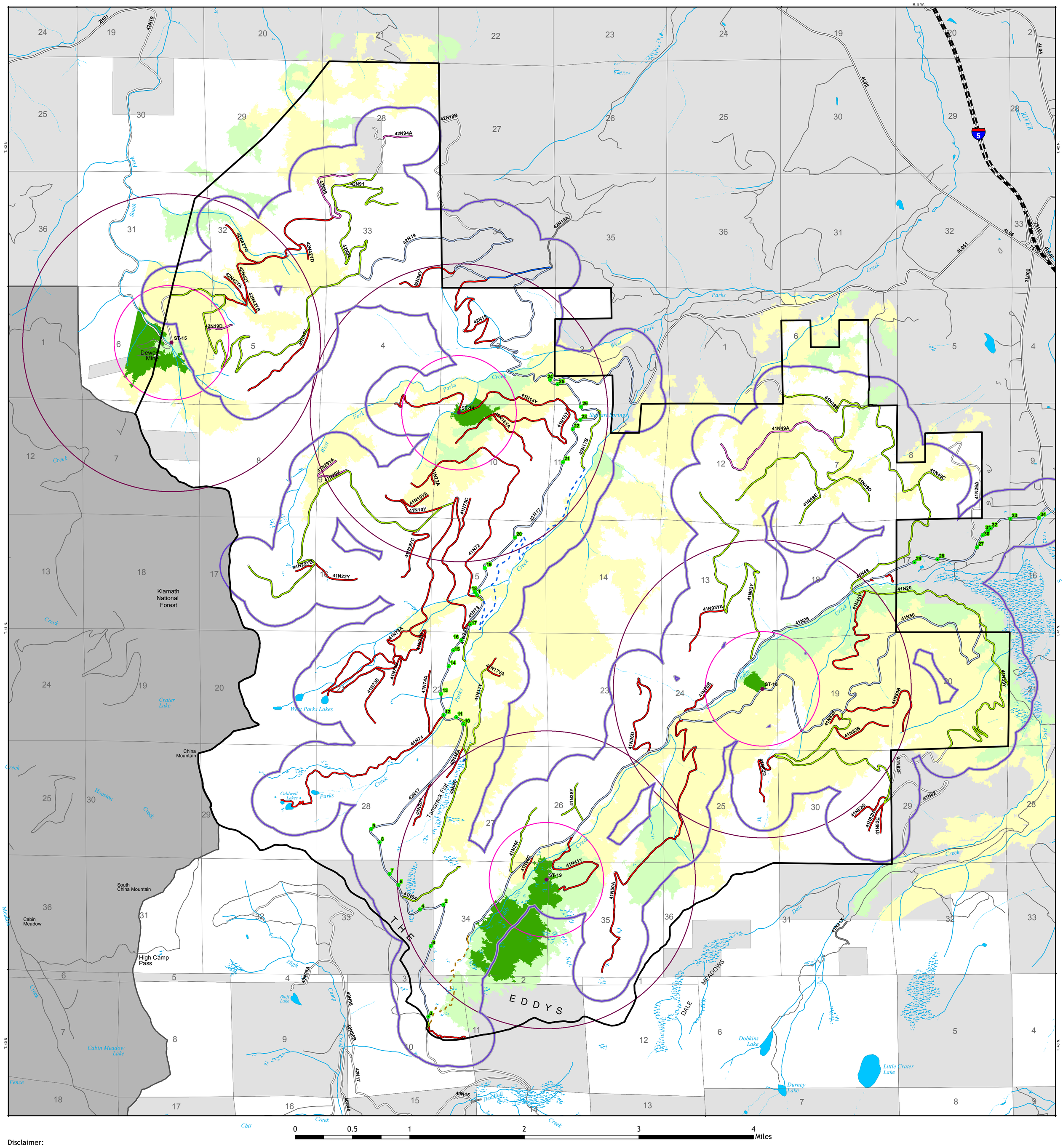
PROPOSED ROAD ACTIONS

ADD
RECONSTRUCT, ADD NON-MOTORIZED TRAIL
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL
RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION

RECONSTRUCTION POINTS
CLOSED ROADS
OPEN ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

MAP 3: PARKS EDDY WATERSHED RESTORATION - NSO HABITAT - ALTERNATIVE 3



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April 29, 2014 ALN

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- PROJECT BOUNDARY
- NSO ACTION AREA
- NSO NEST SITE
- NSO HOME RANGE
- NSO TERRITORY
- NESTING/ROOSTING HABITAT
- FORAGING HABITAT
- DISPERSAL HABITAT

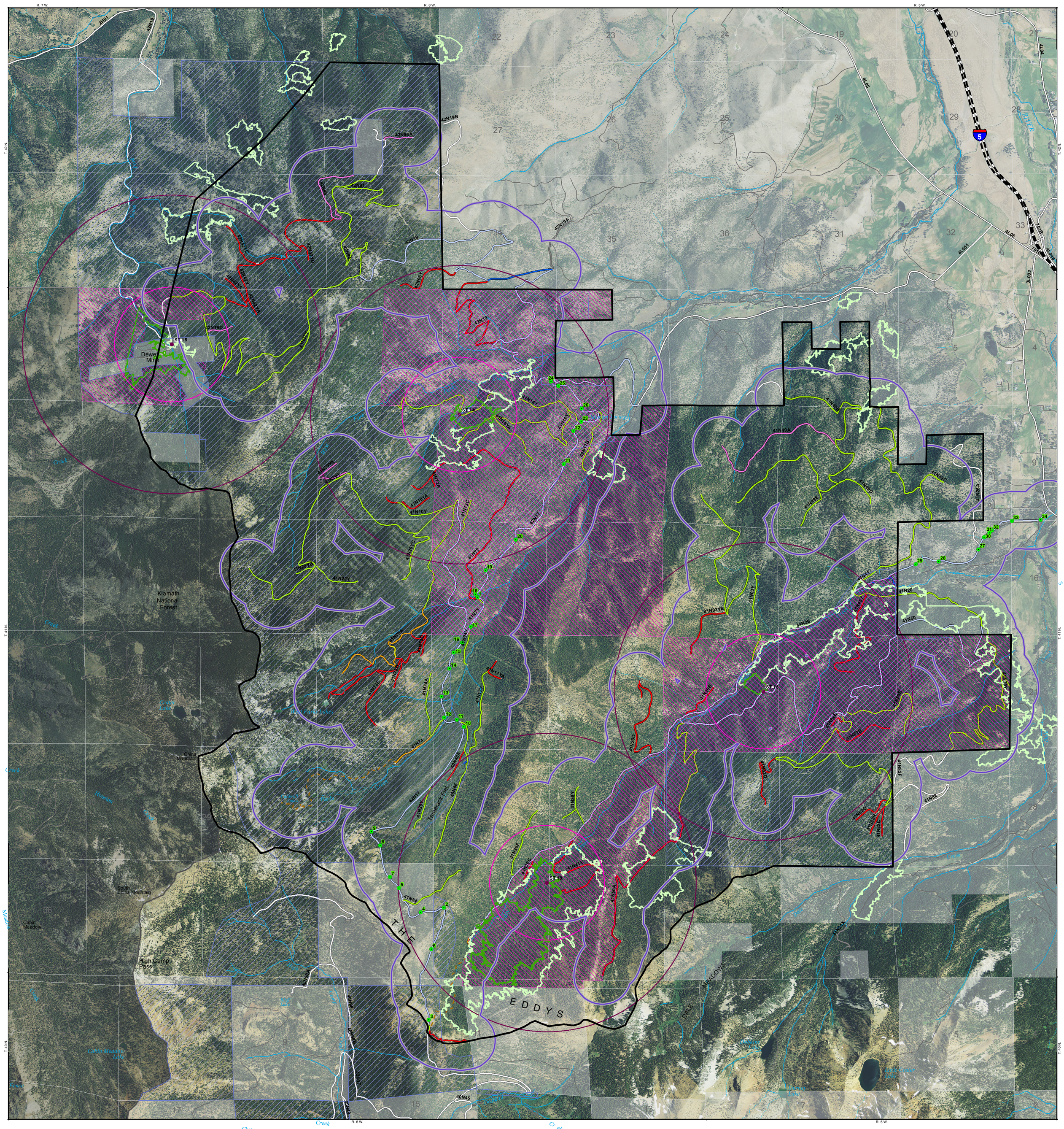
PROPOSED ROAD ACTIONS

- ADD
- RECONSTRUCT, ADD NON-MOTORIZED TRAIL
- KEEP AND MAINTAIN
- RECONSTRUCT, ADD - MOTORIZED TRAIL
- RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
- CLOSE
- DECOMMISSION

- RECONSTRUCTION POINTS
- CLOSED ROADS
- OPEN ROADS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

MAP 4: PARKS EDDY WATERSHED RESTORATION - NSO/LSR/CHU WITH 2012 NAIP
PROPOSED ACTION & ALTERNATIVE 4



0 0.5 1 2 3 4 Miles

Disclaimer:

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Shasta-Trinity National Forest
3644 Avtech Parkway
Redding, CA 96002

April 29, 2014 ALN

DRAFT

- PROJECT BOUNDARY
- NSO ACTION AREA
- NSO NEST SITE
- NSO HOME RANGE
- NSO TERRITORY
- NESTING/ROOSTING HABITAT
- FORAGING HABITAT
- DISPERSAL HABITAT
- LATE SUCCESSIONAL RESERVES
- CHU 2012

PROPOSED ROAD ACTIONS

- ADD
- RECONSTRUCT, ADD NON-MOTORIZED TRAIL
- KEEP AND MAINTAIN
- RECONSTRUCT, ADD - MOTORIZED TRAIL
- RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
- CLOSE
- DECOMMISSION

- RECONSTRUCTION POINTS
- CLOSED ROADS
- OPEN ROADS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

Appendix 3: Project Actions Subject to LOPs

Road ID / Trail	Activity Type	NSO LOP Requirements
41N26	Reconstruction	LOP, or lift thru survey *Significant portions contain suitable habitat and within the ST-016 and T-019 active cores/home ranges*
41N50	Reconstruction	LOP, or lift thru survey
42N17	Reconstruction	LOP, or lift thru survey *LOP is needed from the intersection with the 42N19 road up to Reconstruction Site No. 21 (will include Reconstruction Sites 21, 22, 23, 24, 25 and 26)*
42N19	Reconstruction	LOP, or lift thru survey *Portions have some veins of suitable habitat*
41N26B	Decommissioning	LOP, or lift thru survey
41N26C	Decommissioning	LOP, or lift thru survey
41N41Y	Decommissioning	LOP, or lift thru survey
41N45Y	Decommissioning	LOP, or lift thru survey
41N50A	Decommissioning	LOP or lift thru survey *Verify treatment actions for the activity. First mile of this road is 'keep and maintain' within dispersal habitat; then decommissioning above for the remaining mileage. If the action is to just "allow natural decommissioning to continue" and no noise producing activities are planned, the LOP will not be needed within the upper portion in/near suitable habitat.*
41N72	Decommissioning	LOP, or lift thru survey
42N42YC	Decommissioning	LOP, or lift thru survey *Verify the treatment actions for the activity. If the 42N42Y road is getting bermed at the main intersection with the 42N94 road (e.g., to permit existing natural decommissioning to continue), the LOP may not be needed above the intersection in/near suitable habitat.*
41N03Y	Road Maintenance	LOP, or lift thru survey
41N14Y	Road Maintenance	LOP, or lift thru survey
41N16Y	Road Maintenance	LOP, or lift thru survey
41N16YA	Road Maintenance	LOP, or lift thru survey
41N20	Road Maintenance	LOP, or lift thru survey
41N26F	Road Maintenance	LOP, or lift thru survey
41N49	Road Maintenance	LOP, or lift thru survey

Road ID / Trail	Activity Type	NSO LOP Requirements
41N49B	Road Maintenance	LOP, or lift thru survey
41N38Y	Road Maintenance	LOP, or lift thru survey
41N39Y	Road Maintenance	LOP, or lift thru survey
42N17B	Road Maintenance	LOP, or lift thru survey
42N99	Close Road	LOP or lift thru survey *Likely to use mechanical equipment to install waterbars/closures that will produce noise above ambient levels*
42N19D	Close Road	LOP or lift thru survey *Likely to use mechanical equipment to install waterbars/closures that will produce noise above ambient levels*
41N49A	Close Road	LOP, or lift thru survey *The action area subject to LOP is the 0.25-mile section of road near the intersection with the 41N49 road. Likely to use mechanical equipment to install waterbars/closures that will produce noise above ambient levels*
Eddy Creek Trail	Trail Reconstruction	LOP, or lift thru survey *Trail bisects small portions of suitable foraging habitat. Likely to use mechanical equipment to complete trail reconstruction work that will produce noise above ambient levels*
Parks Creek Trail	Trail Reconstruction	LOP, or lift thru survey *LOP is needed at the first 0.25-miles if heavy equipment will be used (near the 42N17B road)*

Appendix 4: NFS Road 42N17 Sample Actions

Figure 2: Reconstruction point 26, located within the southeastern extent of the ST-014 NSO home range within non-habitat and designated critical habitat.

Figure 3: Reconstruction point 1, cutbank stabilization located within dispersal habitat and critical habitat.

Figure 4: Reconstruction point 2, located outside of suitable, dispersal, or critical habitat, but provides overview of ST-019 home range and core.

Figure 5: Reconstruction point 24, located within the eastern extent of the ST-014 home range and dispersal habitat, and bordering critical habitat.

Addendum to BA—Updated Survey Information

June 3, 2014

Table 3a. Survey status and results of the NSO activity centers in the Action Area updated to include results from the ongoing 2014 Survey Season

Activity Center ID (State ID)	Overall Status (most recent confirmation of pair or resident single status)	**1989-2013 Survey Results and Comments** *Surveys were not conducted to protocol, unless indicated*
ST-014 (SIS0227)	Nighttime Response (2014)	**2014 – No detections during 2 activity center searches, nighttime response 5/22/14, no response on follow-up, 1 protocol (nighttime calling) visit as of 6/3/14** 2013 – No Detections during activity center searches (2012 Protocol) 2012 – No Detections during spot calling (2012 Protocol) 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – Not Surveyed 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Not Surveyed 2003 – Not Surveyed 2002 – Not Surveyed 2001 – Not Surveyed 2000 – Not Surveyed 1999 – Not Surveyed 1998 – Not Surveyed 1997 – Not Surveyed 1996 – Not Surveyed 1994 – Not Surveyed 1993 – Not Surveyed 1992 – Not Surveyed 1991 – Not Surveyed 1990 – Nighttime response 1989 – No Detections
ST-015 (SIS0471)	Occupied Nest (1989)	2014 – No detections during 2 activity center searches, 1 protocol (nighttime calling) visit as of 6/3/14 2013 – No Detections during activity center searches (2012 Protocol) 2012 – No Detections during spot calling (2012 Protocol) 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – Not Surveyed 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Not Surveyed 2003 – Not Surveyed 2002 – Not Surveyed 2001 – Not Surveyed

Activity Center ID (State ID)	Overall Status (most recent confirmation of pair or resident single status)	**1989-2013 Survey Results and Comments** *Surveys were not conducted to protocol, unless indicated*
		2000 – Not Surveyed 1999 – Not Surveyed 1998 – Not Surveyed 1997 – Not Surveyed 1996 – No Detections (historical check) 1995 – Not Surveyed 1994 – Not Surveyed 1993 – Not Surveyed 1992 – Not Surveyed 1991 – Not Surveyed 1990 – Not Surveyed **1989 – NSO pair; one juvenile**
ST-016 (SIS0464)	Occupied Nest (2013)	2014 – No detections during 2 activity center searches, 1 protocol (nighttime calling) visit as of 6/3/14 **2013 – NSO pair; two juveniles during activity center searches** (2012 Protocol) 2012 – Not Surveyed 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – No Detections (1992 protocol) 2006 – Not Surveyed 2005 – Not Surveyed 2004 – Daytime detection during activity center searches (historical check) 2003 – No Detections during activity center searches (historical check) 2002 – No Detections during activity center searches (historical check) 2001 – Nighttime response (historical check) 2000 – Not Surveyed 1999 – No Detections (historical check) 1998 – No Detections (historical check) 1997 – No Detections (historical check) 1996 – No Detections (historical check) 1995 – No Detections (historical check) 1994 – Not Surveyed 1993 – Not Surveyed 1992 – No Detections (1992 protocol) 1991 – Not Surveyed 1990 – Not Surveyed 1989 – Not Surveyed
ST-019 (SIS0465)	Single Male (2013)	2014 – No detections during 2 activity center searches, 1 protocol (nighttime calling) visit as of 6/3/14 **2013 – Single NSO male (private detection)** 2012 – Not Surveyed 2011 – Not Surveyed 2010 – Not Surveyed 2009 – Not Surveyed 2008 – Not Surveyed 2007 – No Detections during activity center searches (historical check)

Activity Center ID (State ID)	Overall Status (most recent confirmation of pair or resident single status)	**1989-2013 Survey Results and Comments** *Surveys were not conducted to protocol, unless indicated*
		2006 – Not Surveyed 2005 – Not Surveyed 2004 – Presence T 41N R6W Sec 26 (historical check) 2003 – No Detections during activity center searches (historical check) 2002 – No Detections during activity center searches (historical check) 2001 – Nighttime detection (historical check) 2000 – Not Surveyed 1999 – No Detections (historical check) 1998 – No Detections (historical check) 1997 – No Detections (historical check) 1996 – Nighttime response (historical check) 1995 – No Detections (historical check) 1994 – Not Surveyed 1993 – Not Surveyed 1992 – NSO pair; one juvenile (historical check) 1991 – Not Surveyed 1990 – Not Surveyed 1989 – NSO pair; no reproduction

2014 Survey Update

As of June 3, 2014, there have been two daytime activity center searches conducted at each of the four historic activity centers within the Action Area project area (ST-014, ST-015, ST-016, and ST-019). No NSO were detected during these activity center searches.

Additionally, the first of 6 planned nighttime calling protocol surveys was conducted May 22, 2014. During this survey, two nighttime NSO responses occurred—one within the historic activity center ST-014, and one in T 41N, 6W, Section 10, southwest corner. No NSO were observed or detected during the follow-up visit conducted on May 25, 2014. MichCal has completed their planned three-visit surveys within the Action Area for 2014 with no detections of NSO.

No barred owls were detected during activity center searches or nighttime calling protocol surveys conducted by federal or private biologists.

In Reply Refer To:

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Yreka Fish and Wildlife Office
1829 South Oregon Street
Yreka, California 96097
Phone: (530) 842-5763 FAX: (530) 842-4517

08EYRE00-2014-I-0011

June 13, 2014

Dave Myers
Shasta-Trinity National Forest
Forest Supervisor
3644 Avtech Parkway
Redding, California 96002

Subject: Informal Consultation on the Parks-Eddy Restoration Project

Dear Mr. Myers,

This responds to your letter dated May 14, 2014, received in this office on May 15, 2014, requesting concurrence with the determination that the proposed Parks-Eddy Restoration Project (Project), may affect, but is not likely to adversely affect northern spotted owls (*Strix occidentalis caurina*) (NSO) and 2012 NSO designated critical habitat. Supplemental information was provided on June 3, 2014. The Project is outside of the range of marbled murrelets *(Brachyramphus marmoratus)* and therefore will have no effect on marbled murrelets or revised 2011 designated marbled murrelet critical habitat. This letter of concurrence is based on analysis of Alternative 2 (Proposed Action) as described in the agreed-upon Biological Assessment (BA) dated April 28, 2014. Additional information has been provided during Level 1 Team streamlined consultation discussions, field reviews, telephone conversations. Review and analysis of the Project provided herein also considers information in the 2011 Revised Recovery Plan for the Northern Spotted Owl (USDI 2011) and the 2012 Proposed Revised Critical Habitat Rule (USDI 2012).

Project Overview

The Project is located on the Mt. Shasta District of the Shasta-McCloud Management Unit, Shasta-Trinity National Forest, and is entirely within the Parks-Eddy Management Area. Project activities are proposed within a Late Successional Reserve, Riparian Reserve, and matrix land allocations. Additionally, the Project overlaps with portions of Unit 8, subunit ECS-3 of 2012 designated critical habitat unit (CHU). The Project proposes watershed restoration in the Parks and Eddy Creek watersheds to promote long-term ecological integrity while providing improvements in safe access for administration of National Forest System (NFS) lands and

recreation opportunities. The Project is designed to reduce both long term road maintenance costs and stream sedimentation through road reconstruction and improved road drainage, and also includes recreation facility improvements.

The Project will involve approximately 44 miles of road maintenance, the reconstruction of approximately 32 miles of roads, decommissioning of approximately 22 miles of roads, closing and storing approximately 3 miles of roads, and the construction of approximately 7.5 miles of trails. Activities will occur along the 6 to 10 feet average prism width for trail reconstruction to a maximum of a 48 feet total prism width for road reconstruction. Road maintenance, reconstruction, and re-alignment activities may involve hazard tree felling (not removal) and brushing of shrubs and small trees. Other associated activities include storm proofing, road realignment, bank stabilization, and the re-classification of some roads from maintenance level 2 to maintenance level 1. Additionally, recreation improvements include construction of trailhead parking areas, installation of trailhead information boards and signs, and the installation of a single vault restroom. The project does not propose any timber harvest, silviculture, fuels treatment or smoke generating activities.

Effects on NSO and NSO Habitat

Four historical NSO activity centers are known to occur within the Project area. NSO occupancy was documented at two of the four activity centers in 2013. 2014 surveys have not been completed; no NSOs have been observed to date (BA Table 3a, updated). As described in the BA, NSO surveys and activity center searches will occur prior to, and throughout, implementation, under mutual agreement with the local Level 1 team and with methods described in the 2012 NSO Survey Protocol.

Effects to NSO may occur from noise disturbance associated with road decommissioning, maintenance and reconstruction activities on roads and trails. However, project design features will be incorporated to minimize or avoid potential effects to NSO from disturbance and to potential effects to their habitat (BA, Table 2). The surveys and stand searches will ensure that Project activities do not result in direct injury or disturbance of normal breeding activities of NSOs. Additionally, activities that generate noise above ambient levels within 0.25 mile of an active NSO nest site or unsurveyed NSO habitat will be seasonally restricted by the following limited operating period (LOP) in any given year, as applicable:

- If nesting NSOs are detected, no activities within 0.25 miles of the nest will occur between February 1 and September 15 of any given year.
- If NSO surveys are completed and nesting owls are not detected, the LOP may be lifted.
- If NSO surveys are not completed, the LOP would remain in effect until September 15.

Proposed activities may affect a maximum of seven acres of NSO nesting/roosting and 40 acres of foraging habitat (BA Table 6), representing about four percent of each of these available habitat types in the action area. No more than 2.2 acres of nesting/roosting and no more than approximately seven acres of foraging habitat will be affected by treatment actions within any known 0.5 mile core area, and within no more than an additional 1.7 acre of nesting/roosting and 5.5 acres of foraging habitat in any of the outer 1.3 mile home range areas (BA Table 12).

Proposed Project activities will not remove or downgrade nesting, roosting, foraging, or dispersal quality habitat. The extent of effects from project activities is linear and narrow, and will be limited to the existing road and trail prisms that range from 6 feet to 48 feet wide. There is the potential that trees may be felled in suitable NSO habitat for hazard abatement and limited sighting distance and safe travel/use improvements, as well as trail reconstruction activities. It is expected that only discrete, individual trees will be felled immediately along roads and trails and that these activities will not create openings or alter canopy closure at the stand level. Felled trees will be left on site and will be available as coarse wood. Roadside brushing is not expected to significantly affect the overall condition of habitat potentially used by NSO. Following the implementation of these actions, beneficial indirect effects are likely to occur through the improved access for fire suppression personnel. Additionally, road decommissioning is expected to reduce the potential for human-caused disturbance and habitat degradation.

In summary, proposed effects are very limited in scope and scale. Activities may affect individual habitat components, but these are linear and scattered across the Project area. Effects are such that habitat function will be maintained and are not expected to significantly alter available forest structural elements or vegetative composition that provides nesting/roosting or foraging habitat for NSOs. Proposed activities are not expected to significantly impact suitable NSO habitat, create any barriers to NSO dispersal, influence barred and spotted owl interactions, negatively impact the NSO, or be inconsistent with the NSO Recovery Plan.

Effects to Critical Habitat

Potential effects to critical habitat and the determination of those effects are evaluated relative to the life history function provided by the affected primary constituent elements (PCEs) (USDI 2012). Approximately 7,170 acres of critical habitat Unit 8, subunit ECS-3, overlap with the 23,290-acre Project area. Activities are proposed to occur within approximately seven acres of PCE 2 (nesting/roosting habitat); 26 acres of PCE 3 (foraging), and 66 acres of PCE 4 (dispersal). As described in the discussion above, these activities are dispersed across the Project area, limited to a linear edge along roads and trails. These effects represent an insignificant and immeasurable change to habitat quality and are not expected measurably change the habitat function of PCEs. For these reasons, adverse effects to critical habitat are not expected.

Summary

Considering: (1) proposed Project activities will not change the function of NSO nesting/roosting, foraging, or dispersal habitat due to the limited and linear, narrow extent of effects, (2) the implementation of surveys and/or the incorporation of LOPs to protect breeding NSOs, (3) the impacts to NSO prey species will likely be minimal due to minimal effects to snags and coarse woody debris, and, (4) short and long term benefits to the NSO are likely to result through development of suitable NSO habitat by increasing habitat connectivity while decreasing the potential for human disturbance through road decommissioning, the Service concurs with your determination that the Project may affect, but is not likely to adversely affect the NSO, and is not likely to adversely affect critical habitat.

This concurrence concludes consultation on the Parks-Eddy Restoration Project, and is contingent upon implementation of the Project description and project design features as outlined in the April 29, 2014, BA for the Project. It will be necessary to contact our office if: 1) new information reveals effects of the proposed action that may affect listed or proposed species or designated critical habitat in a manner or to an extent not considered in this consultation, 2) a new species or critical habitat is designated that may be affected by the proposed action, 3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat not considered in this consultation.

For more information regarding this response, please contact John Morris, Fish and Wildlife Biologist, at 530-841-3130 or by email at john_morris@fws.gov.

Sincerely,

Erin Williams

Erin Williams
Field Supervisor

Literature Cited

USDI Fish and Wildlife Service. 2011. Revised Recovery Plan for the Northern Spotted Owl (*Strix occidentalis caurina*) Region 1 Portland, Oregon. June 28, 2011.

USDI Fish and Wildlife Service 2012. 50 CFR Part 17: Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl; Final Rule. Federal Register Vol. 77, No. 233. December 4, 2012.

Parks Eddy Watershed Restoration Project

Consideration of New Information and Changed Circumstances for Assessing Impacts to Listed Species and Errata

This document summarizes new information regarding the project since the most recent completed informal consultation in June 2014 and the requirements for reinitiating consultation on listed species under the Endangered Species Act (ESA).

Background

The agreed-upon Biological Assessment for the "*Parks Eddy Watershed Restoration Project*" was transmitted to the U.S. Fish and Wildlife Service (FWS) Yreka field office on May 14, 2014. The analysis in the BA of the project's direct, indirect and cumulative effects under the ESA, specifically Alternative 2, on the northern spotted owl (NSO), and its designated critical habitat, yielded a determination that the project is not likely to adversely affect the northern spotted owl or its designated critical habitat. On June 13, 2014, the FWS Yreka field office issued a letter of concurrence (LOC) for this determination (Williams 2014). This LOC is included in the project's Environmental Assessment within Appendix A.

As described on page 4 of the LOC, it is necessary to contact the FWS for potential reinitiation of consultation if: 1) new information reveals effects of the proposed action that may affect listed or proposed species or designated critical habitat in a manner or to an extent not considered in the consultation, 2) a new species or critical habitat is designated that may be affected by the proposed action, or 3) the agency action is subsequently modified in a manner that causes an effect to a listed species or critical habitat not considered in the consultation. These three conditions, and a fourth condition regarding incidental take, for reinitiation of consultation are also described on page 4-60 of the Endangered Species Consultation Handbook (March 1998). Reinitiation is both a responsibility and an obligation if required. However, the ESA is clear that reinitiation is an action agency decision. A decision to reinitiate or not to reinitiate consultation should be based on a strong analysis of the four conditions in the Consultation Handbook, and any additional conditions set forth in FWS consultation documents, and how that analysis supports the decision.

Criteria 1: The amount or extent of incidental take is exceeded

As a Biological Opinion was not prepared for the project, given that the FWS concurred with the Forest's determinations for the NSO and its critical habitat, there is no nexus for addressing incidental take and there is no amount or extent of incidental take to exceed. The Forest Service determined that there would be no effect to three listed species that the FWS administers[1] and no effect to listed fish. The project might affect a threatened species (northern spotted owl), but is unlikely to adversely affect that species or its designated critical habitat. The FWS concurred with the determinations for the northern spotted owl,

[1] There would be no effect to the delta smelt, vernal pool fairy shrimp or the gray wolf as the project area is either outside their known range, contains no suitable habitat, or will have no effect on the species or its critical habitat.

concluding informal consultation as described in the ESA Consultation Handbook (March 1998 p. 3-12). As such, there was no basis for issuing incidental take. No other changes to the project have occurred that would affect a listed, or a proposed listed, species in a manner not already considered since the 2014 BA was prepared and transmitted to the FWS (see **Criteria 4** below for additional information) that would result in a potential for adverse effects or incidental take.

Criteria 2: New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered

See also the discussion for **Criteria 4** below. Since receipt of the June 13, 2014 LOC, which completed the informal consultation for the project, there is no new information (survey results, research, species observations, etc.) that would indicate the agency action is likely to affect a listed species in a manner, or to an extent, not previously considered in the BA or LOC. Modifications that have been made to the agency action since completion of the June 2014 consultation are described below under **Criteria 3**.

In addition to the surveys completed for the project through June 3, 2014, which are fully described in the 2014 BA, there was an aural detection at ST-014 and a nesting pair of NSOs at ST-016 during the 2014 NSO survey season. There have been no barred owl detections in the project's survey area to date (USDA-FS 1989-2014, MichCal 2014). Out-year survey needs, which will depend on the planned implementation and may include a combination of spot checks stand searches and/or nighttime calling as described in the BA (pp. 11, 17, 22, 30, 38, 48, 55), will be discussed at the annual survey coordination meeting with the Yreka FWS office and private landowners in 2015 and beyond, per guidance in the 2012 survey Protocol (pp. 5-6). The limited operating periods or LOPs described in BA Appendix 3, as well as the LOC and Environmental Assessment, remain in effect.

The Forest consulted on the expected effects to critical habitat for the northern spotted owl (April 29, 2014 BA; June 13, 2014 LOC) and there is no new information regarding the designation or project effects that were not considered in the consultation on critical habitat.

Criteria 3: The action is modified in a manner causing effects to listed species or critical habitat not previously considered

Since issuance of the LOC, there have been updates to Alternative 2 (proposed action) and Alternative 3 maps/actions, and a modification to one action across all action alternatives. While Alternatives 3 and 4 were not consulted on, tables and narrative descriptions of effects to NSO habitat and critical habitat under these alternatives were included in the BA for comparison to Alternative 2. These modifications include the following:

- Under the preliminary Alternative 3, roads 41N73, 41N73A, U41N73A, 41N73B, U41N73B, 41N73C, 41N73D and 41N73E and trails 06W23 and 06W23A, would all be "Decommissioned" (approximately 5.5 miles of road/1 mile of trail). Alternative 3 will still "Decommission" this road and trail system, but will also "Reconstruct Non-Motorized" trail on the U41N73B road

(~0.5 mile) and will "Add Non-Motorized" trail from approximately 3.25 miles of the 41N73, 41N73A, U41N73A, 06W23 and 06W23A roads/trails to maintain non-motorized access to West Parks Lakes. There would be ~0.75 mile of non-motorized trail added within NSO dispersal habitat, ~2.25 miles in NSO critical habitat that is classified as non-habitat, and ~1 mile within the outer portion of the ST-014 home range outside of the core (see Map 3 in Attachment 2). The effects of these decommissioning actions (miles/acres affected) were summarized in the BA and described in the EA. Adding ~0.75 mile from the 41N73, 41N73A and U41N73A roads that are in dispersal habitat (~0.7 acres affected) and in critical habitat (~2 acres of non-NSO habitat affected) as a non-motorized trail to the System, and permitting non-motorized access to West Parks Lakes, will not result in any measureable or significant effects to the function of the dispersal habitat, critical habitat or home range (~ 1 acre affected). These roads and trails are currently in place and used by the public to access the Lakes, though ambient noise levels will be reduced by modifying the permitted use level to non-motorized and reducing the potential for fuelwood collection using motorized access. This action does not affect suitable habitat or current NSO nest cores.

- Under the preliminary Alternative 3, roads 41N29Y and 41N29YA were described as "Keep/Maintain" and "Close", respectively. Due to their location within LSR, and the fact that they are not primary connector roads, active cost share roads, or roads that access private property, these roads will be "Decommissioned". This decommissioning affects approximately 3.8 miles of System road, inclusive of ~1.87 miles within the ST-014 home range and ~1.10 miles within NSO dispersal habitat (including ~0.10 mile of critical habitat). This action, like other road decommissioning treatments, will result in beneficial effects of reduced fragmentation and human-caused disturbances such as fire starts and fuelwood collection. The additional beneficial effects to NSO dispersal habitat are estimated at approximately 4.80 acres (including ~0.5 acre of PCE-4), with approximately 8.16 acres of combined dispersal/non-habitat affected within the outer portion of the ST-014 home range.
- Across all alternatives, approximately 500 feet of road at the end of the 41N26 road near the proposed Eddy Creek Meadow trailhead (Alternatives 2 and 3) will be "Decommissioned" instead of "Reconstruct- Convert to Motorized Trail". The reconstruction was described in the BA (Table 16) and would have affected suitable foraging habitat, critical habitat and a very small part of the ST-019 home range outside of the core. The analysis in the BA described the Motorized Trail activity as affecting < one acre of foraging habitat, critical habitat and the ST-019 home range. This segment of road will be decommissioned under all action alternatives considered in detail. Though very minor, this change will be beneficial due to the restriction of motorized access, with increased benefits to high elevation meadow habitat and Riparian Reserves.

In addition to the modifications described above, **Attachment 2** contains updated versions of Maps 1-4. An additional map (Map 5) that is specific to Alternative 4 is also included. A separate map for

Alternative 4 was not included with the April 2014 BA, as the actions proposed were the same as Alternative 2, without the new constructed trailheads/parking areas and reconstruction of roads (<0.10 mile) that access dispersed recreation areas. Edits made to Maps 1-4 are discussed below in the **Map Edits between April 2014 BA and Final Action Alternatives** section, as they are not changes in the project actions, but rather corrections to the preliminary maps.

Criteria 4: A new species is listed or critical habitat is designated that may be affected by the action

Based on a review of species lists obtained since receipt of the June 13, 2014 LOC, which completed the most recent informal consultation for the project, no additional species or critical habitat have been listed or designated in the project area that would be affected by the proposed action or action alternatives. In accordance with the Endangered Species Consultation Handbook (March 1998 p. 3-1), species lists for the four USGS 7.5-minute quadrangles assessed for the project were obtained on March 17, 2014, from the Arcata FWS Office website at: http://www.fws.gov/arcata/specieslist/. These lists are included as Appendix 1 of the April 29, 2014 BA. As described in the BA, there will be no effect to three of the listed species that the FWS administers and there would be no effect to listed fish, nor their respective critical habitats, as the project area is either outside their known range, contains no suitable and/or critical habitat for the species, or the project will have no effect on the species or its critical habitat (refer to the project fisheries BA/BE). These include the vernal pool fairy shrimp, delta smelt and gray wolf and there will still be no effect to these species from the proposed action or alternatives.

Species lists were obtained again on August 20, 2014 to check for any revisions to listed species or critical habitat designations. These lists are included in **Attachment 1** of this document. The Western yellow-billed cuckoo's listing status has been updated from Candidate to Proposed Threatened. The Western yellow-billed cuckoo is a neotropical migrant bird that winters in South America and breeds in western North America. This species used to be abundant west of the Continental Divide, but are now mostly found within riparian corridors in Arizona, California and New Mexico (USDI-FWS 2014). Its historic range extended throughout much of lowland California (Grinnell and Miller 1944) within riparian habitat and it was common in the Central Valley. Their current known breeding range in California is limited to Sacramento River from Red Bluff to Colusa, and the South Fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve. Other sites where small populations of cuckoos (<5 pairs) breed or possibly breed (not necessarily every year) include the Feather River, the Prado Flood Control Basin, the Amargosa River, the Owens Valley near Lone Pine and Big Pine, the Santa Clara River, the Mojave River and portions of the Colorado River (Layman 1998).

They require large, contiguous, multilayered riparian habitats for nesting (USDI-FWS 2014).Wooded habitats with dense cover and water nearby are preferred, including woodlands with low, scrubby, vegetation, overgrown orchards, abandoned farmland and dense thickets along streams and marshes. Threats include loss of riparian habitat and habitat fragmentation as a result of conversion to agriculture, dams and river flow management, bank protection, overgrazing, and competition from exotic plants

(USDI-FWS 2014a). While portions of the project area contain riparian/mixed conifer habitat, primarily along the lower reaches of Eddy Creek and Parks Creek where actions will occur, as well as wet meadow areas near the Shasta River where no actions will occur, there are no contiguous, multilayered riparian areas or suitable habitat that would support nesting or individual Western yellow-billed cuckoo in the project area that would be affected and therefore, the project will have no effect on this proposed listed species.

Map Edits between April 2014 BA and Final Action Alternatives

Map 1: Proposed Action/Preferred Alternative (Alternative 2)

1) Map 1 in the April 2014 BA did not include the proposed 'addition' of a Non-Motorized trail (now mapped as the U41N73B; located in the west 1/2 of Section 21 near West Parks Lakes). This action was included on the preliminary EA maps, but was not included on the BA maps. This proposed 0.25 mile of adding non-motorized trail to the System to access lower West Parks Lake is located within non-habitat for the NSO, outside of critical habitat and outside a known current NSO home range/core. The updated Map 1 (see **Attachment 2 –Maps**) displays the proposed activity for the U41N73B road as "Reconstruct Non-Motorized" trail.

2) Map 1 in the April 2014 BA did not include the proposed 'addition' of a Non-Motorized trail near Parks Creek. This action was already assessed in the final BA however (BA p. 14). The updated Map 1 displays the 42N17BB road near Parks Creek as "Add-Non Motorized".

3) Map 1 in the April 2014 BA displayed “Decommission” on part of the 42N19 road (~1.75 miles). The updated Map 1 displays both “Decommission” and “Reconstruction” on this section of the 42N19 road. It was described in the BA that the decommissioning this section of the road through a sensitive hydrologic area was only contingent on right-of-way access in Section 34 (BA p. 13). If right-of-way is not granted and the road segment is not decommissioned, the segment would be reconstructed per the best design possible to reduce impacts to soils, Riparian Reserves and plants in this area.

4) Map 1 in the April 2014 BA displayed the actions along the 41N74 road, and the 06W01 trail, to Caldwell Lakes as “Keep/Maintain”, “Convert to Motorized Trail” and "Reconstruct-Non-Motorized Trail." These actions are all located within non-habitat for the NSO, outside of critical habitat and outside a known current NSO home range/core. The updated Map 1 shows the first portion of the 41N74 road as "Keep/Maintain" (as originally mapped), with the next ~0.4 mile as "Decommission" and “Reconstruction-Non Motorized” trail, with “Reconstruction - Non Motorized" for ~0.75 mile, and the last ~0.5 mile is "Keep and Maintain - Non-Motorized". While situated outside of NSO habitat, there would be a reduced potential for impacts resulting from human-caused disturbances from noise, fire starts and motorized fuelwood collection.

Map 3: Alternative 3

1) Map 3 in the April 2014 BA displays all of the West Parks Lakes road/trail actions (41N73 road system) as "Decommission". This change was described above under **Criteria 3**. The decommissioning will still occur, though is not mapped. The updated Map 3 displays the actions as "Add - Non-Motorized" trail as well as "Reconstruct Non-Motorized" trail in order to maintain non-motorized access to West Parks Lakes.

2) Same as described for Proposed Action Item #3 above: "Decommissioning" will occur on a ~1.75 mile section of the 42N19 road if right-of way is granted; otherwise "Reconstruction" will occur.

3) Same as described for Proposed Action Item #4 above: "Decommission" will occur in the small area near Eddy Creek Meadow trailhead *instead* of the "Conversion to Motorized Trail" initially reported. This will result in minor beneficial effects with in the ST-019 home range, near suitable foraging habitat, and in CH.

4) Map 3 in the April 2014 BA displays the entire 41N74 road and trail system that accesses Caldwell Lakes as being "Decommissioned". As assessed under Alternative 3, these roads/trail will still be decommissioned as the initial action. The follow up action, included on the updated Map 3, will "Add Non-Motorized" trail (~0.6 mile), "Reconstruct Non-Motorized" trail (~0.75 mile), and "Keep/Maintain Non-Motorized" trail (~0.5 mile) to the lakes. These actions are located within non-habitat for the NSO, outside of critical habitat and outside a known current NSO home range/core.

5) Map 3 in the April 2014 BA displays the 41N29Y road as "Keep/Maintain" (partly in the ST-14 home range, NSO dispersal habitat, and critical habitat); and the 41N29YA road as "Close" (located in the ST-014 home range and dispersal habitat). The effects of this modification under Alternative 3 are described above under **Criteria 3**. The updated Map 3 shows both road actions on the 41N29Y and 41N29YA as "Decommission".

Maps 1, 2, 3, 4 and 5: All Action Alternatives

1) All maps in Appendix 2 of the April 2014 BA displayed approximately 500 feet of road at the end of the 41N26 road as “Reconstruct - Motorized Trail”. This action has been corrected on all of the action alternative maps and the effects are described above under **Criteria 3**.

Based on the aforementioned description and analysis of new information and project map updates, there is no need to reinitiate consultation on the project and this document has been transmitted to the Yreka FWS office for their records.

Prepared by: */s/ Justin A. Mapula*

Justin Mapula
Project Wildlife Biologist
McCloud Ranger District
Shasta-McCloud Management Unit, Shasta-Trinity National Forest

Date: September 8, 2014

Reviewed and updated by: */s/ Christine J. Jordan*

Christine Jordan
Wildlife Biologist
Shasta-McCloud Management Unit, Shasta-Trinity National Forest

Date: September 9, 2014

References

Laymon, S. A. 1998. Yellow-billed Cuckoo (*Coccycus americanus*). *In* The Riparian Bird Conservation Plan:a strategy for reversing the decline of riparian-associated birds in California. California Partners in Flight. http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

Mapula, J. 2014. Biological Assessment for the Parks Eddy Watershed Restoration Project. Unpublished report on file at the Shasta-Trinity National Forest, Shasta-McCloud Management Unit. April 29, 2014.

USDA- Forest Service. 1989-2014 (in progress). Northern spotted owl survey data summary from 1989 through 2014. Unpublished data on file at the Shasta-Trinity National Forest, Shasta-McCloud Management Unit.

USDI-Fish and Wildlife Service. 2014. Species Factsheet for Western yellow-billed cuckoo. March 25, 2014.

USDI-Fish and Wildlife Service. 2014a. Public Advisory for Input on Designation of Critical Habitat for the Western yellow-billed cuckoo. August 14, 2014.

USDI-Fish and Wildlife Service and U.S. Department of Commerce NOAA's National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook. Procedures for Conducting Section 7 Consultations and Conferences. March 1998. 315p.

Williams, E. 2014. Letter of Concurrence Informal Endangered Species Consultation on the Parks Eddy Watershed Restoration Project. Unpublished correspondence signed by Erin Williams, on file at the Shasta-Trinity National Forest, Shasta-McCloud Management Unit. USDI Fish and Wildlife Service. June 13, 2014.

Attachment 1 – 2014 FWS Species Lists

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Listed/Proposed Threatened and Endangered Species for the CHINA MTN. Quad (Candidates Included)

August 20, 2014

Document number: 596514838-1119

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type		Scientific Name	Common Name	Category	Critical Habitat
Invertebrates					
		Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish					
	*	*Acipenser medirostris*	green sturgeon	T	Y
	*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
Birds					
		Coccyzus americanus	Western yellow-billed cuckoo	PT	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

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Listed/Proposed Threatened and Endangered Species for the MOUNT EDDY Quad (Candidates Included)

August 20, 2014

Document number: 596818425-1137

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type	Scientific Name	Common Name	Category	Critical Habitat

Invertebrates					
		Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish					
	*	*Acipenser medirostris*	green sturgeon	T	Y
		Hypomesus transpacificus	delta smelt	T	Y
	*	*Oncorhynchus mykiss*	Central Valley steelhead	T	Y
	*	*Oncorhynchus tshawytscha*	winter-run chinook salmon	E	Y
Birds					
		Coccyzus americanus	Western yellow-billed cuckoo	PT	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

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Listed/Proposed Threatened and Endangered Species for the SOUTH CHINA MTN. Quad (Candidates Included)

August 20, 2014

Document number: 596818425-11222

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type		Scientific Name	Common Name	Category	Critical Habitat
Invertebrates					
		Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Fish					
	*	*Acipenser medirostris*	green sturgeon	T	Y
		Hypomesus transpacificus	delta smelt	T	Y
	*	*Oncorhynchus kisutch*	S. OR/N. CA coho salmon	T	Y
	*	*Oncorhynchus tshawytscha*	winter-run chinook salmon	E	Y
Birds					
		Coccyzus americanus	Western yellow-billed cuckoo	PT	N
		Strix occidentalis caurina	northern spotted owl	T	Y
Mammals					
		Martes pennanti	fisher, West Coast DPS	C	N

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Listed/Proposed Threatened and Endangered Species for the WEED Quad (Candidates Included)

August 20, 2014

Document number: 596818425-11246

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KEY:
(PE) Proposed Endangered Proposed in the Federal Register as being in danger of extinction
(PT) Proposed Threatened Proposed as likely to become endangered within the foreseeable future
(E) Endangered Listed in the Federal Register as being in danger of extinction
(T) Threatened Listed as likely to become endangered within the foreseeable future
(C) Candidate Candidate which may become a proposed species Habitat Y = Designated, P = Proposed, N = None Designated
* Denotes a species Listed by the National Marine Fisheries Service

Type	Scientific Name	Common Name	Category	Critical Habitat
Invertebrates				
	Branchinecta lynchi	vernal pool fairy shrimp	T	Y
Birds				
	Coccyzus americanus	Western yellow-billed cuckoo	PT	N
	Strix occidentalis caurina	northern spotted owl	T	Y
Mammals				
	Canis lupus	gray wolf	E	Y
	Martes pennanti	fisher, West Coast DPS	C	N

Attachment 2 – Final Maps

Map 1: Alternative 2 with NSO Action Area, NSO Habitat, Cores/Home Ranges and Proposed Actions

Map 2: Alternative 2 with NSO Action Area, NSO Habitat, Cores/Home Ranges, 2012 NSO Critical Habitat, LSR Allocation and Proposed Actions

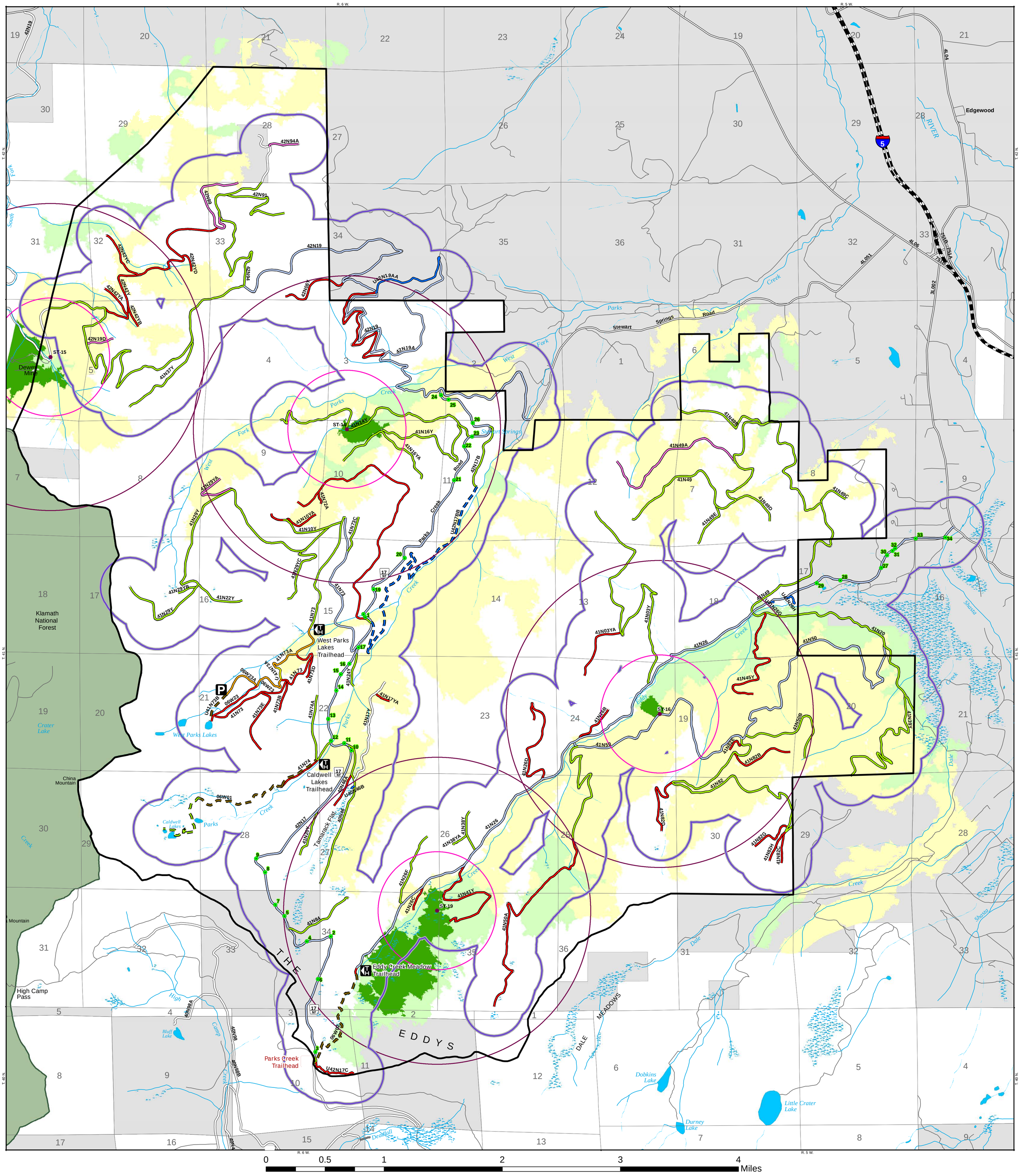
Map 3: Alternative 3 with NSO Action Area, NSO Habitat, Cores/Home Ranges and Proposed Actions

Map 4: Overview of NSO Action Area with NSO Habitat, Cores/Home Ranges and Proposed Actions with 2012 NAIP Imagery

Map 5: Alternative 4 with NSO Action Area, NSO Habitat, Cores/Home Ranges and Proposed Actions

NOTE: The proposed NEW trailhead facilities at West Parks Lake, Caldwell Lakes and the Parks Creek/Mt. Eddy trailheads (e.g., improved parking areas, signboards) are now displayed on Maps 1-4. The updated Map 5 is specific to Alternative 4 and does not display these activities, though it does display the existing trailhead for the Mt. Eddy trail. Note that none of the proposed NEW trailhead facilities/activities are situated within suitable NSO habitat or Critical Habitat, but may occur adjacent to or within NSO dispersal habitat.

MAP 1: PARKS EDDY WATERSHED RESTORATION - NSO HABITAT - PROPOSED ACTION



Disclaimer:

The Forest Service uses the most current and complete data available.GIS data and product accuracy may vary. Data may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results.

The Forest Service reserves the right to correct, update, modify, or replace, GIS products without notification. For more information, contact:

Shasta-Trinity National Forest
3644 Avtech Parkway
Redding, CA 96002

September 8, 2014 ALN

PROJECT BOUNDARY
NSO ACTION AREA
NSO ACTIVITY CENTER
NSO HOME RANGE
NSO TERRITORY
NESTING/ROOSTING HABITAT
FORAGING HABITAT
DISPERSAL HABITAT

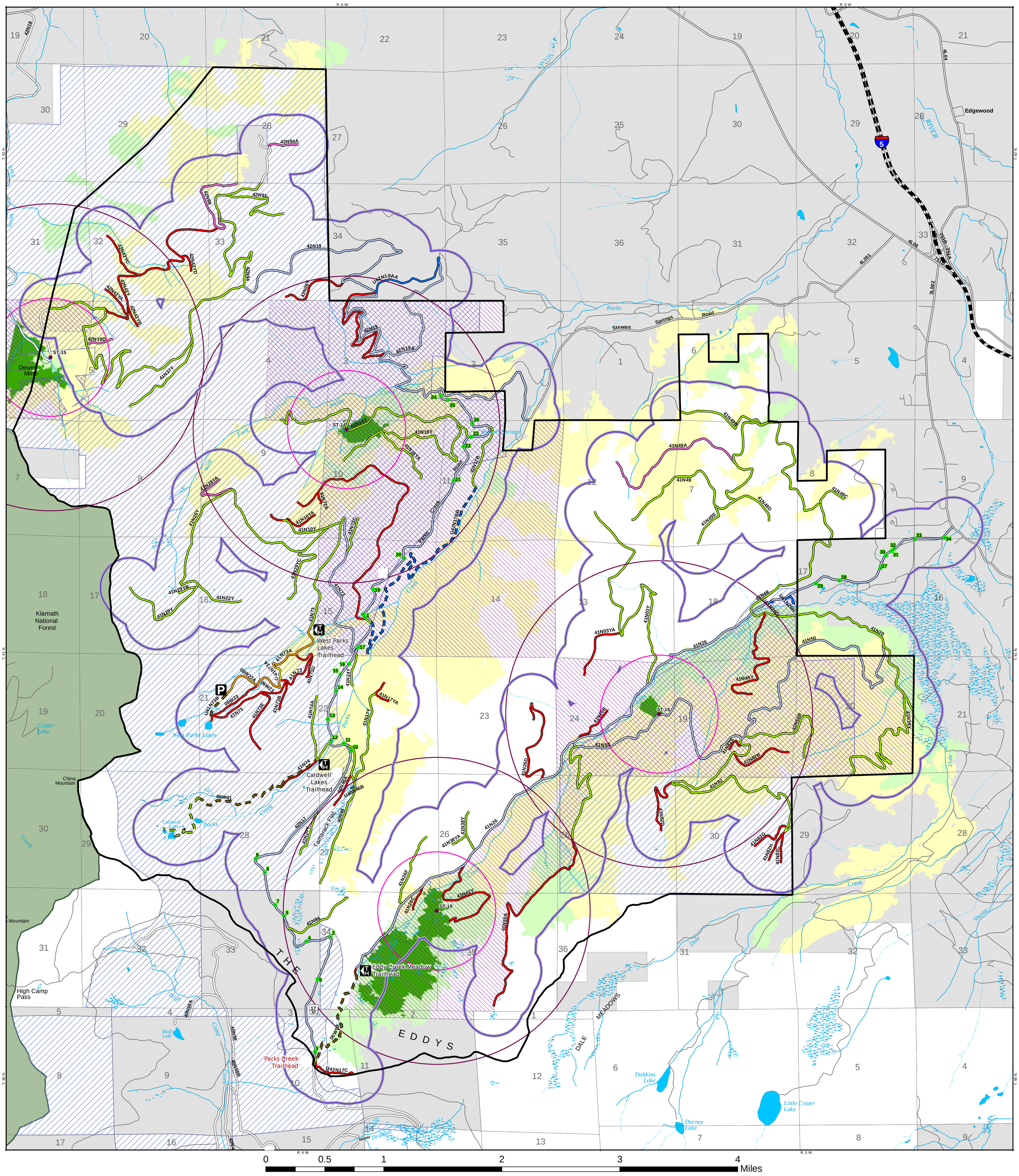
PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL

RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION
RECONSTRUCTION POINTS
PROPOSED TRAILHEADS
PROPOSED PARKING AREA
EXISTING TRAILHEAD

OPEN ROADS
CLOSED ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

MAP 2: PARKS EDDY WATERSHED RESTORATION - NSO/LSR/CHU - PROPOSED ACTION



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Redding, CA 96002

September 8, 2014 ALN

- PROJECT BOUNDARY
- NSO ACTION AREA
- NSO ACTIVITY CENTER
- NSO HOME RANGE
- NSO TERRITORY
- NESTING/ROOSTING HABITAT
- FORAGING HABITAT
- DISPERSAL HABITAT
- LATE SUCCESSIONAL RESERVES
- CHU 2012

PROPOSED ROAD ACTIONS

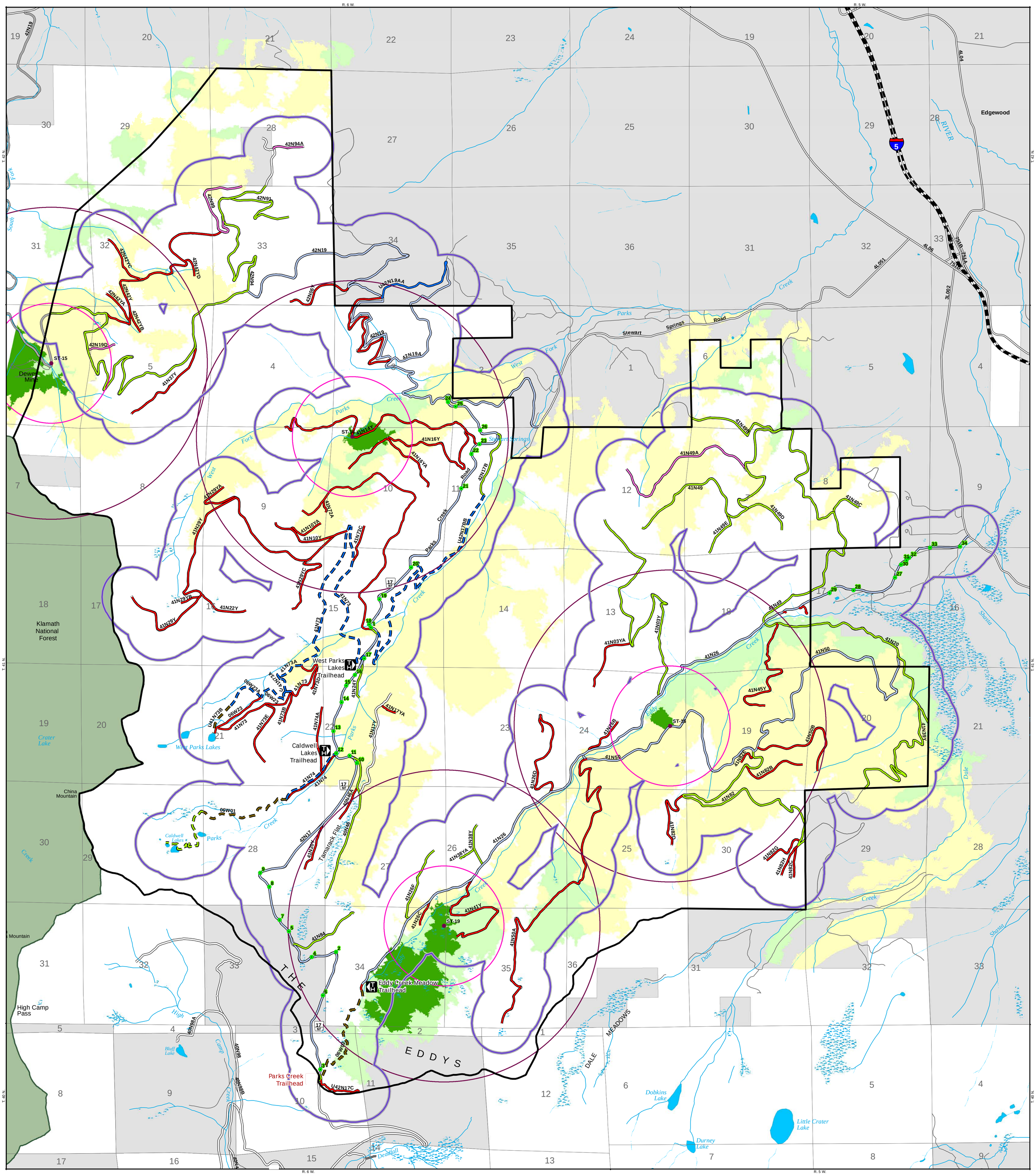
- ADD
- ADD - NON-MOTORIZED
- KEEP AND MAINTAIN - NON-MOTORIZED
- KEEP AND MAINTAIN
- RECONSTRUCT, ADD - MOTORIZED TRAIL
- RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED

- CLOSE
- DECOMMISSION
- RECONSTRUCTION POINTS
- OPEN ROADS
- CLOSED ROADS
- PROPOSED TRAILHEADS
- PROPOSED PARKING AREA
- EXISTING TRAILHEAD

- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

MAP 3: PARKS EDDY WATERSHED RESTORATION - NSO HABITAT - ALTERNATIVE 3



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PROJECT BOUNDARY
NSO ACTION AREA
NSO ACTIVITY CENTER
NSO HOME RANGE
NSO TERRITORY
NESTING/ROOSTING HABITAT
FORAGING HABITAT
DISPERSAL HABITAT

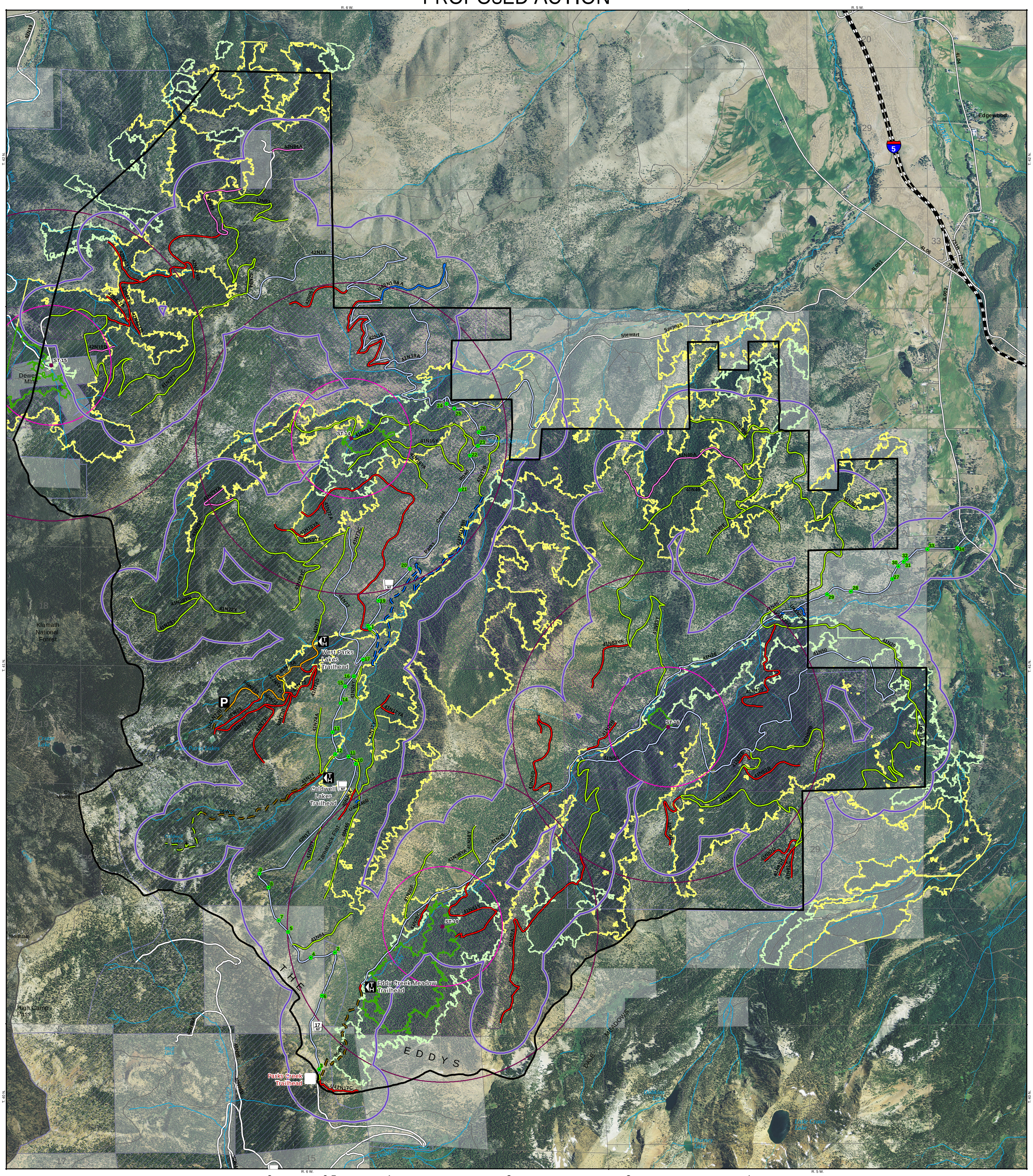
PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN

RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION
PRIVATE
RECONSTRUCTION POINTS
PROPOSED TRAILHEADS
EXISTING TRAILHEAD

OPEN ROADS
CLOSED ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

MAP 4: PARKS EDDY WATERSHED RESTORATION - NSO/LSR/CHU WITH 2012 NAIP PROPOSED ACTION



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Redding, CA 96002

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PROJECT BOUNDARY
NSO ACTION AREA
NSO ACTIVITY CENTER
NSO HOME RANGE
NSO TERRITORY
NESTING/ROOSTING HABITAT
FORAGING HABITAT
DISPERSAL HABITAT
LATE SUCCESSIONAL RESERVES
CHU 2012

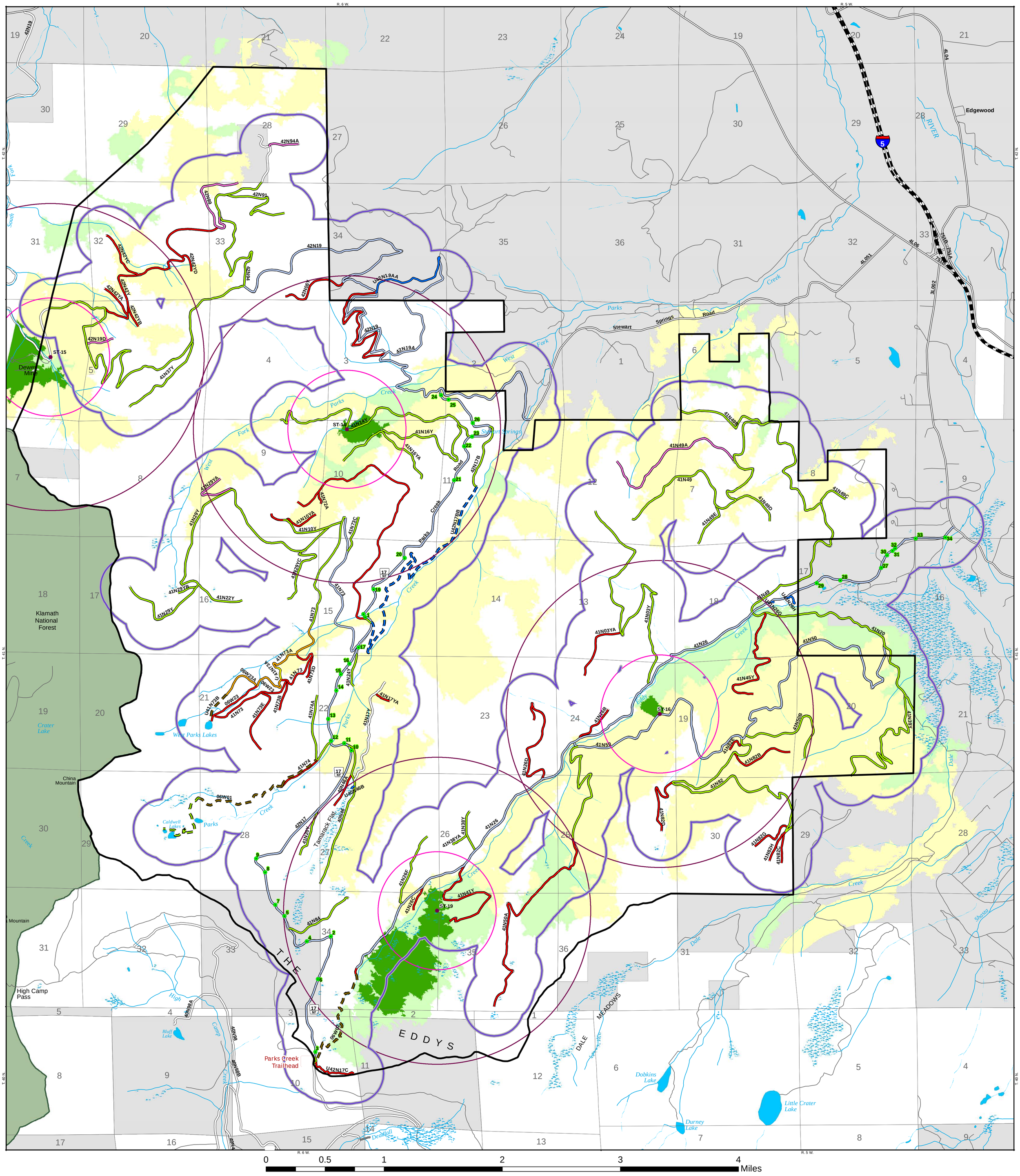
PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL
RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED

CLOSE
DECOMMISSION
RECONSTRUCTION POINTS
OPEN ROADS
CLOSED ROADS
PROPOSED TRAILHEADS
PROPOSED PARKING AREA
EXISTING TRAILHEAD

PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

MAP 5: PARKS EDDY WATERSHED RESTORATION - NSO HABITAT - ALTERNATIVE 4



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September 8, 2014 ALN

PROJECT BOUNDARY
NSO ACTION AREA
NSO ACTIVITY CENTER
NSO HOME RANGE
NSO TERRITORY
NESTING/ROOSTING HABITAT
FORAGING HABITAT
DISPERSAL HABITAT

PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL

RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION
RECONSTRUCTION POINTS
EXISTING TRAILHEAD

OPEN ROADS
CLOSED ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

Appendix B. Road and Trail Proposed Actions

Alternatives 2 and 4

Parks Creek Drainage: NFS Roads

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
40N46	1.27	Keep and Maintain	Functional	Tamarack Flat	
40N46A	0.30	Decommission, berm	Degraded, Drivable	Tamarack Flat	Y
41N20Y	0.41	Keep and Maintain	Functional	Tamarack Flat	Y
41N17Y	0.97	Keep and Maintain first 0.84 miles, then decommission and berm remaining 0.13 miles at A spur, allow turnaround.	Functional to spur, then Stabilized, barely drivable	Tamarack Flat	Y
41N17YA	0.14	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	Tamarack Flat	Y
41N72	2.61	Keep and Maintain first 0.05, then berm and decommission remaining 2.56. Remove culverts and restore crossings.	Functional at entry then blocked and degraded.	Parks Creek	Y
41N14Y	2.21	Keep and Maintain	Functional	Parks Creek	Y
41N16Y	1.58	Keep and Maintain	Functional	Parks Creek	Y
41N16YA	0.57	Keep and Maintain	Functional	Parks Creek	
41N24Y	0.30	Keep and Maintain	Functional	Parks Creek	
41N72A	0.11	Natural decommission. Berm at 41N72	Overgrown, not drivable	Parks Creek	
41N84	0.63	Keep and Maintain	Functional	Parks Creek	
42N17	9.13	Reconstruct. Blade the ditch, install dips, armor the crossing at Parks Creek and replace culverts. Spot repair in areas with subsurface subsidence.	Degraded, Drivable	Parks Creek	
42N17B	0.59	Keep and Maintain, Connect to U42N17BB	Functional	Parks Creek	
42N17C	0.07	Keep and Maintain, Connect to Trailhead Parking Area	Functional	Parks Creek	Y
41N10Y	0.58	Keep and maintain first 0.45, decom remaining 0.13 past intersection	Functional	West Parks	Y
41N10YA	0.30	Decommission. Berm, waterbar, remove culvert and restore stream crossing.	Overgrown, not drivable	West Parks	Y

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
41N22Y	0.43	Keep and maintain.	Functional	West Parks	Y
41N73	2.5	Reconstruct from Parks Creek Road to 1.45 miles, next 1.05 miles maintain to Creek and new Trailhead/parking area.	Degraded but drivable (1.45), then functional (1.05) to creek.	West Parks	Y
41N73	1.54	Beyond creek crossing, convert to motorized trail for 0.33 miles and connect to 41N73A. Decommission remaining 1.31 miles, allow ingrowth to continue.	Degraded, Drivable, then Overgrown, not drivable	West Parks	Y
41N29Y	3.34	Keep and maintain.	Functional	West Parks	Y
41N29YA	0.48	Close. Berm and intersection and waterbar	Degraded, drivable.	West Parks	Y
41N29YB	0.17	Keep and maintain.	Functional	West Parks	Y
41N29YC	0.67	Keep and maintain.	Functional	West Parks	Y
41N73A	0.29	Reconstruct and connect with 41N73 and convert to motorized trail. Add waterbars, lead-off drainage, realignments and turnouts.	Degraded, Drivable	West Parks	Y
41N73B	0.25	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	West Parks	Y
41N73C	0.32	Keep and Maintain	Functional	West Parks	Y
41N73D	0.20	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	West Parks	Y
41N73E	0.61	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	West Parks	Y
41N74	0.57	Keep and Maintain lower 0.18 miles to Trailhead. Decommission upper 0.39 miles, replace with adjacent non-motorized trail.	Functional, then degraded.	Caldwell Lakes	Y
41N74A	0.56	Keep and Maintain	Functional	Caldwell Lakes	Y
41N37Y	0.81	Keep and Maintain	Functional	Dewey Mine	Y
42N06Y	0.63	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	Dewey Mine	Y
42N19	1.68	Reconstruct (stormproof, dips, fords, crossings) the first 1.09 miles, reconstruct or re-route next 1.68 miles pending right of way across private land. Reconstruct next 2.6 miles and maintain remaining 3.91 miles.	Varies from Severely Degraded but drivable to functional at upper elevations.	Dewey Mine	Y
42N19A	1.22	Reconstruct, stormproof, outslope and install dips	Degraded, Drivable	Dewey Mine	Y
42N19D	0.24	Close, berm at intersection.	Functional	Dewey Mine	Y
42N42Y	2.12	Decommission, berm at intersection. Close remaining 0.17	Overgrown, not drivable	Dewey Mine	Y

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
		miles.			
42N42YA	0.29	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	Dewey Mine	Y
42N42YB	0.20	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	Dewey Mine	Y
42N42YC	0.45	Decommission, berm at 42N42Y	Overgrown, not drivable	Dewey Mine	Y
42N42YD	0.18	Decommission, berm at 42N42Y	Overgrown, not drivable	Dewey Mine	Y
42N91	0.88	Keep and Maintain	Functional	Dewey Mine	Y
42N94	1.88	Keep and Maintain	Functional	Dewey Mine	Y
42N94A	0.26	Close, berm at intersection.	Blocked, Stabilized	Dewey Mine	Y
42N99	0.70	Close, berm at 42N42Y	Functional	Dewey Mine	Y

Eddy Creek Drainage: NFS Roads

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
41N03Y	2.83	Keep and Maintain	Functional	Eddy Creek	
41N03YA	0.57	Natural Decommission, berm at intersection	Overgrown, not drivable	Eddy Creek	
41N20	1.97	Keep and Maintain	Functional	Eddy Creek	
41N26	6.89	Reconstruct, stormproof, outslope rocked creek crossings, add dips. Convert last 0.5 miles to non-motorized trail past new Trailhead/parking area. Change to Maintenance Level 2 from Maintenance Level 3.	Degraded, Drivable	Eddy Creek	
41N26B	0.37	Decommission. Berm, waterbar, remove culverts and restore creek crossing.	Functional	Eddy Creek	
41N26C	0.21	Decommission. Berm, waterbar and restore creek crossing.	Degraded, Drivable	Eddy Creek	
41N26D	1.13	Decommission. Berm and waterbar.	Severely Degraded, Barely Drivable	Eddy Creek	
41N26F	0.65	Keep and Maintain	Functional	Eddy Creek	
41N38Y	0.35	Keep and Maintain	Functional	Eddy Creek	

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
41N38YA	0.15	Keep and Maintain	Functional	Eddy Creek	
41N39Y	1.73	Keep and Maintain	Functional	Eddy Creek	
41N41Y	1.26	Natural decommission. Berm, remove bridge abutment.	Blocked, Overgrown	Eddy Creek	
41N45Y	1.24	Decommission. Berm, remove culverts, restore water crossings and add waterbars.	Severely Degraded, Drivable	Eddy Creek	Y
41N49	5.22	Keep and maintain.	Functional	Eddy Creek	
41N49A	1.40	Close, berm at the intersection.	Degraded, Drivable	Eddy Creek	
41N49B	0.83	Keep and Maintain	Functional	Eddy Creek	
41N49C	0.29	Keep and Maintain	Functional	Eddy Creek	
41N49D	0.41	Keep and Maintain	Functional	Eddy Creek	
41N49E	0.39	Keep and Maintain	Functional	Eddy Creek	
41N50	4.71	Reconstruct, stormproof, outslopes, install dips at Humboldt creek crossing.	Degraded, Drivable	Eddy Creek	Y
41N50A	3.35	Keep and Maintain (beginning to 1.32 miles). Decommission remaining 2.03 miles with berm, stabilize water fords, add waterbars.	Functional on lower end, then Severely Degraded, Barely Drivable	Eddy Creek	Y
41N50B	1.03	Keep and Maintain	Functional	Eddy Creek	Y
41N82	2.63	Keep and Maintain	Functional	Eddy Creek	Y
41N82B	0.58	Decommission, berm	Overgrown, not drivable	Eddy Creek	Y
41N82C	0.25	Natural decommission, allow ingrowth to continue	Overgrown, not drivable	Eddy Creek	Y
41N82D	0.68	Decommission, berm and waterbar	Severely Degraded, Drivable	Eddy Creek	Y
41N82E	0.17	Decommission, berm	Degraded, Drivable	Eddy Creek	Y
41N82G	0.39	Decommission, berm	Degraded, Drivable	Eddy Creek	Y
41N82H	0.28	Decommission, berm	Functional	Eddy Creek	Y

Project Trails Routes

Trail Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
06W01	1.58	Reconstruct, stormproof, re-align	Degraded non-motorized Trail	Caldwell Lakes	Y
06W23	0.09	Decommission first 0.05 and re-route. Convert next 0.35 mile to motorized trail and maintain (connect to 06W23A). Allow last 0.5 miles to decommission naturally (parallel route to 06W23A),	Overgrown, degraded, portions not drivable.	West Parks	Y
06W23A	0.38	Reconstruct and convert to motorized trail (Connecting to 06W23). Add waterbars, lead off drainage, re-align and add turnouts.	Degraded, Drivable	West Parks	Y
06W02	1.06	Reconstruct and re-align out of wet meadow.	Degraded non-motorized Trail	Eddy Creek	

Project Unauthorized Routes

Unauthorized Routes	Miles	Proposed Action	Current Condition	Vicinity	LSR
U40N46B	0.04	Add to system in Alt.2, Decom in Alt. 4	Functional	Tamarack Flat	
U41N26G	0.03	Add to system in Alt.2, Decom in Alt. 4	Functional	Eddy Creek	Y
U41N26H	0.14	Add to system in Alt.2, Decom in Alt. 4	Functional	Eddy Creek	Y
U41N73A	0.13	Add- motorized, waterbars, leadoff drainages, re-align, and add turnarounds.	Degraded, Drivable	West Parks	Y
U41N73B	0.28	Add to system – non-motorized, block OHV	Functional, Needs Trail MTC	West Parks	Y
U42N17BB	2.57	Add to system – non-motorized	Functional, Needs Trail MTC	Parks Creek	Y
U42N17C	0.40	Decommission	Stabilized	Parks Creek	Y
U42N19AA	0.58	Add to system, reconstruct, widen, outslope.	Blocked, stabilized	Dewey Mine	

Alternative 3

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
06W01	1.58	Reconstruct, maintain upper section as non-motorized Trail	Degraded Trail	Caldwell Lakes	Y
06W02	1.06	Reconstruct - Non-motorized Trail	Degraded Trail	Eddy Creek	
06W23	0.05	Decommission parallel route	Overgrown, not drivable	West Parks Lake	Y
06W23	0.35	Maintain as non-motorized trail	Degraded, Drivable	West Parks Lake	Y
06W23	0.50	Decommission	Overgrown, not drivable	West Parks Lake	Y
06W23A	0.38	Maintain as non-motorized trail	Degraded, Drivable	West Parks Lake	Y
40N46	1.27	Keep	Functional	Tamarack Flat	
40N46A	0.30	Decommission	Degraded, Drivable	Tamarack Flat	Y
41N03Y	2.83	Keep	Functional	Eddy Creek	
41N03YA	0.57	Decommission	Overgrown, not drivable	Eddy Creek	
41N10Y	0.45	Decommission	Functional	West Parks Lake	Y
41N10Y	0.13	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N10YA	0.30	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N14Y	2.21	Decommission	Functional	Parks Creek	Y
41N16Y	1.58	Decommission	Functional	Parks Creek	Y
41N16YA	0.57	Decommission	Functional	Parks Creek	Y
41N17Y	0.84	Keep to intersection	Functional	Tamarack Flat	
41N17Y	0.13	Decommission beyond intersection	Stabilized, barely drivable	Tamarack Flat	
41N17YA	0.14	Decommission	Overgrown, not drivable	Tamarack Flat	
41N20	1.97	Keep	Functional	Eddy Creek	
41N20Y	0.41	Decommission	Functional	Tamarack Flat	Y
41N22Y	0.43	Decommission	Functional	West Parks Lake	Y
41N24Y	0.30	Keep	Functional	Parks Creek	
41N26	6.84	Reconstruction. Change ML3 to ML2	Degraded, Drivable	Eddy Creek	

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
41N26	0.05	Convert non-Motorized Trail	Degraded, Trail Reconstruction	Eddy Creek	
41N26B	0.37	Decommission	Functional	Eddy Creek	
41N26C	0.21	Decommission	Degraded, Drivable	Eddy Creek	
41N26D	1.13	Decommission	Severely Degraded, Barely Drivable	Eddy Creek	
41N26F	0.65	Keep	Functional	Eddy Creek	
41N29Y	3.34	Decom	Functional	West Parks Lake	Y
41N29YA	0.48	Decom	Degraded, Drivable	West Parks Lake	Y
41N29YB	0.17	Decommission	Functional	West Parks Lake	Y
41N29YC	0.67	Decommission	Functional	West Parks Lake	Y
41N37Y	0.81	Decommission	Functional	Dewey Mine	Y
41N38Y	0.35	Keep	Functional	Eddy Creek	
41N38YA	0.15	keep	Functional	Eddy Creek	
41N39Y	1.73	Keep	Functional	Eddy Creek	
41N41Y	1.26	Decommission	Blocked, Overgrown	Eddy Creek	
41N45Y	1.24	Decommission	Severely Degraded, Drivable	Eddy Creek	Y
41N49	5.22	Keep	Functional	Eddy Creek	
41N49A	1.40	Close	Degraded, Drivable	Eddy Creek	
41N49B	0.83	Keep to property line	Functional	Eddy Creek	
41N49C	0.29	Keep	Functional	Eddy Creek	
41N49D	0.41	Keep	Functional	Eddy Creek	
41N49E	0.39	Keep	Functional	Eddy Creek	
41N50	4.71	Reconstruct	Degraded, Drivable	Eddy Creek	Y
41N50A	1.32	Decommission	Functional	Eddy Creek	Y
41N50A	2.03	Decommission	Severely Degraded, Barely Drivable	Eddy Creek	
41N50B	1.03	Decommission	Functional	Eddy Creek	Y

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
41N72	0.05	Keep for parking	Functional	Parks Creek	
41N72	2.56	Decommission	Blocked, degraded	Parks Creek	Y
41N72A	0.11	Decommission	Overgrown, not drivable	Parks Creek	Y
41N73	1.45	Decommission – convert to non-motorized trail	Degraded, Drivable	West Parks Lake	Y
41N73	1.05	Decommission– convert to non-motorized trail	Functional	West Parks Lake	Y
41N73	0.33	Decommission– convert to non-motorized trail	Degraded, Drivable	West Parks Lake	Y
41N73	0.55	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N73	0.76	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N73A	0.29	Decommission– convert to non-motorized trail	Degraded, Drivable	West Parks Lake	Y
41N73B	0.25	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N73C	0.32	Decommission	Functional	West Parks Lake	Y
41N73D	0.20	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N73E	0.61	Decommission	Overgrown, not drivable	West Parks Lake	Y
41N74	0.18	Convert Non-Motorized Trail	Functional	Caldwell Lakes	Y
41N74	0.39	Convert Non-Motorized Trail	Degraded, Trail Reconstruction	Caldwell Lakes	Y
41N74A	0.56	Decommission	Functional	Caldwell Lakes	Y
41N82	2.63	Keep	Functional	Eddy Creek	Y
41N82B	0.58	Decommission	Overgrown, not drivable	Eddy Creek	Y
41N82C	0.25	Decommission	Overgrown, not drivable	Eddy Creek	Y
41N82D	0.68	Decommission	Severely Degraded, Drivable	Eddy Creek	Y
41N82E	0.17	Deommission	Degraded, Drivable	Eddy Creek	Y
41N82G	0.39	Decommission	Degraded, Drivable	Eddy Creek	Y
41N82H	0.28	Decommission	Functional	Eddy Creek	Y
41N84	0.63	Keep	Functional	Parks Creek	
42N06Y	0.63	Decommission	Overgrown, not drivable	Dewey Mine	Y

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
42N17	9.13	Reconstruct	Degraded, Drivable	Parks Creek	
42N17B	0.59	Keep	Functional	Parks Creek	
42N17C	0.07	Keep to parking area and trail	Functional	Parks Creek	Y
42N19	1.09	Reconstruct	Degraded, Drivable	Dewey Mine	Y
42N19	1.68	Reconstruct or decommission	Severely Degraded, Drivable	Dewey Mine	Y
42N19	1.07	Reconstruct	Degraded, Drivable	Dewey Mine	Y
42N19	1.53	Reconstruct	Degraded, Drivable	Dewey Mine	Y
42N19	3.91	Keep	Functional	Dewey Mine	Y
42N19A	1.22	Reconstruct if bypass is approved	Degraded, Drivable	Dewey Mine	Y
42N19D	0.24	Close	Functional	Dewey Mine	Y
42N42Y	1.95	Decommission to intersection	Overgrown, not drivable	Dewey Mine	Y
42N42Y	0.17	Close connecting route	Functional	Dewey Mine	Y
42N42YA	0.29	Decommission	Overgrown, not drivable	Dewey Mine	Y
42N42YB	0.20	Decommission	Overgrown, not drivable	Dewey Mine	Y
42N42YC	0.45	Decommission	Overgrown, not drivable	Dewey Mine	Y
42N42YD	0.18	Decommission	Overgrown, not drivable	Dewey Mine	Y
42N91	0.88	Keep	Functional	Dewey Mine	Y
42N94	1.88	Keep to property boundary	Functional	Dewey Mine	Y
42N94A	0.26	Close from intersection	Blocked, Stabilized	Dewey Mine	Y
42N99	0.70	Close	Functional	Dewey Mine	Y
U40N46B	0.04	Decommission	Functional	Tamarack Flat	
U41N26G	0.03	Decommission	Functional	Eddy Creek	Y
U41N26H	0.14	Decommission	Functional	Eddy Creek	Y
U41N73A	0.13	Decommission – convert to non-motorized trail	Degraded, Drivable	West Parks Lake	Y
U41N73B	0.28	Reconstruct non-motorized trail	Functional, Needs Trail MTC	West Parks Lake	Y

Road Number	Miles	Proposed Action	Current Condition	Vicinity	LSR
U42N17BB	2.57	Add Non-Motorized	Functional, Needs Trail MTC	Parks Creek	Y
U42N17C	0.40	Decommission beyond trailhead	Stabilized	Parks Creek	Y
U42N19AA	0.58	Add if authorized	Blocked, stabilized	Dewey Mine	

Appendix C. Best Management Practices

Storm-Proofing and Erosion Control Plan

Timing of Erosion Control Work	**Primary BMPs**
Conduct operations in a timely manner within the Limiting Operating Period's as noted in the corresponding Resource Protection Measures (e.g. Botanical, Wildlife) Schedule operations when rain, runoff, wet soils, snowmelt or frost melt are less likely. • Optimally, schedule construction during dry periods, while still adhering to other seasonal restrictions and corresponding RPMs (e.g. wildlife breeding, spawning, fire activity levels). • Stabilize project areas during normal operating season when the National Weather Service predicts a 30 percent or greater chance of precipitation, such as localized thunderstorms or approaching frontal systems. • Keep erosion-control measures sufficiently effective during ground disturbance to allow rapid closure when weather conditions deteriorate. • Complete all necessary stabilization measures prior to predicted precipitation that could result in surface runoff. • To the extent possible, construct new stream crossings when streams are dry or when stream flow is at its lowest. Install sediment controls when necessary to protect water quality.	2.3, 2.4, 2.6, 2.7, 2.8 4.7.3, 4.7.6, 4.7.8
Use of Mechanical Equipment in Riparian Reserves	
Dispose of all waste material (fuels, lubricants, etc.) properly and select service/refueling areas well away from wet areas and surface water.	2.11
No disposal of spoils (fines) within 100 feet of culverts, road dips, in an inside ditch, above a ditch or anywhere material can reach a stream channel. Spoils disposal areas will be approved by the Interdisciplinary Team during implementation level surveys and project design.	2.3, 2.4, 2.6, 2.7, 2.8
Dispose of cleaned out material from culvert intake to locations where it will not enter a channel, ditch, or re-enter intake area consistent with all Resource Protection Measures (e.g. Geology, Heritage, Botany).	2.3, 2.4, 2.6, 2.7, 2.8
No debris disposal in or within 100 feet Streamside Management Zone, meadows, wetlands or Riparian Reserve.	2.3, 2.4, 2.7, 2.8
Culvert Installation or Removal	
Stream flow will be directed around construction sites at all live stream crossings.	2.3, 2.7, 2.8
Keep excavated material out of channels.	2.3, 2.8
Remove any materials stacked, or stockpiled on floodplains prior to the rainy season.	2.6, 2.7, 2.8, 2.10
In some cases, fill material may have to be imported for better soil	2.8, 2.10

Timing of Erosion Control Work	**Primary BMPs**
compaction. Original fill may have to be exported to a disposal site.	
Install silt fences or straw bale check dams at culvert outlets where necessary to control project related erosion associated with storm proofing activities.	2.3, 2.6, 2.7, 2.8
Roads	
Spot rocking of native surface roads with aggregate if used during wet weather operations. Utilize washed rock.	2.3, 2.4
Stabilize road slope surfaces and spoil disposal areas	2.3, 2.4, 2.6, 2.7
Mulch and seed new or disturbed fill slopes and disposal sites prior to winter as identified by the Project Manager.	2.3, 2.7
Do not undercut toe of fill slope, leave at a stable angle of repose	2.2, 2.3, 2.4, 2.7
Properly space and construct to specification all cross drains, water bars or rolling dips to control road rolling.	2.2, 2.3
Properly install all energy dissipators, aprons, downspouts, flumes and overside drains to control road rolling.	2.3
Properly install all armoring of ditches, drain inlets/outlets, removing and adding berms to control runoff.	2.3
Accomplish dispersal of runoff on the road surface by means of outsloping or crowning.	2.2, 2.3
Utilize potential sidecast (fines) and other waste material on the road surface or remove to designated disposal sites.	2.3
Utilize proper size and composition rip rap as specified for project.	2.3
Utilize proper techniques for water source development.	2.5
All grading will be completed using water to properly compact the roadbed.	2.3

Actions that apply to Project Area unless Specifically Designated

Timing of Erosion Control Work	**Primary BMPs**
Implement and construct erosion control work. (see monitoring section)	2.13
Use of Mechanical Equipment in Riparian Reserves	
Brush/woody debris will be masticated or lopped and scattered along the roadside. Piling of brush/debris will only occur in areas where water quality and aquatic/riparian habitats will not be affected as approved by the Project Manager.	2.3, 2.7, 2.8
Control construction and maintenance activities within and adjacent to any stream- management zone.	2.3, 2.7, 2.8

Appendix D. Response to Public Scoping Comments

Comment #	Commenter	Comment	Response
1A	KS Wild	Willow Parks WA should be available to view/read.	To be easily available to the public for review, the Willow Parks Watershed Assessment was posted on the Forest website on 01/27/2014.
1B	KS Wild	We recommend that public education and law enforcement as well as physical restoration be included as part of the project.	The commenter recommendations will be considered during project and alternative development.
2A	MSBEC	"Also, the Mount Shasta Bioregional Ecology Center is very interested in learning more about the Parks-Eddy Watershed Restoration Project, please do advise us of the public information meetings next week."	An E-mail response from Carolyn Napper to Jennifer Witherspoon was sent on 1/30/2014 regarding public meetings in McCloud 02/05 2014, and in Mt. Shasta on 02/06/2014.
3A	Steve Layman	"…on first glance the map is much easier to review than in the previous phase of this…"	Updated maps of the project area, proposed action and alternatives will be included in the Environmental Assessment and posted on the SOPA website link.
3B	Steve Layman	"…Are you indicating that persons on the road cannot maintain the road or do snow removal unless they form an association?"	An Email response from Carolyn Napper to Steve Layman was sent on 01/08/2014 regarding road use permit issuance.
4A	Conservation Congress	"The Conservation Congress appreciates the opportunity to provide scoping comments on the proposed Parks Eddy Watershed Restoration Project. Please incorporate them into the administrative record and consider them in the development of this project."	All scoping comments are included as part of the project record. Comments and responses to the comments will be included as an appendix to the environmental assessment.
4B	Conservation Congress	"We have numerous major concerns with this project and we also believe a lot of important information was left out of the scoping document	The environmental assessment and resource specialist reports will contain literature review and available data to fully analyze the effects of the project on the area

Comment #	Commenter	Comment	Response
		that the public will need in order to make a fair evaluation of the project."	resources.
4C	Conservation Congress	"The map provided with the scoping notice doesn't delineate the two LSRs…This needs to be remedied."	A project map showing northern spotted owl designated Critical Habitat Units, Late-Successional Reserves and Special Interest Area designations was posted to the Forest website on 2/20/14 and will also be included in the environmental assessment.
4D	Conservation Congress	"The scoping document also doesn't mention whether any of the lands are designated critical habitat for the northern spotted owl. This question requires an answer."	Project maps showing the northern spotted owl designated Critical Habitat Units, Late-Successional Reserves, and Special Interest Area designations were posted to the Forest website on 2/20/14 and will also be included in the Environmental Assessment. The number of acres of NSO critical habitat within the project area will be described in the biological assessment, noted in the environmental assessment, and included in the analyses of project effects to resources.
4E	Conservation Congress	"We would also like to know where on the map the IRA and China Mountain SIA are located."	Project maps showing the northern spotted owl designated Critical Habitat Units, Late-Successional Reserves, and Special Interest Area designations were posted to the Forest website on 2/20/14. In addition, a map of the project area showing the Matrix designations (III, VI, VIII) and Inventoried Roadless Area was also posted to the Forest website on 2/20/14. Both maps will be included in the Environmental Assessment.
4F	Conservation Congress	"The scoping document states that the Forest is planning to develop an EA for this project. We believe that would be a mistake based on the current conditions in the area and the	An environmental assessment will be written for this project. If analysis of the environmental consequences reveals significant adverse effects from the project,

Comment #	Commenter	Comment	Response
		proposed project that will likely have significant impact thereby requiring a full EIS. We encourage the forest to develop an EIS for this project."	an environmental impact statement will be written to address these effects.
4G	Conservation Congress	"The STNF LSRA clearly states that roads should not be developed in LSRs and should be built around them in order to access them…This is a perfect opportunity to close all the roads in the LSRs RC-341 and RC-340. An alternative should be developed that analyzes permanently closing these roads. "	The Late-Successional Reserve Assessment states that "Existing roads, within Late-Successional Reserves and Managed Late-Successional Areas are beneficial to providing access for control of wildfire and to function as fire lines in prescribed burns, to provide access for other habitat management actions such as thinning and pest control. Some exceptions include access to private inholdings and improvements to provide for increased public safety." (LSRA, page 2-18). For instance, Parks Creek Road is a cost share road. Dewey Mine road provides access to several private land owners, and to the Park Mountain Communication Site (Designated Multi-User Site in Forest Plan page 4-21). The project will be analyzed for effects to the Late-Successional Reserves and effects will be discussed in the environmental assessment and wildlife reports. Alternative 3 was developed to consider closing roads located within LSRs that are not primary connector roads, active cost share roads, or roads that access private property.
4H	Conservation Congress	"We are also troubled by the Forest's assertion that no specific timber projects are planned at this time, yet the scoping document makes several mentions of the need for 'active management' and 'timber sales'...if timber sales are being	Any timber sales being planned or currently underway within the project area or accessed by project roads will be included in the cumulative effects analysis in the environmental assessment.

Comment #	Commenter	Comment	Response
		planned in RC-341 and RC-340 those are foreseeable projects that must be included in the cumulative effects analysis."	
4I	Conservation Congress	"After LSRs, the next largest acreage in the project is wildlife habitat in Matrix areas, yet there is virtually no discussion of wildlife in the scoping document…The scoping notice makes it sound like this is an innocuous project with no impacts to wildlife. We disagree."	The impacts to wildlife will be analyzed and discussed in the BA, BE, MIS, S&M, and migratory bird reports. The impacts to wildlife will be disclosed in the environmental document.
4J	Conservation Congress	"Roads present a serious impact to wildlife and their habitat. It is the Forest's responsibility to consider potential impacts and then analyze direct, indirect and cumulative impacts from past, present, and reasonably foreseeable future projects. This information needs to be included in the EIS."	Past, present, and foreseeable future road projects will be considered in the cumulative effects analysis for the project. This information will be presented in the specialist reports and in the environmental assessment.
4K	Conservation Congress	"All late-successional species as well as the numerous anadromous fish species mentioned in the scoping notice need to be considered. Any designated critical fish habitat also needs to be disclosed."	Late-successional species, anadromous fish species, and designated critical habitat for fish will be disclosed, and considered in the wildlife and fisheries reports and the environmental consequences section of the environmental document.
4L	Conservation Congress	"We also request full disclosure of the unique botanical communities found in fens, *Darlingtonia* seeps, springs, meadows, ridgetops and serpentine barrens…Complete botanical surveys need to be conducted at the appropriate time of year and that information disclosed. We specifically request that these sensitive areas be mapped in accordance with the roads so we can see where they are located in relationship to the roads."	Unique botanical communities will be discussed in the affected environment section of the botany reports, and will be considered in the environmental effects analysis (and presented in the environmental assessment) where they are impacted. A map showing known locations will be posted to the Forest website.

Comment #	Commenter	Comment	Response
4M	Conservation Congress	"We also request a cultural resources impact report stating the cultural condition; what is causing the degradation; and how these areas will be repaired and/or protected."	Cultural resources will be considered in the environmental consequences section of the environmental assessment. A cultural resources summary will be written and available to the public (the ARR is a confidential document and not available to the public). Resource protection measures for cultural resources were developed for the proposed action and action alternatives and will be included in the environmental assessment.
4N	Conservation Congress	"We request quantitative water quality data be included at the 5th field watershed, and then for any smaller fields in the project area (6th, 7th, 8th)…We request information on current sedimentation, turbidity, dissolved oxygen, nutrients and temperature information for each watershed and stream segment in the project area."	Available water quality data at the appropriate watershed fields will be utilized for the hydrologic analysis and will be included in the hydrology report and the environmental assessment. Water quality data are not available for most of the stream segments in the project area. Sediment source and road condition inventories have identified point sources of sediment to streams emanating from the transportation system. These data sources along with the TAP have been used to develop action alternatives that will reduce or eliminate sediment sources to streams which will benefit water quality. Limited water quality data for the watershed include data from Stream Condition Inventories. This information is presented in the fisheries BE/BA and referenced in the hydrology report. Additional water quality data are available for the South Fork of Willow Creek associated with studies examining legacy water quality impacts from the

Comment #	Commenter	Comment	Response
			Dewey Mine. (SB)
4O	Conservation Congress	"...We are puzzled as to why the Forest isn't proposing to decommission more roads since it admits the roads are in their current condition due to a backlog of maintenance…how much this project will cost; where is the money coming from; and how long this project will take to conclude. This information should be in the Economics Report."	Discussion of road maintenance concerns, project road costs, funding, and project time frame will be discussed in the Transportation report and included in the environmental assessment.
4P	Conservation Congress	"We request a map of the riparian areas in the project area that will have any type of road maintenance, including any OHV use. What are the current ACSO currently and projected post project? The scoping notice states the Forest wants to adjust dispersed and developed recreation practices to ensure attainment of ACS objectives. What about adjusting the density of roads? It is clear that more roads need to be decommissioned."	A map showing riparian areas and road maintenance activities was posted on the Forest website on 2/20/14. The Aquatic Conservation Strategy objectives will be discussed in the Hydrology report and environmental assessment.
4Q	Conservation Congress	"We request a separate road map that shows ALL roads and segments included in the project and proposed for maintenance…The roads and segments should be shown in their proper management area such as LSR, IRA, Matrix, etc. and the type of maintenance/reconstruction should be shown for each road/segment. Riparian areas should also be included. Please provide the open road density for the project area, and the two LSRs individually."	A map of the project area including all roads proposed for treatment and showing the Late-Successional Reserves, northern spotted owl designated Critical Habitat Units, Special Interest Area, Inventoried Roadless Area, and Matrix land designation was posted to the Forest website on 2/20/2014 and will be included in the environmental assessment. The open road density for the project area and the Late-Successional Reserves within the project area will be discussed in the Transportation report and the environmental assessment.
4R	Conservation Congress	"A complete cumulative effects analysis must be completed for	A cumulative effects analysis will be completed for each resource

Comment #	Commenter	Comment	Response
		this project and we would like to know what past activities have caused the current conditions."	and presented in the resource reports and environmental assessment. A list of past projects will be included in the cumulative effects analysis and discussed in relation to the current conditions.
4S	Conservation Congress	"The scoping document refers to the draft 'TAP' document repeatedly and the proposed action is relying on this document. Therefore the TAP document needs to be included with the draft EIS…"	The Travel Analysis Process (TAP) was completed in March 2014 and was posted to the Forest website. It will be discussed in the Transportation report and environmental assessment.
4T	Conservation Congress	"We also request the completed 2012 Sediment Source Inventory be included with the draft decision. It can be posted on the website along with the other specialist reports."	A discussion of the 2012 Sediment Source Inventory will be included with the Hydrology report and the environmental assessment.
4U	Conservation Congress	"How does the Forest plan to manage for illegal OHV use in wet meadows, riparian areas and throughout the watershed?"	The project includes road closures, decommissioning, and unauthorized route closure/decommissioning to restrict OHV access to sensitive areas. Illegal OHV use is managed by Forest Service law enforcement staff. Law enforcement actions are outside the scope of this project.
4V	Conservation Congress	"The scoping notice states the Parks Creek Road has inadequate passing width and sight distance in places, then states Timber Products Company is also a road owner and conducts commercial log haul on the Parks Creek Road. Will these companies be contributing to the cost of reconstruction and maintenance?"	Sierra Pacific Industries and Timber Products Company have both contributed to surface replacement and drainage maintenance in past years. The Forest Service plans to enter into a Road Maintenance Agreement with Michigan California Timber Co.
4W	Conservation Congress	"Will dispersed camping sites not being used be closed? The recreation areas proposed for a parking lot and turnaround areas need to have the management areas disclosed. If	Only those dispersed areas associated with road access are within the scope of the project. Where dispersed areas are accessed by roads proposed for closure, those sites will no longer

Comment #	Commenter	Comment	Response
		they are in LSR they should not be built."	be legally accessible by vehicle, but will be accessible by foot. All three trailhead parking areas (Parks Creek, Caldwell Lakes and West Parks Lakes) are within Late-Successional Reserves, although none are within designated Critical Habitat Units.
4X	Conservation Congress	"The scoping notice states 'the proposed action is designed to retain important ecological components for this area, such as stream shading, snags, logs and potential fish habitat, etc. The project will include measures to protect resources such as BMPs to maintain water quality." This information needs to be clearly disclosed in the environmental document."	The environmental assessment will clearly state what resource protection measures and best management practices will be implemented with the project.
4Y	Conservation Congress	"If the Forest insists on preparing an EA then it must be able to demonstrate a FONSI. Considering the current conditions (303d list) and the amount of road reconstruction/maintenance/building, etc. we don't possibly see how a FONSI can be obtained."	An environmental assessment is being prepared for the project because preliminary analysis indicates there are not likely to be significant impacts from the project. If during environmental assessment development potentially significant impacts are identified, the Forest will prepare an environmental impact statement.
4Z	Conservation Congress	"We are also troubled that the Forest states a preliminary EA is expected to be completed in March of 2014. We don't see how the Forest can incorporate public comment in such a short period of time."	A preliminary goal was to present a draft environmental assessment to the public in March 2014. The Forest will endeavor to complete the draft environmental assessment, including inclusion of scoping comments from the public in a timely manner as soon as the document is complete.
4AA	Conservation Congress	"Please keep us on the NEPA mailing list for this project and forward to our office in a timely manner any other opportunities to provide public	The commenter, as well as all other commenters on the project will be kept on the mailing list for this project for all opportunities to comment. All specialist

Comment #	Commenter	Comment	Response
		comment. Please post all specialist reports, as well as the TAP and 2012 Sediment Report on the STNF website as well. We also request the Legal Notice for comment be posted on the website as required by the 218 regs."	reports, The TAP, and the 2012 sediment report will be included in the appropriate specialist report(s) and environmental assessment. Where appropriate, they will also be posted to the Forest website, along with the environmental assessment. Legal Notice for Comment will be posted to the Forest website.
5A	Francis Mangels	"Having been retired 35 years from USFS in 2008, and managed range, wildlife, botany and watershed in Eddy area of SMMU since 1981, I submit this experience into public record. I believe this carries extra consideration and invite your telephone calls to me for clarifications. You have further documentations of my qualifications in your records and essential supporting information including R&W inspection records (incl. photos) at USFS Mt. Shasta which I wrote to the files, posed by RVs in these drainages."	The commenter has stated his qualifications for submitting comments on the scoping document and project.
5B	Francis Mangels	"Watershed restoration is a worthy thing. Everyone loves it, and some action is better than nothing. However, some parts of the proposal appear to be quid pro quo."	Commenter has expressed his support for watershed restoration but has concerns regarding some components of this project.
5C	Francis Mangels	"A simple helpful alternative is to have an open season for roads. Gate them at both ends and have an opening day, and don't snow plow roads for early access…I suggest opening this area for road use July for holiday and watershed reasons, and do not do any tree and rock moving until July...I recommend maintenance actions as fire patrol season begins, because Eddy tourism is mainly confined to July-	The commenter is making a suggestion regarding seasonal closures for roads. Alternative 3, which addresses road closure and decommissioning of roads within the LSR, would close the roads identified as potentially appropriate for seasonal closure. Seasonal road closure could be considered in the future if impacts warrant action.

Comment #	Commenter	Comment	Response
		September and snow comes any time in October."	
5D	Francis Mangels	"The area contains 3 NSO nesting territories (Dewey, Parks, Eddy) and 1 for great gray owl. Consider nesting effects and shooting of owls by locals."	The project area contains four northern spotted owl territories, in two Late-Successional Reserves. Direct, indirect, and cumulative effects to northern spotted owls and their habitat will be analyzed in the biological assessment and disclosed in the environmental assessment. The survey and manage report will discuss great gray owl.
5E	Francis Mangels	"The 2002 STNF botanical maps and my own reports identify about 40 sensitive plant populations…Protect these populations. Terminate actions which build motorized trail and do foot trails, and close all spurs back to N17 and in Eddy back to the bridge, which should be removed or gated to protect Eddy meadows."	Sensitive plant species will be identified in the project area and discussed in the Botany reports and environmental assessment. The project contains resource protection measures to protect populations of sensitive plant species. Alternative 3 eliminates the motorized trail proposal in exchange for a foot trail at West Parks Lake. Alternative 3 proposes closure of most spur roads from the 42N17 road (within the LSR) and most spur roads off the 41N26 road (within LSR). See the map for Alternative 3 for specific road closures.
5F	Francis Mangels	"The public should not be paying partial taxes for road access by a private club of only 50 members. Let them pay for fun roads and quit polluting our watershed and fishing."	Commenter expresses concern that tax money is being used for road access by a small private club. The Forest is not aware of a 50-member club using the project area.
5G	Francis Mangels	"Why keep Dewey Mine road open for that private enterprise. Let them do their own road work and hike or helicopter in. We owe no taxes to prospectors."	Dewey Mine road provides Forest Service administrative access to the Park Mountain Multi-User Communication site. The Alaska National Interest Land Conservation Act (ANILCA) requires that the Forest provide reasonable access to non-federally owned land within the

Comment #	Commenter	Comment	Response
			boundary of the National Forest System. In addition, Dewey Mine Road has been used in the past for fire suppression access.
5H	Francis Mangels	"Grazing allotments were a poor enterprise due to erosive serpentine soils…For true watershed restoration on West Parks, Bear, and Eddy allotments, terminate these allotments for the good of the watershed and financial problems…"	The approval of grazing allotments is outside the scope of the Project. Grazing allotments are subject to NEPA review with opportunities for the public to comment. The commenter may provide comment during any future NEPA review of the West Parks, Bear and Eddy grazing allotments.
5I	Francis Mangels	"A proposal was made to bring back elk to the Eddys. Game species do not do well if road density is too high due to poaching and elk interactions with tourists (RIR on file)."	The reintroduction of wildlife game species is outside the scope of the project. However, road densities will be reduced with the decommissioning that is proposed for this project, possibly improving conditions for elk.
5J	Francis Mangels	"Fishers, martens, wolverines, great gray owls, goshawk nests, Cascade frogs and other sensitive species I have recorded in this area. Road density is too high for good populations…"	The project proposes to reduce road density through closure and decommissioning, which will benefit many of the wildlife species referenced. Direct, indirect, and cumulative effects to fishers, martens, wolverines, goshawks, Cascades frogs, and other sensitive wildlife species will be analyzed in the Biological Evaluation and discussed in the environmental assessment. Resource protection measures will be included with the project to minimize effects to sensitive wildlife species.
5K	Francis Mangels	Trout fishing is good in lower West Fork, Tamarack Flat and below, Middle Eddy Meadows and below. I saw considerable erosion into creeks from roads and cows.	Impacts to fisheries will be analyzed in the fisheries biological assessment and biological evaluation and discussed in the environmental assessment. The project purpose and need includes improving

Comment #	Commenter	Comment	Response
			water quality by reducing sediment sources, and therefore improving fish habitat.
5L	Francis Mangels	"Purely financial, it costs too much to keep so many roads maintained. Cut back on the miles of road you intend to maintain and open them briefly only for management purposes, fire, and firewood…"	Commenter is expressing concern that the cost of maintaining roads in the project area is too high.
5M	Francis Mangels	"The USFS needs more commitment and swift response to meadow damage…"	Meadows adjacent to various road activities associated with this project will benefit from the road actions. Some meadow restoration is proposed (relocation of Dewey Mine Road and restoration of Upper Eddy Creek meadow). Effects of the project on meadows will be analyzed in the Hydrology report and discussed in the environmental assessment. The project includes resource protection measures and best management practices to minimize impacts to meadows.
5N	Francis Mangels	Local Landowners used unauthorized gates on NF land or otherwise deny access to maintain their 'private forest reserve.' This is unfair…"	Commenter expresses concern that there is unauthorized gate use on Forest lands. Note that any unauthorized gates and unauthorized activities found in the project area will be referred to Forest law enforcement.
5O	Francis Mangels	Serpentine soils are notoriously erosive, slump, and due to ultra-basic chemistry, often difficult to regrow grass cover. Cows and roads are the two worst erosive forces, though trails can be a problem in some areas. Hence close more roads and motor trails."	The project includes activities to reduce erosion from roads and trails. Cattle grazing is outside the scope of the project.
5P	Francis Mangels	"If you are going to provide road access, make decent access, not access just for high clearance vehicles and mud	The TAP discusses the current maintenance levels of existing roads and how we determine which levels roads should be

Comment #	Commenter	Comment	Response
		machines. A normal car should be able to go in and park for access to a trail, lake, or meadow."	based on use needs. A complete discussion of road maintenance levels will be included in the Transportation report and the environmental assessment.
5Q	Francis Mangels	"Dewey Mine Road: Close all roads…"	The commenter suggests closing Dewey Mine Road and all other roads in the vicinity of Dewey Mine. Dewey Mine Road accesses private land and is subject to the ANICLA requirements to provide reasonable access. Some other roads in the vicinity are proposed for decommissioning with the proposed action. The Transportation report and environmental assessment will analyze the effects of the proposed action and other alternatives regarding road actions.
5R	Francis Mangels	"West Fork Parks Creek: Close all roads, convert to foot trails…"	The commenter suggests closing all the roads in the West Fork Parks Creek area, and converting them to foot trails. Alternative 3 proposes closing all roads in the West Parks Lake area. Road actions in the West Fork Parks Creek area will be considered in the Transportation report and discussed in the environmental assessment.
5S	Francis Mangels	"West Park Lakes: Close all except north swamp road, and convert to foot trail only at the upper bridge to prevent the Toad Lake type debacle of litter and drunken parties…swamps need more protection from mud machines."	The commenter suggests closing all roads in the West Park Lakes area except "North Swamp Road." Alternative 3 proposes closing all roads in the West Parks Lake area. Road actions in this area will be considered in the Transportation report and discussed in the environmental assessment.
5T	Francis Mangels	"Caldwell Lakes: Very good fishing in all three lakes, natural spawning. Parking lot	The commenter notes Caldwell Lakes are good for fishing. Dam repairs are not currently

Comment #	Commenter	Comment	Response
		and trail improvement good, but dam repairs would help. Also maintain inlet to Lower Lake."	proposed with the project but will be considered by the ID Team for inclusion in the proposed action or an action alternative.
5U	Francis Mangels	"Tamarack Flat:…Close N84 and upper 1/2 mile of N46, Keep turnaround at lower camp. Close 17Y…Look for flowers *(R. pringleii*) along N17 where cows were not so bad…"	Commenter suggests closing all or portions of some roads in the Tamarack Flat area. Tamarack Flat area roads will be considered in the Transportation report and discussed in the environmental assessment. Surveys for sensitive plants will be completed and the results discussed in the Botanical report(s).
5V	Francis Mangels	"Eddy Creek: Close spurs and side roads except access to Dale Creek and close main Eddy road near south fork…Often disputes about access to forest with local owners along N26…Close all Eddy (grazing) allotments."	Commenter suggests closing spurs and side roads except access to Dale Creek, as well as closing Eddy Road near South Fork. Road actions in the Eddy Creek area will be considered in the Transportation report and discussed in the environmental assessment. Actions regarding grazing allotments are outside the scope of the project. The public will have the opportunity to comment on any grazing allotment actions during the NEPA process for the allotment(s).
5W	Francis Mangels	"Eddy-Parks face: Deer winter range, poacher's delight. Close all roads seasonally, esp. N26A and N49. Decommissioning or gates will make poaching inconvenient."	Commenter suggests closing roads seasonally in the Eddy-Parks face area, and installing gates or decommissioning to deter poaching. Evidence of poaching will be referred to Forest law enforcement. Road actions in the Eddy-Parks face area will be considered in the Transportation report and discussed in the environmental assessment.
5X	Francis Mangels	"Dale Creek: Get easier access if you can…close the jeep road to Dobkins Lake if you are	Dobkins Lake and the upper Dale Creek drainage are outside of the project area. Access to Dale Creek

Comment #	Commenter	Comment	Response
		going to improve access…damage to Eddy Buckwheat was common there..."	from within the project area is through private land on private roads. Eddy buckwheat will be included in surveys for sensitive plants, which will be presented in the botanical reports and discussed in the environmental assessment.
6A	KS Wild, KFA, EPIC	"Thank you for considering these comments regarding the Parks Eddy Project from the Klamath Siskiyou Wildlands Center (KS Wild), the Klamath Forest Alliance (KFA), and the Environmental Protection Information Center (EPIC). Please ensure that we remain on your project mailing list to receive physical hard copies of forthcoming NEPA and project decision documents."	The commenter(s) will remain on the mailing list for the project. Hard copies of NEPA and decision documents will be sent to the commenters when complete.
6B	KS Wild, KFA, EPIC	"...Please also note that much of the project area consists of Late Successional and Riparian Reserve land use allocations in which ecological (terrestrial and aquatic) conservation is emphasized. Additionally, Subpart A of the Travel Rule requires the agency to identify an ecologically and economically sustainable road system."	Late Successional and Riparian Reserve allocations will be considered in the environmental analysis. MTM was utilized to develop the TAP and the proposed action. It will be utilized to develop any alternatives to the proposed action and considered in the environmental analysis of the project.
6C	KS Wild, KFA, EPIC	"…the TMDL waiver from RWQCB requires that the Forest Service engage in sediment remediation and watershed restoration of sediment sources."	The project is designed to reduce sediment sources and includes other watershed restoration elements based in part on the TMDL waiver. Project effects to water quality will be analyzed in the Hydrology report and discussed in the environmental assessment.
6D	KS Wild, KFA, EPIC	"…the Forest Service must address chronic sediment production, habitat destruction, and the significant ongoing cumulative impacts of its	The project was developed to address sediment, habitat concerns, and the cumulative impacts of the road and trail system in the project area. These

Comment #	Commenter	Comment	Response
		transportation system in this planning area. "	topics will be considered in the Hydrology, Botany, Fisheries, and Transportation reports, and discussed in the environmental assessment.
6E	KS Wild, KFA, EPIC	"We appreciate the proposed NFTS road maintenance, reconstruction, decommissioning and closures…We support the proposed blend of road maintenance activities. We also recognize that the Forest Service will be criticized by an element of the motorized community...Please be assured that most Americans support reasonable efforts to reduce taxpayer road maintenance obligations and aquatic and terrestrial impacts of inappropriate off-road vehicle use on public lands."	The commenter has expressed support for road maintenance activities and the belief that there is support for reducing road maintenance obligations and the impacts of inappropriate off-road vehicle use to aquatic and terrestrial resources. The effects of the project on aquatic and terrestrial resources will be analyzed in the resource specialist reports and discussed in the environmental assessment.
6F	KS Wild, KFA, EPIC	"Perhaps an element of the project could include a kiosk or signs that describe the ecological and riparian values of the project as well as the many remaining opportunities for motorized recreation."	The commenters suggest inclusion of interpretive signs and a kiosk in the project activities. Some interpretive facilities are included in the proposed action. Additional interpretive opportunities will be considered in the Transportation, Recreation, and Scenery reports. Impacts of interpretive facilities will be analyzed in the resource specialist reports and discussed in the environmental assessment.
6G	KS Wild, KFA, EPIC	"…we recommend that public education and law enforcement as well as physical restoration be included as part of this project so as to ensure its long-term success."	Public education in the form of interpretive signs and kiosks at trailheads are a part of the proposed action. Physical restoration in the form of streambank stabilization will be done along with road actions to stabilize the roads. Observations and evidence of illegal activities will be referred to Forest law

Comment #	Commenter	Comment	Response
			enforcement. Law enforcement is an ongoing activity and outside of the scope of this finite project.
7A	Dolph Marshall	"I received the proposed action for Eddy/Park Creek area. Thank you for that information and seems like a nice plan. However, my immediate concerns are for Eddy Creek Road from 4000 Eddy Creek Rd to Old Stage Rd. The NFS has an easement for this section that is not being maintained as the easement was written. The aforementioned section of the road is dangerous and in need of immediate repair. Please let me know who I should speak with regarding this specific issue."	Easements for Eddy Creek Road do not specify maintenance actions by the Forest Service. The project proposal is to maintain the road as a Maintenance Level II road. The Forest will work with a homeowners association to authorize additional maintenance if requested.
8A	Jim Steitz	"As a former resident of southwest Oregon who has visited the Shasta-Trinity and similarly situated forests with respect to ORVs, I hope you will take this opportunity to curtail some of the rampant abuse that I saw. Forest staff should emphasize the closure of existing unauthorized illegal, 'user-created' routes that are bleeding soil into our streams. ORV use should be directed onto a finite number of clearly marked and mapped routes that can be policed and enforced with reasonable frequency given the staff time available...Forest staff must be willing to cite and ticket violators on sight..."	The commenter suggests closing unauthorized user-created OHV routes and restricting OHVs to clearly marked and mapped routes, with more law enforcement actions. The proposed action includes designating specific OHV trails. OHV use and OHV trails will be analyzed in the Transportation and Recreation reports and discussed in the environmental assessment. Observed and evidence of OHV violations will be referred to Forest law enforcement. Law enforcement is an ongoing activity, and outside the scope of this project.
9A	George and Frances Alderson	"…We want to see the restoration get underway as soon as possible. ORVs should be barred from fragile meadows, and the road system should be limited to segments that can be maintained within	OHV use is not permitted in meadows where resource damage is possible as per federal regulations (36 CFR 261.13 and 261.15c). OHV use is permissible on maintenance level II roads. The proposed action includes

Comment #	Commenter	Comment	Response
		your budget without letting sediment pour into priority streams such as Parks Creek."	designated motorized trails to restrict meadow use by OHVs. Motorized trails and road reconstruction and maintenance (including financial impacts) will be considered in the Transportation and Recreation reports and discussed in the environmental assessment.
10A	Brian Stewart	"Please consider this email a comment regarding the Parks-Eddy projects and cause this email document to be incorporated into the record for such."	All public comments for the project will be included in the project record.
10B	Brian Stewart	"I acknowledge that the beginning road approach to the Caldwell Lakes trail needs attention in order to control erosion problems, etc., yet I can't support a full trailhead information board, trailhead signs and possible reference of such on USFS maps…a great deal of new users...not stand up well to impacts brought about by further development of trailheads...I would support necessary improvements to correct road surface, drainage and parking needs but cannot support a trailhead designation at this site and oppose such...decommissioning or even road closure...would be more preferable to me than seeing this area designated as a trailhead.	The commenter expresses concern that trail and trailhead activities will increase users to the Caldwell Lakes area. The potential increased use will be included in the analysis of impacts from developing trails and trailhead in this area will be analyzed in the resource specialist reports and discussed in the environmental assessment. Alternative 4 eliminates all trailheads in the project.
10C	Brian Stewart	"I oppose any further development of the access road to this (West Parks Lake) and ask the USFS to please consider decommissioning more of or all of the road and closing the road within this area to any motorized use. Convert to non-motorized trail only...If you're so concerned about habitat	The commenter expresses concern that additional development of road access to the West Parks Lake area will result in impacts to the area. Impacts to the West Parks Lake area from project activities will be analyzed in the resource specialist reports and discussed in

Comment #	Commenter	Comment	Response
		impacts and erosion control then why on earth would you even consider establishing a motorized trail access into this fragile area?"	the environmental assessment.
10D	Brian Stewart	"I do understand the USFS is obliged to have an orderly and uniform plan to address access to these areas. I merely ask that you consider that the actions you take today have the foresight to not allow (by way of design), for more people and motorized traffic to access so close to the fragile & unique ecosystems of Caldwell and West Parks Lakes."	We appreciate your concern for the Caldwell and West Parks Lakes areas. A complete analysis of the effects of this project, including cumulative effects will be presented in the resource specialist reports and the environmental assessment.
11A	Roseburg-Arne Hultgren	"Roseburg is a significant owner of timberlands in and around the Shasta-Trinity National Forest…We have noted the deterioration of the Forest road system over the past 15 years and are pleased to (see) the District is stepping up to take a proactive approach...The Project looks well-conceived and we hope you will be able to fund and implement it expediently with a minimum of pernicious litigation."	Commenter notes the condition of the Forest road system and is in support of the project.
11B	Roseburg-Arne Hultgren	"As a progressive company, we have been programmatically improving our transportation system over the past 20 years. Unfortunately some of that system involves joint use with the USDA-Forest Service where the cooperative maintenance burden has been asymmetrically applied, with much of the work falling upon Roseburg and other private landowners."	Commenter is expressing concern regarding the condition of joint use roads and cooperative maintenance burden. The Forest proposes to enter a Maintenance Agreement with Michigan California Timber Company for joint maintenance of the Parks Creek Road.
11C	Roseburg-Arne Hultgren	"Your willingness to address this area is hopefully an indication of a new paradigm in	The commenter expresses support for the proposed action.

Comment #	Commenter	Comment	Response
		cooperation with private timberland owners to achieve a higher degree of watershed protection. In that regard we fully support the project as described in the Proposed Action and Scoping Document."	
12A	James Gulrich	"I would really like a little more information on the Parks Eddy Watershed Restoration Project. I have grown up snowmobiling in a lot of the areas around Mt. Eddy and I'm not sure of what is being proposed to do…"	The comment is an information request. Additional information will also be available in the environmental document and resource specialist reports, which will be posted on the Forest website for public comment. All commenters from the scoping period will be included on the mailing list for the project.
13A	Nick Joslin	" I would appreciate the same approach to Eddy Creek, where off-roaders drive up fens every spring. Essentially connecting Eddy Creek road to Parks Creek Road."	The proposed action includes the closure of the user created road through Upper Eddy Creek Meadow and restoration of the site to remove tire tracks.
14A	Form Letter (~700 emailed form letters received)	"Thank you for proposing the Parks Eddy Watershed Restoration Project. As you know ongoing sediment production from old logging roads and damage to meadow ecosystems from irresponsible off-road vehicle use are a significant problem in this area. It is my understanding that Parks Creek has been identified as a "priority watershed" for restoration by the Forest Service in part because of the significant sediment problems that you are trying to address."	Comment is generally in support of the project.
14B	Form Letter (~700 emailed form letters received)	"Please do not be dissuaded by a few bad apples who oppose needed restoration and favor the continued destruction of meadows and riparian values. I value clean water, healthy meadows, and a "right-sized"	Comment recommends a "right sized" road system that can be affordably maintained. The road system and road actions proposed with the project will be considered in the Transportation report and discussed in the

Comment #	Commenter	Comment	Response
		road system that we can afford to maintain. I stand with you in your efforts to protect these important lands that belong to all Americans."	environmental assessment.

Appendix E. Past, Present and Reasonably Foreseeable Management Activities

This appendix describes the overall approach to the Parks Eddy project cumulative effects analyses and summarizes a list of potentially relevant ongoing and reasonably foreseeable futures actions.

Past, present, and reasonably foreseeable future management activities were considered for this project, in order to assess accumulated impacts. According to the Council on Environmental Quality NEPA regulations, a "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7). Spatial and temporal boundaries are the two critical elements to consider when deciding which actions to include in a cumulative effects analysis. Spatial and temporal boundaries set the limits for selecting those actions that are most likely to contribute to a cumulative effect. The effects of those actions must overlap in space and time for there to be potential cumulative effects (FSH 1909.15 (15.2)). Spatial and temporal boundaries are the two critical elements to consider when deciding which actions to include in a cumulative effects analysis. Spatial and temporal boundaries set the limits for selecting those actions that are most likely to contribute to a cumulative effect. The effects of those actions must overlap in space and time for there to be potential cumulative effects (FSH 1909.15 (15.2)). Therefore, relevant boundaries and projects assessed for cumulative effects vary by resource. Each resource's cumulative effect area can be different and possibly larger or smaller.

This cumulative effects review 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 catalogue 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 always be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions may 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.

The cumulative effects analysis for each environmental component or resource area is guided by and consistent with the Council on Environmental Quality letter "Guidance on the Consideration of Past Actions in Cumulative Effects Analysis" (Connaughton, 2005). The current environmental conditions on the landscape reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects and can be used as a proxy for the impacts of past actions (§ 220.4 (f)).

The team reviewed direct and indirect effects of the proposed action, in accordance with the Forest Service Handbook 1909.15 (15.2), and determined relevant spatial and temporal boundaries for cumulative effects analysis. For the Parks Eddy project, the longest relevant temporal boundary in this review was 30 years. The largest relevant spatial boundary in this review resulted in the three 5th field watersheds, Willow Creek, Parks Creek-Shasta River, and Upper Shasta River. Both boundaries were determined appropriate for hydrology cumulative

effects analysis. All other spatial and temporal boundaries fell within this largest boundary or were unneeded.[48] The Parks Eddy project area boundary was the most common cumulative effects spatial boundary used. Additionally, most specialists considered existing conditions as the aggregate of past actions. See Table Appendix E-1 for a summary of cumulative effects analysis bounding by resource.[49]

Once this "general review area" was identified (Parks Eddy project general cumulative effects review area), activities were reviewed for data contained within or intersecting this largest boundary within the last 30 years (for ERA calculations) to generate a list of potentially relevant actions. The interdisciplinary team reviewed for activities that are contained within or intersect with the Parks Eddy project general cumulative effects review area from the following sources: Forest Activities Tracking (FACTS) database for the Shasta-Trinity and Klamath National Forests, CALFIRES's timber harvesting plan (THP) status table (for THPs submitted to CALFIRE) and CALFIRE's Forest Practice Geographical Information System timber harvest data in ERSI formats (for THPs approved, completed, etc.), the Schedule of Proposed Actions (SOPA) for the Shasta-Trinity and Klamath National Forests (January 1-March 31, 2014 Quarterly SOPA), and Forest personnel for past, present, ongoing and future activities.

The information is characterized in the Cumulative Effects Worksheet for each resource as applicable (in the project record). A summary of potentially relevant present and reasonably foreseeable future actions is summarized in Table Appendix E-2. Relevant cumulative effects are documented for the resource in the project specialist reports and are summarized in the Environmental Impacts section of the EA.

Table Appendix E-1. Summary of Cumulative Effects Analysis Bounding by Resource

Resource Area	Cumulative Effects Spatial Boundary	Cumulative Effects Temporal Boundary
Sensitive Plants	The area within 100 feet radius from areas of activity where sensitive plants occur	5-year implementation period + 2-4 years after
Cultural Resources	Area potentially disturbed by either ground disturbance from project activities, or by sediment or runoff due to project actions.	5-year implementation period
Hydrology	HUC 5 and HUC 8 watershed scales	30 years into the past and 6 years into the future.
Geology	HUC 5 and HUC 8 watershed scales	30 years into the future

[48] A few resources such as air quality, climate change, socio-economic had larger spatial boundaries but because of the nature of the resource and/or effects, a cataloguing of actions was not necessary to the analysis.

[49] Rationale for selection of boundaries as well as analysis can be found in specialist reports and are summarized in the Environmental Impacts section of the EA.

Resource Area	Cumulative Effects Spatial Boundary	Cumulative Effects Temporal Boundary
Soils	Road "footprint": cutslope, travelled way, fillslope, and downslope soils (up to 200 feet)	10 years into the future
Transportation	Area within the project boundary	5 year implementation period
Recreation	Area within the project boundary	20 years into the future
Socio-Economics	Siskiyou County	5 year implementation period
Wildlife-TES Species (northern spotted owl)	Action area (area of proposed activities + 0.25 mile buffer)	10 years into the future
Wildlife-Sensitive Species	a) 19,812 acre area which is all lands within 0.25 mile of the proposed activities, or b) 4,380 acre area that encompasses Riparian Reserves affected by project (regardless of ownership)	10 years into the future
Visual Quality	Views to Scott Mountains, Eddy Mountains, view to valley	20 years into the future

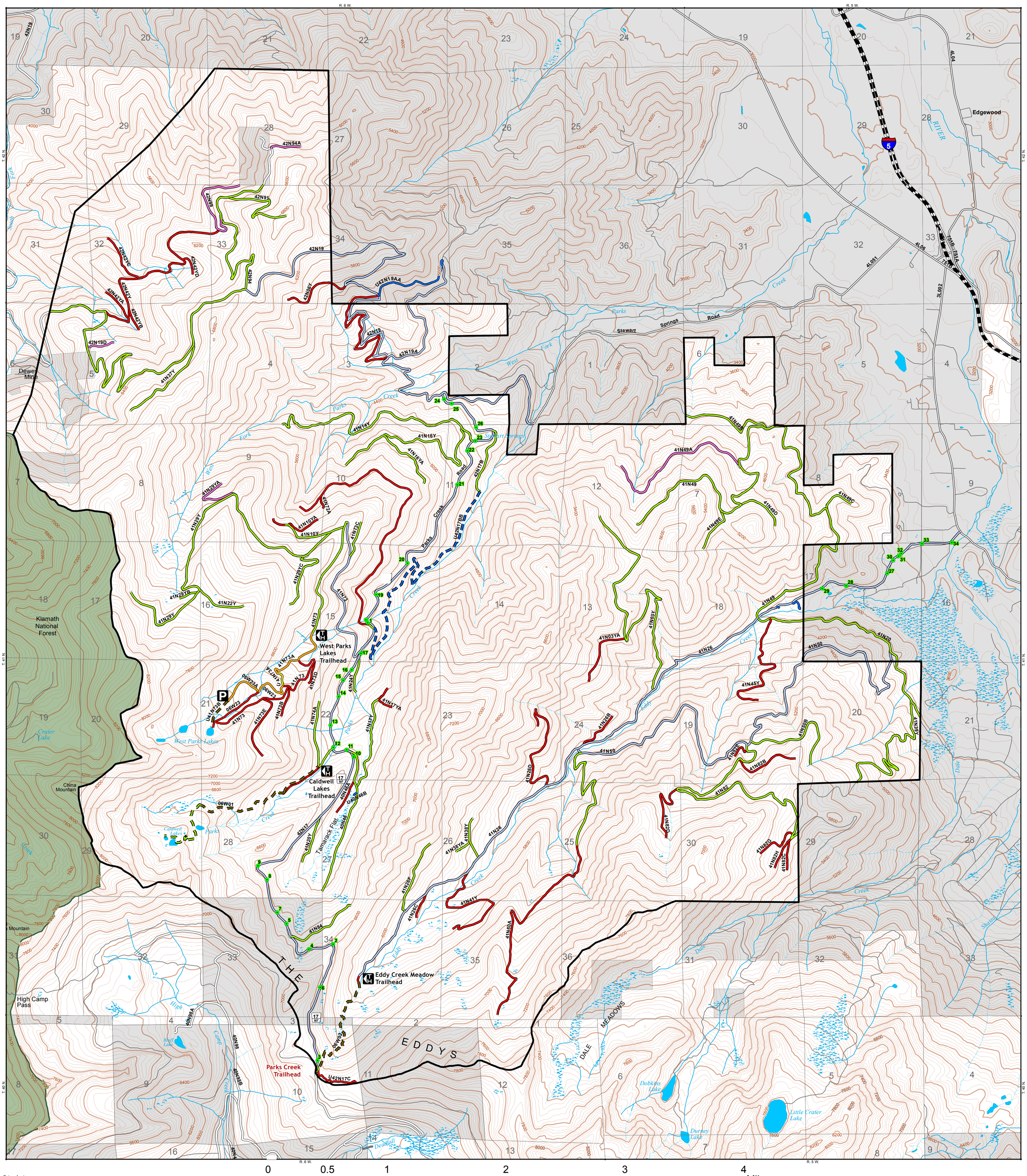
Table Appendix E-2: Present and Reasonably Foreseeable Future Activities in the Parks Eddy Watershed Restoration Project's General Cumulative Effects Boundary and the Project Boundary.

Activities within the General Cumulative Effects Boundary (Project area plus 0.25 mile buffer around project activities, which includes land outside the project area, regardless of ownership)	Type
Firewood Cutting	Past/Ongoing
Mushroom Picking	Past/Ongoing
Dispersed Recreation (includes driving for pleasure, snowmobiling, skiing, camping, hunting, hiking, mountain biking, OHV riding)	Past/Ongoing
Fire Suppression	Past/Ongoing
Noxious Weed Control (monitoring, prevention and hand control)	Past/Ongoing
Special Use Permit (Jefferson Public Radio Communications Site)	Past/Ongoing

Activities within the General Cumulative Effects Boundary **(Project area plus 0.25 mile buffer around project activities, which includes land outside the project area, regardless of ownership)**	**Type**
Easements, Cost-Share Agreements	Past/Ongoing
Hazard Tree Abatement (roads, trailheads, administrative sites)	Past/Ongoing
West Parks Creek Grazing Allotment (Permit is active, grazing status is not known.)	Past/ Possible Foreseeable Future
Eddy Creek Grazing Allotment (Permit is active, grazing status is not known.)	Past/ Possible Foreseeable Future
Special Forest Products (bough and cone collecting)	Past/Ongoing
THP 2-14-016-SIS (Dale Creek) – Notice of Intent to Harvest Timber filed March 21, 2014 by Michigan-California Timber Company. Pending Approval. (297 acres of clearcutting, shelterwood removal step, selection, alternative prescription, cable corridor area, road right-of-way and sanitation-salvage in T41N R5W, Sections 29, 31, and 32.)	Possible Foreseeable Future
THP 02-08-106-TRI (Deadfall) Located southwest of the project area, includes units that are partially within the NSO Action Area, not yet reflected in the existing condition. The THP includes clear-cutting and meadow restoration treatments outside of suitable habitat.	Ongoing/ Forseeable Future
Mining (Dewey Mine has been inactive since 1940. Mining claims could be active at any time.)	Past/Ongoing

Appendix F. Maps

PARKS EDDY WATERSHED RESTORATION - PROPOSED ACTION



0 0.5 1 2 3 4 Miles

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Redding, CA 96002

Contour Interval is 40 feet.

September 8, 2014 ALN

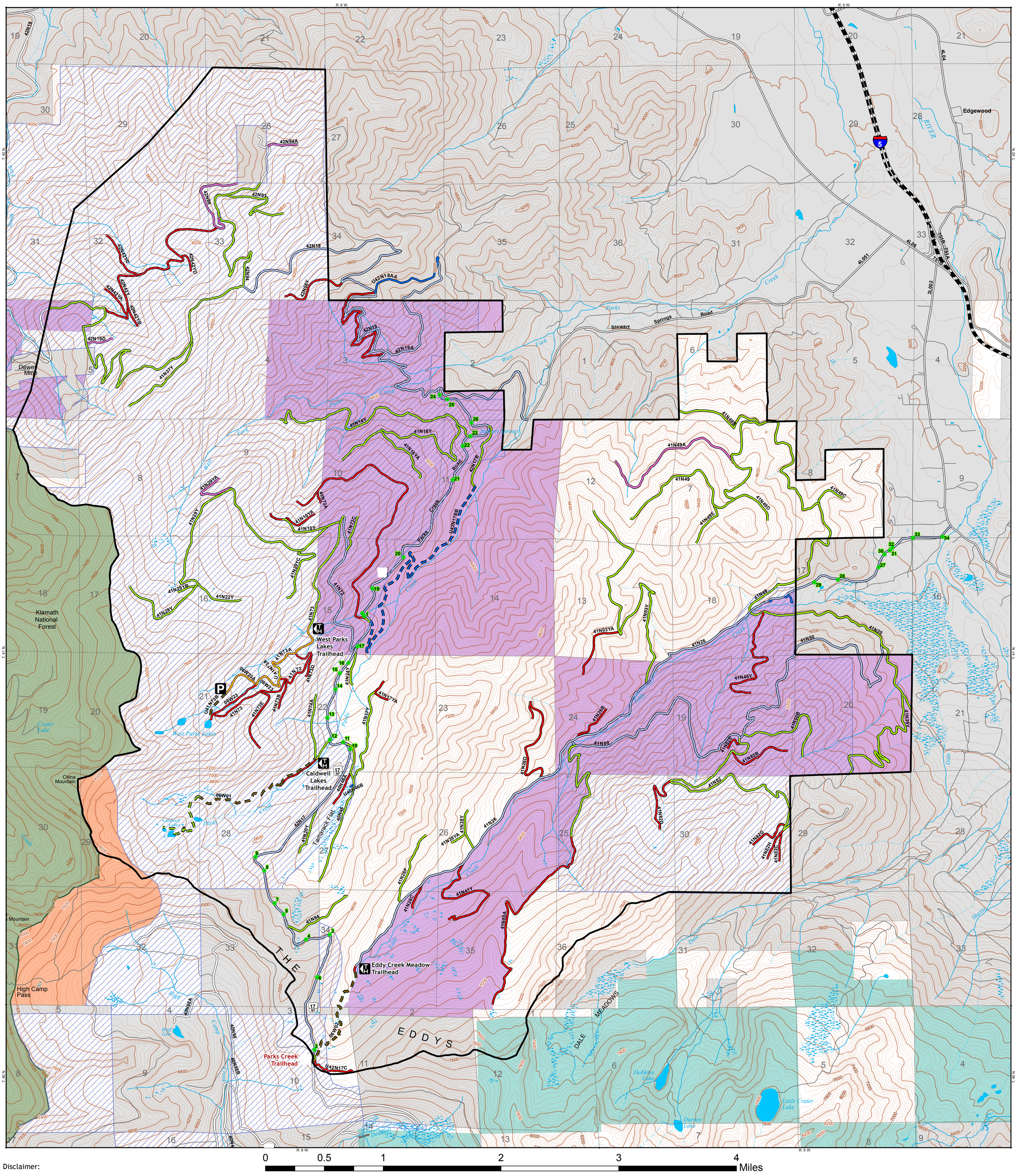
PROJECT BOUNDARY
PROPOSED TRAILHEADS
PROPOSED PARKING AREA
EXISTING TRAILHEAD

PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL
RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION
RECONSTRUCTION POINTS

OPEN ROADS
CLOSED ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

PARKS EDDY WATERSHED RESTORATION - PROPOSED ACTION



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LATE SUCCESSIONAL RESERVES, CHU 2012, SPECIAL INTEREST AREA MANAGEMENT, INVENTORIED ROADLESS

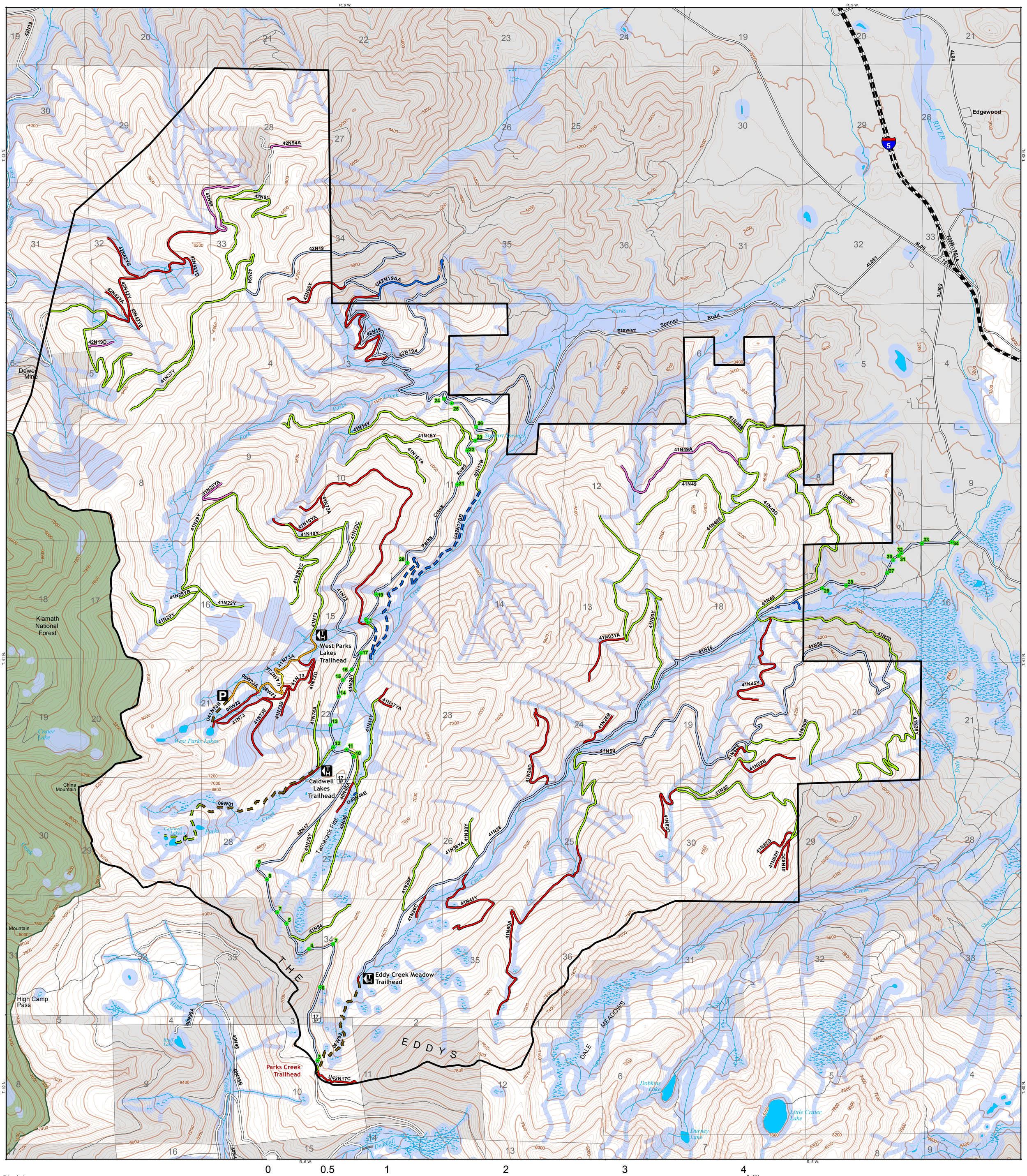
- PROJECT BOUNDARY
- PROPOSED TRAILHEADS
- PROPOSED PARKING AREA
- EXISTING TRAILHEAD
- CHU 2012
- INVENTORIED ROADLESS
- SPECIAL INTEREST AREA
- LATE SUCCESSIONAL RESERVES

PROPOSED ROAD ACTIONS

- ADD
- ADD - NON-MOTORIZED
- KEEP AND MAINTAIN - NON-MOTORIZED
- KEEP AND MAINTAIN
- RECONSTRUCT, ADD - MOTORIZED TRAIL
- RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
- CLOSE
- DECOMMISSION
- RECONSTRUCTION POINTS
- OPEN ROADS
- CLOSED ROADS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

PARKS EDDY WATERSHED RESTORATION - PROPOSED ACTION



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September 8, 2014 ALN

RIPARIAN RESERVES

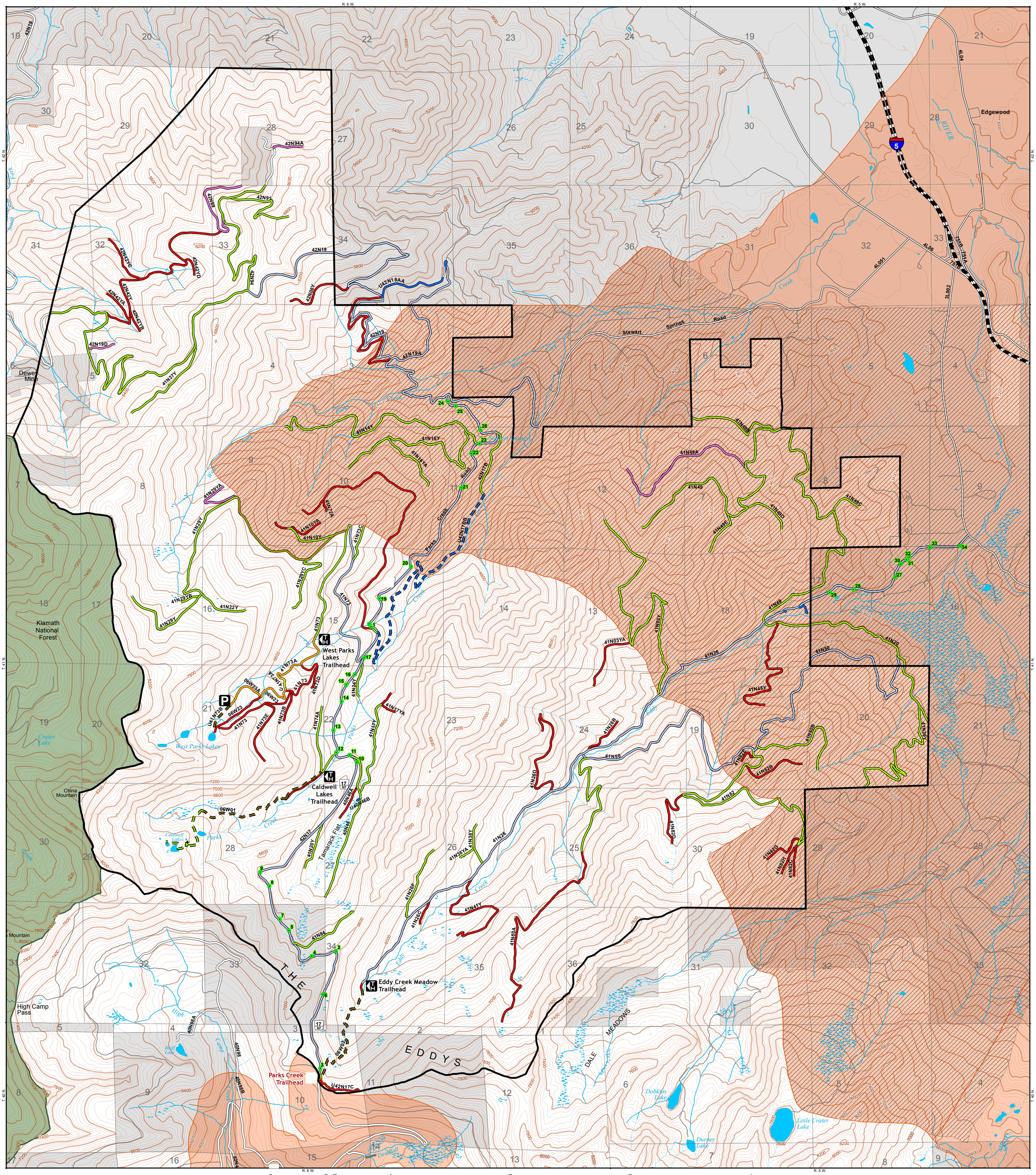
- PROJECT BOUNDARY
- PROPOSED TRAILHEADS
- PROPOSED PARKING AREA
- EXISTING TRAILHEAD
- RIPARIAN RESERVES

PROPOSED ROAD ACTIONS

- ADD
- ADD - NON-MOTORIZED
- KEEP AND MAINTAIN - NON-MOTORIZED
- KEEP AND MAINTAIN
- RECONSTRUCT, ADD - MOTORIZED TRAIL
- RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
- CLOSE
- DECOMMISSION
- RECONSTRUCTION POINTS
- OPEN ROADS
- CLOSED ROADS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

PARKS EDDY WATERSHED RESTORATION - PROPOSED ACTION



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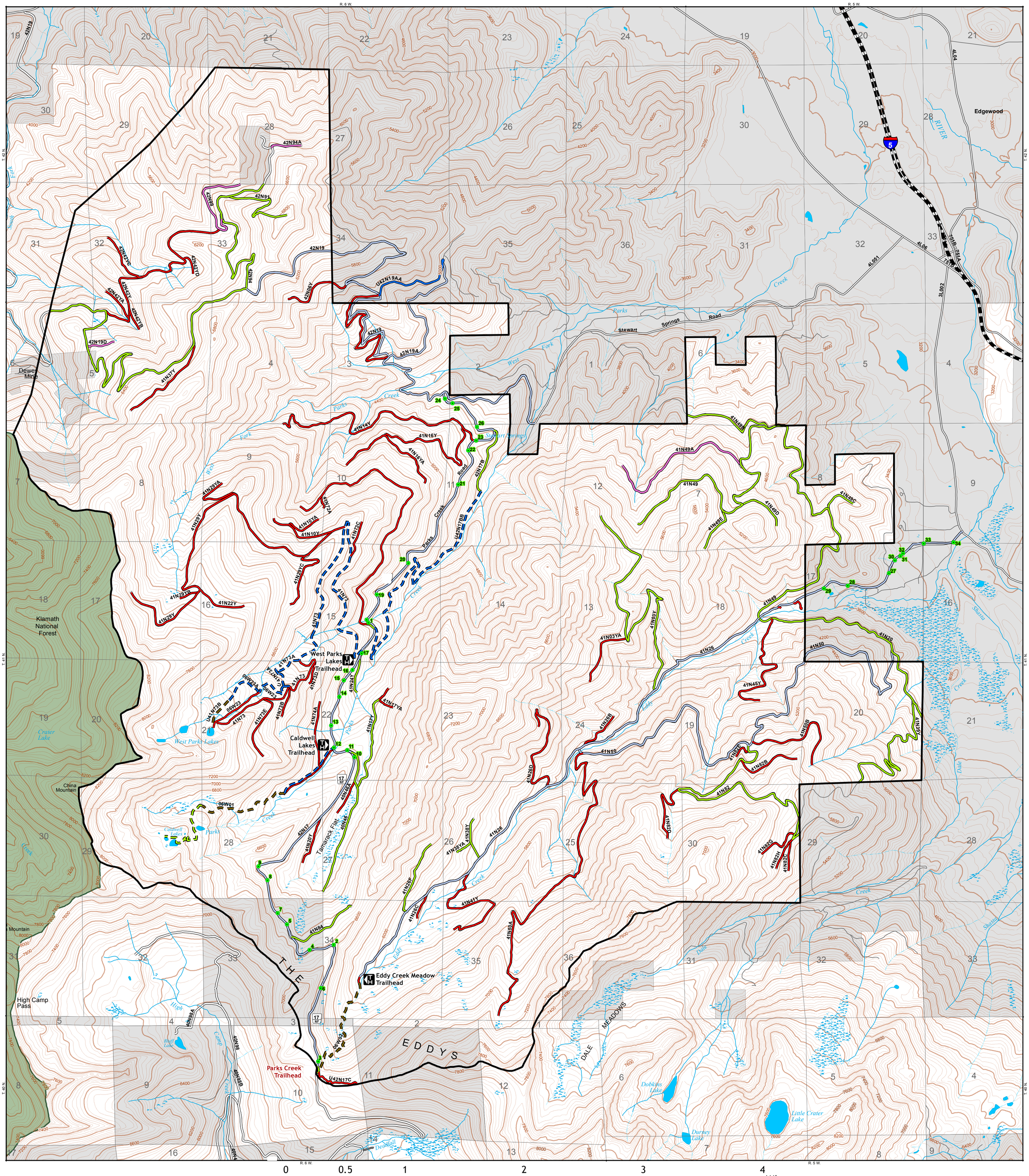
September 8, 2014 ALN

PROJECT BOUNDARY
PROPOSED TRAILHEADS
PROPOSED PARKING AREA
EXISTING TRAILHEAD
WILDLAND URBAN INTERFACE (WUI) 2011
WUI FROM WILLOW PARKS WA

PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN
RECONSTRUCT, ADD - MOTORIZED TRAIL
RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION
RECONSTRUCTION POINTS

OPEN ROADS
CLOSED ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

PARKS EDDY WATERSHED RESTORATION - ALTERNATIVE 3



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September 8, 2014 ALN

PROJECT BOUNDARY
PROPOSED TRAILHEADS
EXISTING TRAILHEAD

PROPOSED ROAD ACTIONS
ADD
ADD - NON-MOTORIZED
KEEP AND MAINTAIN - NON-MOTORIZED
KEEP AND MAINTAIN

RECONSTRUCTION
RECONSTRUCTION - NON-MOTORIZED
CLOSE
DECOMMISSION
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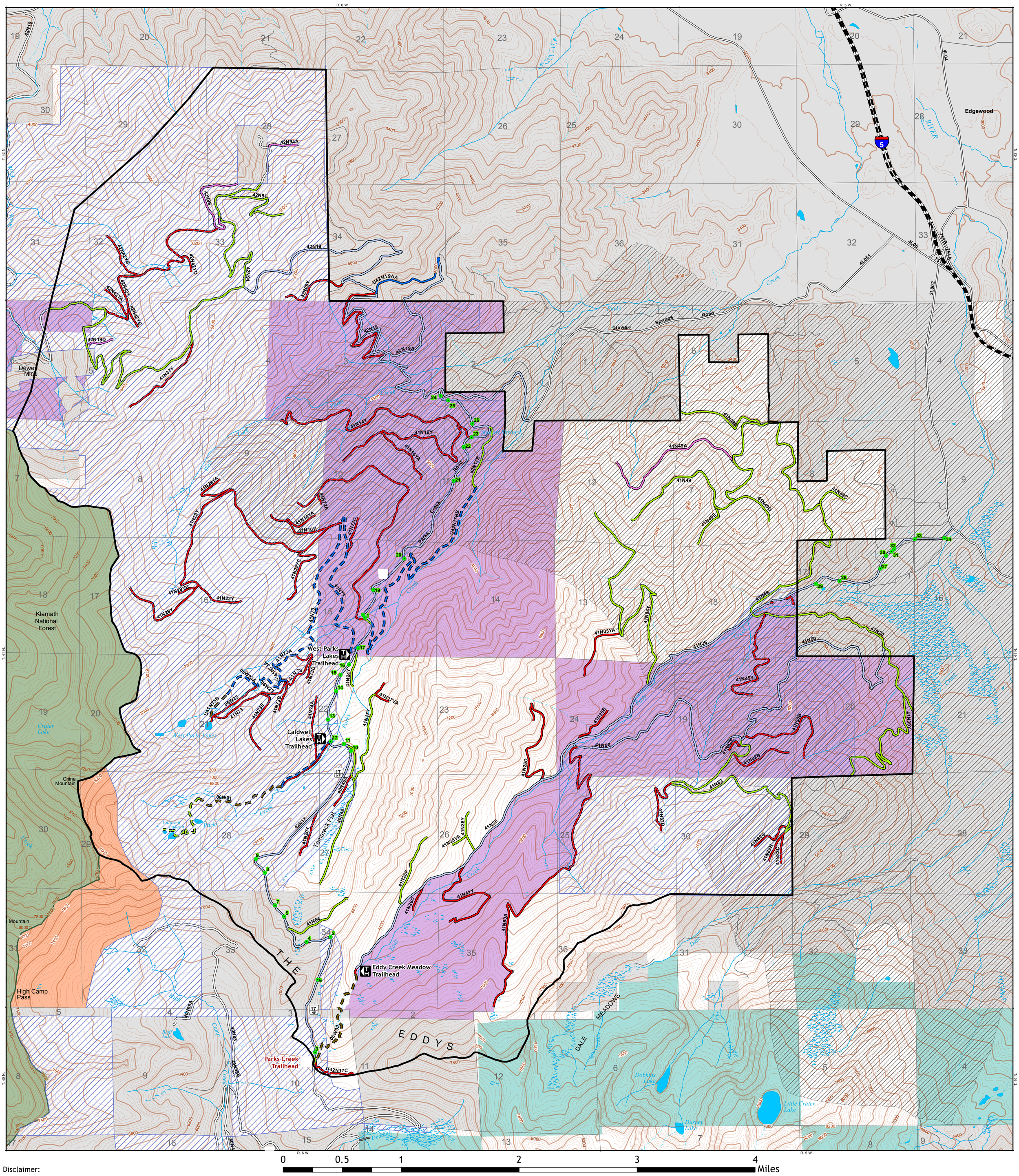
CLOSED ROADS
PERENNIAL STREAMS
INTERMITTENT STREAMS
KLAMATH NF
SHASTA-TRINITY NF
OTHER OWNERSHIP

N

PARKS EDDY WATERSHED RESTORATION - ALTERNATIVE 3



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September 8, 2014 ALN

LATE SUCCESSIONAL RESERVES, CHU 2012, SPECIAL INTEREST AREA MANAGEMENT, INVENTORIED ROADLESS

- PROJECT BOUNDARY
- PROPOSED TRAILHEADS
- EXISTING TRAILHEAD
- CHU 2012
- INVENTORIED ROADLESS
- SPECIAL INTEREST AREA
- LATE SUCCESSIONAL RESERVES

PROPOSED ROAD ACTIONS

- ADD
- ADD - NON-MOTORIZED
- KEEP AND MAINTAIN - NON-MOTORIZED
- KEEP AND MAINTAIN
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
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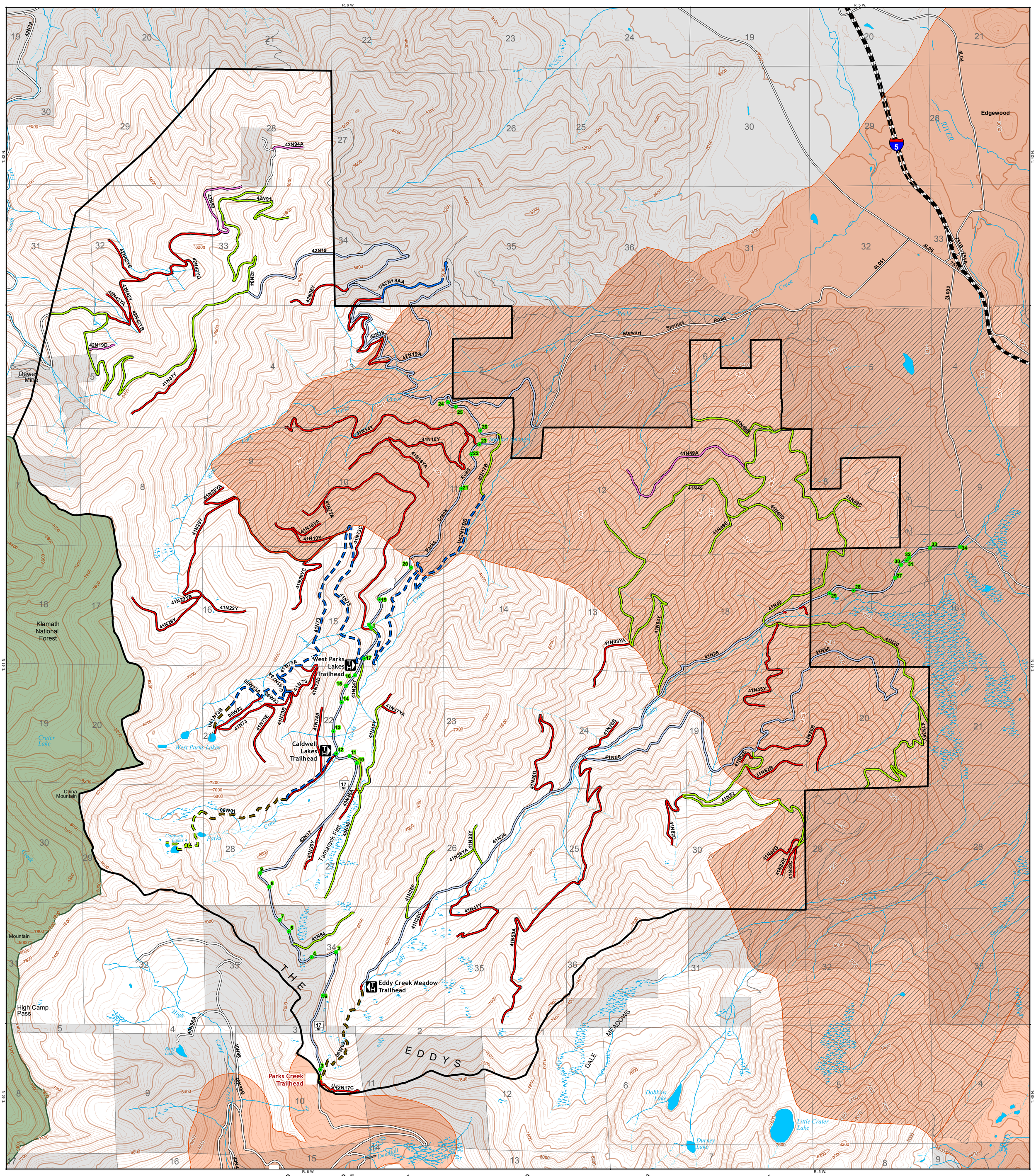
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

PARKS EDDY WATERSHED RESTORATION - ALTERNATIVE 3



Disclaimer:

The Forest Service uses the most current and complete data available.GIS data and product accuracy may vary. Data may be: developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised. Using GIS products for purposes other than those for which they were created, may yield inaccurate or misleading results.

The Forest Service reserves the right to correct, update, modify, or replace, GIS products without notification. For more information, contact:

Shasta-Trinity National Forest
3644 Avtech Parkway
Redding, CA 96002

Contour Interval is 40 feet.

September 8, 2014 ALN

WILDLAND URBAN INTERFACE (WUI) 2011

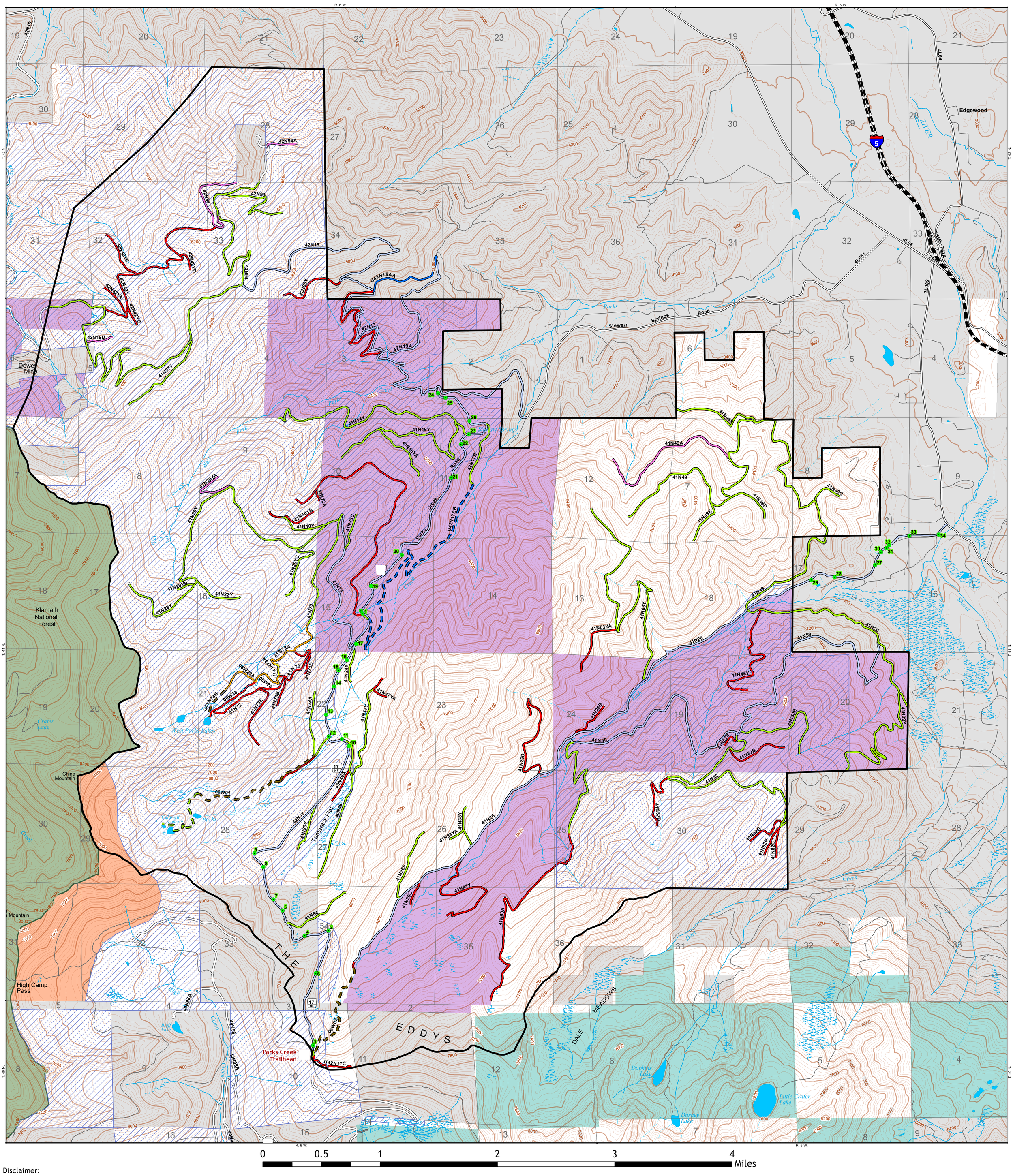
- PROJECT BOUNDARY
- PROPOSED TRAILHEADS
- EXISTING TRAILHEAD
- WILDLAND URBAN INTERFACE (WUI) 2011
- WUI FROM WILLOW PARKS WA

PROPOSED ROAD ACTIONS

- ADD
- ADD - NON-MOTORIZED
- KEEP AND MAINTAIN - NON-MOTORIZED
- KEEP AND MAINTAIN
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
- CLOSE
- DECOMMISSION
- RECONSTRUCTION POINTS
- OPEN ROADS
- CLOSED ROADS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

PARKS EDDY WATERSHED RESTORATION - ALTERNATIVE 4



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September 8, 2014 ALN

LATE SUCCESSIONAL RESERVES, CHU 2012, SPECIAL INTEREST AREA MANAGEMENT, INVENTORIED ROADLESS

- PROJECT BOUNDARY
- EXISTING TRAILHEAD
- CHU 2012
- INVENTORIED ROADLESS
- SPECIAL INTEREST AREA
- LATE SUCCESSIONAL RESERVES

PROPOSED ROAD ACTIONS

- ADD
- ADD - NON-MOTORIZED
- KEEP AND MAINTAIN - NON-MOTORIZED
- KEEP AND MAINTAIN
- RECONSTRUCT, ADD - MOTORIZED TRAIL
- RECONSTRUCT, CONVERT TO MOTORIZED TRAIL
- RECONSTRUCTION
- RECONSTRUCTION - NON-MOTORIZED
- CLOSE
- DECOMMISSION
- RECONSTRUCTION POINTS
- OPEN ROADS
- CLOSED ROADS
- PERENNIAL STREAMS
- INTERMITTENT STREAMS
- KLAMATH NF
- SHASTA-TRINITY NF
- OTHER OWNERSHIP

N

Appendix G. Photographs

Parks Eddy Watershed Restoration Project
Appendix G
Photos of Existing Conditions and Proposed Actions

Examples of Roads to Be Maintained:

Examples of Roads to be Re-constructed:

41N26 Eddy Creek Road

41N26 Eddy Creek Road. Example of creek capture and road erosion.

Examples of Roads and User Created Routes to Be Decommissioned:

Examples of Roads to be Closed:

Trails:

6W02
Upper Eddy Creek Trail.
10/30/2012 12:28

6W23
West Parks Lake Trail
06/27/2013 11:20

Parks Creek Trail
08/01/2013 11:18

Appendix H

Public Comments/Responses

The following organizations and individuals provided timely comments on the preliminary EA for the Parks Eddy project:

Commenter	Comment Code
Conservation Congress	CC
Arley Kisling	AK
Klamath Siskiyou Wildland Center	KSWC/KFA/EPIC
Barbara Hull	BH
Sherwin Nelson	SN
Stephen Layman	SL
Bill Repetto	BR
Dolph Marshall	DM

Comment #	Comment	Response
CC #1	"The Conservation Congress appreciates the opportunity to comment on the Parks Eddy Watershed Restoration EA. Please incorporate them into the AR and consider them prior to making a decision."	All comments received during scoping and comment periods will become part of the project record. Conservation Congress (as well as all other commenters) comments are considered and the comments with Forest responses can be seen below.
CC #2	LSR Management Objective, Misc. Activity 1: Maintaining Existing Facilities including Resorts, campgrounds, administrative sites etc. "This Misc. Activity doesn't include construction of new parking facilities or turnouts in LSR yet that is part of the proposed project. This Activity pertains to existing facilities."	The Shasta-Trinity National Forest, Forest-Wide Late Successional Reserve Assessment (LSRA) was prepared as directed in the Forest Plan (pg. 4-37) to provide guidance for managing Late-Successional Reserves (LSRs). It was reviewed by the Regional Ecosystem Office and approved in 1999. The LSRA contains a partial list of miscellaneous activities (LSRA pgs. 203-208) that are considered neutral to the objectives of LSRs. Miscellaneous activity #1 applies to preexisting facilities, such as

Comment #	Comment	Response
		the Parks Creek Trailhead. It states that "These facilities are in need of periodic maintenance and improvement to continue to provide safe service to the public" (LSRA pg. 203). Maintenance and improvements to the trailhead will improve safe service to the public by providing adequate (more organized) parking, improved sanitary conditions, and education about the area. Improvements to the Parks Creek Trailhead are consistent with the LSRA under Miscellaneous Activity #1. The desired condition for Miscellaneous Activity #1 is continued management of existing facilities.
CC #3	LSR Management Objective, Misc. Activity 10: Maintaining, repairing, stabilizing road cuts and fills, and decommissioning roads. "This activity doesn't include reconstructing roads in LSR; only maintenance and decommissioning. The project calls for reconstruction of roads in LSR."	Miscellaneous Activity #10 applies to existing roads in the project area that are in LSRs. It is important to note that roads in LSRs proposed for reconstruction activities are preexisting roads that are in need of repairs greater than what would be considered regular/routine maintenance. Reconstruction activities include improved drainage facilities such as cross drains and ditch improvements, other drainage facilities, and rocking the road surface (all of which are stabilizing the road cut/fill) to reduce erosion, and the negative effects these stretches of road are having to water quality (which would be beneficial to the objectives of the LSR as noted in the trade-offs and effectiveness of Miscellaneous Activity #10). Miscellaneous Activity #10 is consistent with the Forest Plan (pg. 4-39), which states that "Road construction in Late-Successional Reserves…generally is not recommended unless potential benefits exceed the costs of habitat impairment…" The potential benefits to water quality in LSR outweigh the "reconstruction" proposed with this project.

Comment #	Comment	Response
		The new turnouts on Parks Creek Road are also included in Miscellaneous Activity #10. They will be located in existing wider areas of the road prism and are not considered new construction (not new ground disturbance outside the existing road prism).
CC #4	LSR Management Objective, Misc. Activity 11: Managing dispersed recreation including, installing traffic control devices, seasonal closure gates and fences, constructing, reconstructing, re-routing, and maintaining trails, maintaining, improving, removing undeveloped camp sites, and installing signs. "This Misc. Activity also doesn't include new construction of new parking facilities or turnouts in LSR yet that is part of the proposed project. This Activity pertains to closures, trails, and signage."	As noted in the response to comment CC #3, above, the turnouts along Parks Creek Road are considered activities under Miscellaneous Activity #10. Where they provide the opportunity to access cross-country hiking, they will be providing access for dispersed recreation. Note that the turnouts will be located where there are already wider spots along the road and that no new ground disturbance outside the road prism will occur. The new trailheads for access to trails for West Parks Lakes and Caldwell Lakes (the proposed trailhead for Eddy Creek is outside LSR) will also be constructed in locations where there is room within the road prism for the trailhead parking, and ground disturbance will be minimized. They are considered included under Miscellaneous Activity #11 as a part of the trail system, with the intent of better managing safe trail use and reducing negative trail impacts to water quality. Miscellaneous Activity #11 desired condition includes providing opportunities for dispersed recreation compatible with protection of resources.
CC #5	"We do not support the chosen Alternative 2 as it is not consistent with the LSRA. We do believe Alternative 3 is more consistent with the LSRA and we will support this alternative and encourage the Forest to choose it for a variety of reasons as explained below."	As stated in the responses to comments CC #2, 3, and 4 above, the road, trail, and trailhead activities proposed are consistent with LSRA Miscellaneous Activities 1, 10, and 11. Decommissioning roads within the LSR is included in Miscellaneous Activity #10, and the desired condition is that

Comment #	Comment	Response
		excess roads are removed from the system. The LSRA general desired condition for road density in LSRs is less than 3.0 miles per square mile. Alternatives 2 and 4 would result in open road density of 1.9 miles per square mile in LSR. Alternative 3 would result in open road density of 1.2 miles per square mile. All action alternatives are well below the LSRA desired condition of less than 3.0 miles per square mile. Within the project area there is a need to provide for public access and recreational opportunities (including motorized), in addition to protecting and enhancing late-successional forest ecosystems. All action alternative activities have been determined to be consistent with the LSRA, will either be neutral to or benefit the LSR objectives, will meet the Aquatic Conservation Strategy (ACS) objectives, and will meet the LSRA desired conditions of providing opportunities for dispersed recreation compatible with resource protection.
CC #6	"Alternative 3 would be the most beneficial to sensitive plants, fisheries, geology, hydrology, open road densities in HUC5, riparian reserves by HUC5 acres, ACS Objectives, non-motorized recreation, soils, open road densities, and NSO and its habitat."	Recreation – The purpose and need of the project includes enhancing recreational facilities and opportunities. Alternative 3 would not be the most beneficial for motorized recreation, including dispersed camping and other recreation as more roads would be decommissioned, reducing access to dispersed recreation areas and reducing the numbers of miles of open roads available for motorized travel (56.8 miles per square mile with Alternative 3 versus 70.8 miles per square mile with Alternatives 2 and 4). Hydrology – The purpose and need for the Parks Eddy project is driven primarily by watershed restoration activities that will

Comment #	Comment	Response
		promote long-term ecological integrity and meet ACS objectives, while providing safe and efficient access for administration of NFS lands and recreation opportunities. All action alternatives have been designed to meet this objective. For example, road reconstruction activities will address chronic sources of sediment and erosion while decommissioning activities will allow for the restoration of natural drainage patterns. Both of these activities, while different, are designed to benefit watershed resources. It is true that Alternative 3 would result in more miles of decommissioning than any of the other action alternatives but all action alternatives are beneficial to watershed resources and address the purpose and need for the project. Geology – Alternative 3 would have a greater reduction on landslide potential and fewer roads in ultramafic rock formations because more roads would be decommissioned compared to Alternatives 2 and 4. However all action alternatives will reduce landslide potential and exposure to disturbance of ultramafic rock formations. Sensitive Plants – Alternative 3 would provide more protection for many sensitive plants than Alternatives 2 and 4 by decommissioning more roads in the LSRs and converting the motorized vehicle trail to foot traffic only. There may be losses of some individual plants in the short term from Alternatives 2 and 4 (Botany BA/BE pgs. 10-12). At the present time no sensitive plants are known to occur along the proposed motorized trail to West Parks Lake. However there is habitat in

Comment #	Comment	Response
		the unique meadows known to occur along the trail route. Since the draft Botany BA/BE was written, new populations of mountain lady's slipper and Canadian buffalo-berry were found along a route that would be closed under Alternative 3. To a small degree, Alternative 3 would be the most beneficial for sensitive plants, watch list plants and unique habitats. However, with resource protection measures in place to protect these resources, the differences between alternatives are very small. See RPMs Botany-S 1 through 6; GHS 10 and GHS 11recreational activities and roads in riparian reserves; GHS 12 and GHS 14 storm-proofing of roads etc. Northern Spotted Owl – Alternative 3 would result in 2.1 more miles of roads closed or decommissioned in NSO cores, and 7.85 more miles of roads closed or decommissioned in NSO home ranges than Alternatives 2 and 4. This does not affect the determination that the project may affect but is not likely to adversely affect NSO.
CC #7	"All of these benefits can be achieved by closing all of the roads in the LSR, which is approximately 40 miles of road. If Alternative 3 were chosen about 61% of the project could proceed as described in the EA. Considering more than half of the project is in LSR and much of the Action Area is designated critical habitat, the primary objective of this project should be protection of late-successional species including the NSO, and their habitat."	This project was developed in response to water quality concerns in the Shasta River, and tributaries to the river within the project area are contributing sediment and turbidity due to erosion from portions of the road/trail system. The purpose and need for the project is to restore the watershed condition (aquatic ecosystems and riparian reserves), manage the transportation system, and enhance recreation opportunities, while meeting the management requirements in Late-Successional Reserves and Riparian Reserves, and it is designed to meet those needs. Late-successional habitat will be protected during implementation by following the resource protection

Comment #	Comment	Response
		measures that were developed for the project. And late-successional habitat (including riparian reserves) will benefit from the project. The project is consistent with the LSRA and the Forest Plan Standards and Guidelines for Late-Successional Reserves. The Forest is obligated to provide access to private land within the National Forest boundaries where there are legal rights-of-way or easements in place. Some roads within LSRs fall into this category, and so it would not be possible to close all the roads within the LSRs. There is also the need to retain roads that provide access for Forest management activities and firefighting access. Alternative 3 decommissions more roads in LSR than Alternative 1 but does not decommission roads that have legal rights-of-way or active easements in place. The proposed action and action alternatives all contain road closure and decommissioning activities. All road treatments, including decommissioning, closure, reconstruction or maintenance have been designed to benefit water quality and aquatic and riparian habitats. Closing all of the roads in the LSR would not be consistent with the purpose and need for the project which includes other objectives (e.g. transportation system operation and management and recreation facilities and operations enhancement).
CC #8	"Trees and snags that contribute to potential nest sites, foraging habitat and prey base may be felled and left on the ground…firewood cutting is permitted and these hazard trees could be cut up and taken for firewood…the	The analysis of effects in the BA considered the potential impacts to cutting of hazard trees and snags (BA pgs. 38, 48, 49, 51 and 52 and EA pgs. 133 and 138). FWS was provided with this information and summarized their concurrence with the Forest's

Comment #	Comment	Response
	EA fails to consider the impact of the removal of large trees from NSO habitat. By the same account, the FWS LOC failed to account for this and therefore the consultation is incomplete. The LOC states "Felled trees will be left on site and will be available as coarse wood." It doesn't mention anything about the felled wood being removed."	determination of effects to NSO, NSO habitat and critical habitat in their Letter of Concurrence. Fuelwood collection is not part of the proposed action, but was considered under cumulative effects (BA pg. 36). See also the response to comment CC #19. Fuelwood cutting is currently allowed on the Forest within designated fuelwood cutting zones. Fuelwood regulations prohibit the cutting of all live trees, dead standing trees larger than 15 inches diameter at breast height, or trees with paint (trees proposed for leave or harvest under the Forest's vegetation management programs), wildlife signs, or other official signs. Per the 2014 fuelwood collection permit maps, a large portion of the Parks Eddy Project area is located within zones designated for fuelwood cutting, or fuelwood cutting within 100 feet of roads. Only dead and down wood can be collected in the area open to cutting only along roads. In LSRs, only down wood may be collected, and only within 100 feet of the road (LSRA pg. 192). Fuelwood collectors are required to be in compliance with the MVUM during fuelwood collection. Under Alternative 2, there are approximately 24.8 miles of road within the project area proposed for closure or decommissioning (BA pg. 12). Completion of these closures and decommissioning activities will limit public access for fuelwood cutting, reducing potential impacts to foraging habitat and potential prey for NSO.
CC #9	"So in addition to hazard tree felling, standing snags may	See also the response to comment CC #8. Standing snags may be

Comment #	Comment	Response
	also be taken for firewood. These issues aren't analyzed in the EA, BA or LOC."	collected under current year fuelwood collection permits in some portions of the project area, with removal of any snags larger than 15 inches at 4.5 feet from the ground being prohibited. Permitees must also follow the MVUM in terms of the limited distances from roads when collecting. Cutting of snags is prohibited in LSRs. Fuelwood collection is not part of the proposed action, though it is addressed in the EA on pgs. 140 and 141 for the NSO, and on pgs. 146, 147 and 164 for sensitive wildlife species and cumulative effects. It is addressed in the BA on pg. 36. See also the response to comment CC #19 regarding cumulative effects under the Endangered Species Act (ESA). A large portion of the project area is closed to fuelwood cutting for dead and down trees except adjacent to NFS roads for up to 100 feet (both sides of the road). Fuelwood cutting is limited to dead and down trees. This is consistent with the LSRA which allows fuelwood cutting within 100 feet of roads in the LSRs.
CC #10	"Under road maintenance about 9.5 acres of suitable habitat will be affected by hazard tree or snag felling…About 20 additional acres will be affected from road reconstruction…Why is the Forest continuing to chip away at owl habitat project by project, including cutting down nest trees, when habitat is very limited and owl populations at the local, state, and regional level continue to decline?"	As described in the BA, to account for the maximum potential effect from proposed road and trail actions, specific distances based on limits of potential work were utilized to determine the potential acreage effects (see the methods and effects section of the BA, pgs. 9 and 39-40, and the EA pgs. 123-124). Vegetation modification from road and trail actions would occur within narrow, linear areas along existing roads and trails. As described in the BA and EA, there is a potential for NSO habitat elements that contribute to suitable, dispersal and critical habitat (large hazard trees/snags, small trees, shrubs) to be affected (felled/removed) during project activities. The analysis completed for the NSO determined that no suitable (or

Comment #	Comment	Response
		dispersal) habitat will be degraded, downgraded or removed under any of the action alternatives considered in detail. Therefore the pre and post acreages of suitable (and critical) habitat are identical (BA pg. 40, Table 12; LOC pg. 3). There is no harvest component proposed under any alternative. While the project does not include specific vegetation management to improve NSO habitat through thinning to increase individual tree growth and resilience, or reduce fuel ladders, under Alternative 2, there are approximately 24.75 miles of road within the project area proposed for closure and decommissioning (BA pg. 12). Existing roads and user created routes can and do result in habitat fragmentation, depending on the site-specific conditions. And roads in steeper topography have other direct and indirect fragmentation outcomes, including soil loss and stream channel diversions, which can cause fill failure and slides, affecting habitat. Closure and decommissioning of these roads generally results in beneficial effects to the wildlife resource. Completion of closure and decommissioning activities with this project will help to limit fragmentation of suitable and critical habitat on approximately 33 acres (BA pg. 51, Table 19). An overall reduction in road density under Alternatives 2-4 will also contribute to improving the connectivity and health of potential NSO habitat and reducing disturbance to NSOs and within NSO habitat. Reconstruction activities will also improve road conditions to decrease response times for fire suppression equipment in the project area in the event of a fire. There are currently four activity centers and home ranges within portions of the action

Comment #	Comment	Response
		area for the project, with two being more recently active. No suitable or dispersal habitat will be measurably affected and the project includes LOPs to reduce if not eliminate the potential for direct or adverse effects during the critical breeding period. Addressing the state and regional population levels are beyond the scope of the proposed action.
CC #11	"For these reasons, as well as others explained below, we disagree with the Forest's determination of MANLAA [May Affect, Not Likely to Adversely Affect], and believe a MALAA [May Affect, Likely to Adversely Affect] is more likely."	The Project Biological Assessment discusses the reasoning behind the determination of "may affect, not likely to adversely affect" (MANLAA) (BA pgs. 54-55) due to lack of adverse effects to NSO and their suitable and critical habitat. A letter of concurrence was issued by the FWS on June 13, 2014. Due to the fact that activities are "linear and scattered across the project area" (LOC pg. 3), the FWS concurred with the Forest's determination.
CC #12	"We could not find any document of the Forest consulting with NMFS [for Klamath Mountain Province steelhead DPS] on this project. In our scoping comments we stated we believed this consultation was required and we still do."	As the Klamath Mountain Province Distinct Population Segment (DPS) for steelhead is not a federally listed fish species/DPS, there is no basis for consulting with the NOAA's National Marine Services on effects. Effects of the project on Klamath Mountain Province steelhead DPS are assessed however, as it is a Forest Service sensitive species (refer to the EA pgs. 37, 182-195; and the fisheries BA/BE on the project website and in the project record). Based on the completed analysis, implementation of any of the action alternatives may impact habitat for the Forest Service sensitive Klamath Mountain Province steelhead DPS in the short-term, but individuals would not be measurably or adversely affected. Implementation of any of the action alternatives will not contribute to a trend towards Federal listing

Comment #	Comment	Response
		or loss of viability to the [KMP DPS] population. There will be long-term beneficial effects of improved water quality and quantity (EA. pg. 194).
CC #13	"The Action Area contains approximately 7% suitable habitat (of that 14% N/R and 86% foraging); 25% provides dispersal habitat; and 68% is classified as non-habitat. This is below the 50% level typically used to evaluate the dispersal capability of a landscape; the Forest alleges this is due to natural conditions in the Action Area."	Past actions, including federal and private actions and known fire history, within the analysis area are discussed within the BA (BA pgs. 35-36). While the project area and action area have experienced the effects of bothwildfire and timber harvest, the current lack of suitable and dispersal habitat is largely due to the ultramafic soil found in the majority of the project area (EA pg.102). This soil type does not provide for adequate growth and regeneration for producing quality habitat for NSO. Coupled with the elevational range of the project area, lack of water, and vegetation type, which generally lacks the understory component and species composition typically associated with NSO habitat, this accounts for the general lack of suitable habitat. Most of the suitable habitat within the project area is concentrated within main drainages with perennial streams. As fully described in the April 2014 BA, dispersal habitat is generally considered adequate if about 50 percent of the assessed landscape meets an average 40 percent canopy/11-inch tree dbh (Forsman et al. 2002; Thomas et al. 1990; USDI-FWS 2012). This is not a threshold of habitat amount that treatments cannot 'pass below' and more critically, the amount of total dispersal habitat in the action area is due to the natural conditions. See also the response to comment CC #17.
CC #14	"We note here that the EA relies heavily on impacts to the Action Area which is smaller than the project area. The BA relies more on the Project Area yet it shows more impacts	The EA relies on specialist analysis, while the (wildlife) BA directly analyzes impacts to threatened and endangered species and their habitat. Therefore, effects are analyzed at both the

Comment #	Comment	Response
	at the project level than the Action Area level."	action area and the project area scales. The Parks Eddy Project was developed to address sediment sources to a key watershed, stating "The Action Plan for the Shasta River Watershed Dissolved Oxygen and Temperature TMDL includes land stewardship practices and activities that minimize, control, and preferably prevent discharges of fine sediment, nutrients and other oxygen consuming materials from affected waters of the Shasta River and its Class I and II tributaries (pg. 8). The Plan also notes that reduced sediment loads could lead to increased frequency and depth of pools for lower stream temperatures overall and an increase in the amount of lower temperature pool habitat. While there is no reduction in dissolved oxygen TMDL prescribed for the headwater reaches, sediment source reduction in the headwaters will aid in the achievement of downstream dissolved oxygen goals." (EA pg. 11) Proposed actions will occur on or adjacent to existing road and trail systems. According to the Purpose and Need "A need exists to reduce sediment sources to help restore riparian and aquatic habitats to improve and maintain water quality, in alignment with the Shasta McCloud Management Unit Watershed Restoration Action Plan and Waiver of Waste Discharge Requirements." (EA pg. 8) The project area boundary encompasses only federal lands. The Action Area scale is more biologically meaningful as it assesses the potential for effects, including noise disturbance to NSOs, within 0.25 mile of all proposed activities, regardless of ownership, as described in the

Comment #	Comment	Response
		BA on pgs. 8-9 and pg. 31; and in the EA on pg. 123.
CC #15	"…we would argue that all remaining suitable N/R/F habitat should be protected for the NSO."	No nesting, roosting or foraging (N/R/F) habitat will be degraded, downgraded, or removed under any alternative considered in detail for the Parks-Eddy Watershed Restoration Project (BA pg. 40, Table 12; LOC pg. 3). See also the response to comment CC #7 regarding the purpose and need for the project.
CC #16	"The EA further states that N/R/F habitat is considered to be moderate to lower quality and most of the action area is not considered suitable N/R/F NSO habitat. The EA fails to state how these assertions were determined."	Habitat determinations and methodology are discussed in the BA and EA (BA pgs. 10-11, 25-34; EA pg. 125). A review of the Forest's 2007 Existing Vegetation data and 2010 and 2012 aerial photographs were paired with extensive ground-truthing within NSO cores and home ranges, areas along roads and trails, and at recreation sites to lead to the final habitat quality determinations.
CC #17	"Table 17 shows the suitable N/R/F habitat within the Action Area Home Ranges and Cores for all 4 territories. All of the territories are below minimum FWS habitat thresholds for reproduction and all are at 'take' level."	See also the response to comment CC #13. The current lack of suitable and dispersal habitat in the NSO action area and project area is largely due to the ultramafic soil types found in the majority of these areas (EA p. 102; BA pgs. 21, 23, 25-28, 31-34, 44, and 46-47). This soil type does not provide for adequate growth and regeneration for producing quality habitat for NSO. The soil type, coupled with the elevational range, lack of water and vegetation types (which generally lack the understory component and species composition typically associated with NSO habitat described in the BA on pgs. 25-28), accounts for the general lack of suitable (and dispersal) habitat in the action area and project area. Most of the suitable habitat is concentrated within the main drainages along the perennial Eddy and Parks Creeks. As the proposed road, trail and trailhead actions under

Comment #	Comment	Response
		Alternative 2 (and all action alternatives considered in detail) would not remove, downgrade or degrade the function of suitable (or dispersal) habitat in any of the four home ranges or the action area, there would be no reduction below the current levels of suitable habitat. The FWS concurred with the Forest's determinations that the project may affect, but would not adversely affect, the NSO (or its critical habitat) and did not complete formal consultation where incidental take is potentially considered (refer to the LOC pg. 3 and EA-Appendix A pg. A-85). For context, the habitat thresholds referenced by the commenter, though not specified in the comment, are from the 2009 'Regulatory and scientific basis for USFWS guidelines for evaluation of take for northern spotted owls on private timberlands in California's Northern Interior Region'. These are not binding thresholds for habitat types/amounts within an NSO core or home range to support reproduction, but rather are guidance values. They are not regulations and are not intended to substitute for regulations. The habitat levels within NSO cores and home ranges, in combination with other factors such as distance to water, elevation, slope position, aspect, etc. are used by the Forest Service and the FWS in making effects determinations (BA pg. 30).
CC #18	"Within the Eddy and Scott LSRs combined there are only 56 acres (<1%) of N/R habitat, and 460 acres (4%) of foraging habitat. It is clear these LSRs are not being managed for the benefit of late-successional species such as the NSO."	This comment is outside the scope and purpose and need of this project. One major contributing factor to the poor NSO habitat quality is the large amount of ultramafic soil found within the project area (EA pg. 102). Coupled with the elevational range of the project area, lack of water, and vegetation type, which

Comment #	Comment	Response
		generally lacks the understory component and species composition typically associated with NSO habitat, this accounts for the general lack of suitable habitat. The proposed action reduces road density within LSR (EA pg. 42, Table 4) and will therefore benefit LSRs and suitable NSO habitat by reducing fragmentation and disturbance, as well as potential for fire starts that may cause stand-replacing wildfires. Management of LSRs is guided by the LSRA and the Forest Plan. The Parks Eddy Project was developed to address water quality concerns and improve riparian conditions and recreational use in the area. It includes activities within LSRs and is consistent with the Forest Plan and the LSRA. Incidentally, project activities will have a beneficial effect on some of the habitat conditions in the LSRs.
CC #19	"…the EA/BA states approximately 164-189 acres of combined PCEs 1-4 within designated critical habitat may be affected…This discrepancy, along with the FWS not analyzing felled large tree removal for firewood cutting demonstrates the FWS needs to reevaluate this project because clearly it didn't consult on the entire project, or wasn't aware of all the information."	The EA/BA state that approximately 164-180 acres of combined PCE 1-4 may be affected by road and trail actions. This amount varies by alternative, as explained in Table 19 (BA pg. 51) and Table 26 (EA pg. 140). FWS was provided with all available information and was informed on all stages of project development during informal consultation (BA pg. 5). The FWS issued a LOC on June 13, 2014 summarizing their concurrence with the Forest's determination of effects to NSO, NSO habitat and critical habitat. Under the ESA, cumulative effects include "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation" (50 CFR 402.02). It should be noted that the definition of cumulative effects under ESA is different from cumulative effects as

Comment #	Comment	Response
		interpreted under NEPA and the two should not be confounded or confused (refer to the BA pg. 53-54 for additional discussion of cumulative effects). As described in the response to comments CC #8, fuelwood collection on NFS lands authorized by the Forest Service through annual fuelwood collection permits is not a component of this project's purpose and need. Fuelwood collection is addressed as a cumulative effect under the NEPA (EA pgs. 140-142).
CC #20	"Seven activities are proposed including road and trail reconstruction and maintenance, and road decommissioning and closure…The project includes multiple activities that may result in direct effects to NSO breeding, feeding, sheltering and dispersing due to noise disturbance."	Potential for noise disturbance to breeding NSO pairs and the measures in place to prevent such disturbances are discussed in the BA (BA pgs. 17-20, 38, and Appendix 3). A LOP for noise-generating activities above ambient levels is required within 0.25 mile of suitable NSO habitat. The LOP will start on February 1: -If nesting NSOs are detected, the LOP will extend through September 15th within 0.25 mile of the nest. -If surveys/stand searches are completed, and nesting owls are not detected, the LOP may be lifted after July 9. -If surveys/stand searches are not completed, the LOP would remain in effect until September 15. These LOPs are expected to minimize, if not eliminate, the likelihood that project activities will have direct effects on single and/or breeding NSOs and/or their young and dispersing individuals. While NSOs may disperse and forage within the Action Area, they are generally expected to avoid areas of treatment activity and not be measurably affected by noise generating activities during dispersal (~September to

Comment #	Comment	Response
		November). FWS issued a LOC, citing these LOPs as one of the contributing factors to their determination of concurrence (LOC pg. 3).
CC #21	"The Revised Recovery Plan states that activities should be avoided in Core areas and Home Ranges of NSO. Because there is limited habitat in the Action Area; all habitat thresholds in each activity center is below minimum; we believe roads and activities should be closed and/or prohibited in all Core Areas and Home Ranges."	There is no requirement in the Revised Recovery Plan that NSO cores and home ranges not be treated. Rather, the Recovery Plan states that "within provincial home ranges, but outside core use areas, opportunities exist to conduct vegetation management to enhance development of late-successional characteristics or meet other restoration goals" (Recovery Plan, pg. III-17). The Project's consistency with the Recovery Plan is addressed in the BA (pg. 4). Closure of all roads within NSO cores and home ranges would prevent response by fire personnel and risk potential total loss of these stands during a catastrophic wildfire and would not reasonably meet the project Purpose and Need. The proposed action would close or decommission a total of 2.45 miles of road between the four NSO cores and 15 miles in home ranges, inclusive of cores (BA pgs. 44-46, Tables 13-16). While not specific to road/trail actions, the Recovery Plan lists management of roads to address fire risk as a key element of dry forest restoration (Recovery Plan pg. III-35). See also the Response to comment CC #7 regarding the Purpose and Need of the project.
CC #22	"Tables 24, 25, 26 and 27 show the road and trail actions in the 4 owl territories and proposed activities are included in each Core Area and each Home Range. These activities should not be occurring in Core Areas and Home ranges. Between the effected [sic] acreage and the	The proposed action would close or decommission a total of 2.45 miles of road between the four NSO cores and 15 miles in home ranges, inclusive of cores (BA pgs. 44-46, Tables 13-16). Based on the analysis of effects competed in the BA and consulted on with the FWS, no N/R/F habitat will be degraded,

Comment #	Comment	Response
	road/trail activities each of the 4 territories will continue to be further degraded."	downgraded or removed under the Parks-Eddy Project (BA pg. 40, Table 12; LOC pg. 3). Habitat function will be maintained, despite the potential for some suitable, dispersal, and critical habitat elements being affected (felling of hazard trees/snags, small trees and shrubs). The project includes Resource Protection Measures and LOPs that minimize effects to NSO and their habitat (BA pg. 17, Table 2).
CC #23	"There are approximately 11 site-specific actions on Parks Creek road located in designated critical habitat…The Forest considers this removal of trees in CH as being a non-significant removal of connected or critical habitat…we are at a loss as to how the Forest made this determination."	Sites selected for safety and viewshed turnouts are from a set of existing wide spots along Parks Creek Road. None of these points are located in suitable habitat (BA Appendix 1, Map 1). Trees and shrubs that might be removed are generally small and will be moved from sight along and off the road in accordance with visual quality RPM Measure VQ-1. They will be left on site/out of view from the road (primarily downslope in forested areas and on serpentine barrens) as coarse wood in accordance with project design features (BA pgs. 16 and 19, RPM WF-7a, and Appendix 4). Hazard trees, snags and shrubs/small tress would only be felled/cut as necessary to meet the project Purpose and Need. The vegetation effects to NSO habitat or their prey would be linear, narrow and site-specific (as the commenter notes).
CC #24	"Table 28 shows the miles of road and acreages affected by the project in designated critical habitat. They are 38.2 miles of road and 164.25 acres. The table does not break down the amount of N/R/F and dispersal habitat for roads and acreages. This information needs to be disclosed."	This information is available in Table 18 of the Biological Assessment (BA pg. 50; EA Appendix A, pg. A-55). The EA includes summary information from the BA and other resource reports in Chapter 3, and the BA is included in the EA as Appendix A.
CC #25	"There are four NSO home ranges/cores within the Action Area…It would have been helpful had the Forest included a table that showed current habitat pre and post project."	No habitat will be degraded, downgraded or removed under any of the action alternatives considered in detail, therefore the pre- and post acreages of suitable (and critical) habitat are identical

Comment #	Comment	Response
		(BA pg. 40, Table 12; LOC pg. 3).
CC #26	"These time frames [1 to 5 years] do not account for the loss of hazard trees in LSR/CH. If a nest tree is cut down it will take at a minimum 80 years and more likely up to 200 years before the tree can be replaced and used as a nest tree… We don't believe the time frames used for analyses is an accurate portrayal of cumulative effects."	If trees or snags that may be used by nesting NSOs are an identified hazard to the public, or completion of the project activities, they may be cut to alleviate the hazard. Per RPM No. WF-6 (EA, pg. 32), "hazard tree identification and felling along roads, trails, and near facilities will follow the 2012 Regional Hazard Tree Guidelines. Roads/routes will be reviewed prior to implementation to determine if potential nest trees for NSO (or northern goshawk, or rest/den sites for fisher/marten are occupied or will be affected). If occupied, the NSO nesting LOP would be implemented until the nesting period ends." The potential effects to suitable (including nesting) habitat elements were assessed in the BA under direct and indirect effects (BA pgs. 39-43). The 1 to 5-year timeframe is the applicable timeframe for assessing direct and indirect effects from implementation as this is the term during which the project actions are expected to be completed (BA pgs. 11, 53; EA pgs. 124, 125). As described, with supporting rationale, in the BA (pgs. 10, 53 and 54) and EA (pgs. 125, 141-142), cumulative effects are addressed over a 10-year period. This timeframe represents the time in which all project activities are expected to occur and overlap with any potential effects of reasonably foreseeable future federal, State or private actions, given the predicted timeline to complete project activities and its short and long term effects. Refer to Appendix E of the EA (pg. E-1) for the definition of cumulative effects under the NEPA, and the BA (pg.

Comment #	Comment	Response
		37) and EA-Appendix A (pg. A-42) for the definition of cumulative effects under the ESA. The commenter's concern regarding timeframes for cumulative effects is noted; however the temporal (and spatial) bounding for direct, indirect and cumulative effects is in accordance with both the NEPA and the ESA. The completed analysis, based on the scope and scale of potential direct and indirect effects combined with resource protection measures, determined that habitat function would not be removed, downgraded or degraded even though minor elements (hazard trees/snags, small trees, shrubs/brush) may be affected (BA pgs. 1, 40-44, 48-49, and 54-55; EA pgs. 134, 136, 138-139). The FWS concurred with this determination (LOC pgs. 2-3; EA-Appendix A pgs. A-84-A-85).
CC #27	"The survey results on pages A12, 13 and 14 prove the revised 2012 survey protocol was not followed. It appears the 1992 protocol and misapplied portions of the 2012 protocol were used. But there is no assurance that surveys of 6 visits per year for 2 years were conducted for any of the four owl territories prior to the development of this project. The Forest continues to ignore the 2012 survey protocol that is required for use by the FWS."	Project development meetings, including discussions of survey plans, were held with the FWS on January 23 and February 7, 2014 (BA, pg. 5). Private landowners (MichCal) were also contacted and coordinated with on surveys (March 25/26/27, 2014 personal communications with Bobbie Douglas, BA pgs. 36, 54). In addition, the project's survey plan was reaffirmed at the annual SMMU survey coordination meeting held with FWS on March 20, 2014 (notes are in the project record). The project's survey plan and FWS/private lands coordination are in accordance with direction from the 2012 NSO Survey Protocol (pg. 5), and survey guidance for disturbance-only projects (pg. 17). The Forest, with the FWS, determined that 6-visit protocol surveys will be completed in 2014 and 2015. Following 2015, survey needs will be discussed at the annual coordination

Comment #	Comment	Response
		meeting, based on planned road and trail work locations. LOPs will remain in place throughout project implementation (see also the response to comment CC #29).
CC #28	"The EA states that activity center searches and/or spot checks will be continued prior to and throughout project implementation as funding and personnel are available. The EA claims this is in accordance with the 2012 survey protocol. We strongly disagree with this assertion (as funding and personnel are available); the Forest failed to cite to the portion of the 2012 survey protocol that allegedly states this; and this 'method' will not protect the threatened NSO."	See also the response to comment CC #27 regarding survey coordination and the 2012 Survey Protocol. Yearly coordination meetings with the FWS, in accordance with direction from the 2012 NSO survey protocol (pg.5) determined that adequate survey coverage and duration were proposed and will be completed prior to implementation. Survey needs will be determined on an annual basis, depending on where work is planned for the year.
CC #29	"Since 2012 protocol surveys haven't been conducted, LOPs should remain in effect from Feb. 1 – Sept. 15 for all activities if the proposed action is chosen."	See also the response to comment CC #27. The LOP will start on February 1: -If nesting NSOs are detected, the LOP will extend through September 15th within 0.25 mile of the nest. -If surveys/stand searches are completed, and nesting owls are not detected, the LOP may be lifted after July 9. -If surveys/stand searches are not completed, the LOP would remain in effect until September 15. These LOPs are expected to minimize, if not eliminate, the likelihood that project activities will have direct effects on single and/or breeding NSOs and/or their young and dispersing individuals. While NSOs may disperse and forage within the Action Area, they are generally expected to avoid areas of treatment activity and not be measurably affected by noise generating activities during dispersal (~September to

Comment #	Comment	Response
		November). (BA pg. 38)
CC #30	"…an analysis must be conducted regarding how the project may impact NSO by the potential for incursion of barred owls."	As described in the BA on pg. 39, "While barred owls are not currently known to occur in the Action Area, they are recognized as a significant threat to the recovery of the NSO (USDI-FWS 2011). In environments where the two species compete directly for resources, maintaining larger amounts of older forest (nesting/roosting habitat) may help NSOs persist in the short term and reduce competitive interactions (Dugger et al. 2011). There are no [actions or vegetation] treatments proposed that would measurably or significantly affect suitable or dispersal habitat and it is unlikely that the project will contribute to any competitive interactions between the two species." Based on the survey data from both the Forest Service and private land (MichCal) surveys, there are currently no documented barred owl detections within the project area (BA pg. 22; EA pgs. 126, 131). This does not mean however that barred owls are not in the project area/action area, or could not move in at a later time. Based on their broader habitat and prey base needs, the FWS "assumes that barred owls now occur at some level in all areas used now or in the past by spotted owls" (Recovery Plan pg. I-8). Contrary to language in the Recovery Plan at pg. I-8, however, barred owls have not been detected during surveys in the Parks Eddy area, as noted above. Barred owls are discussed in the BA (pgs. 21-25 and 34-35) under the species status section. More importantly, project actions would not result in any removal, downgrading or degrading of suitable (or dispersal) NSO habitat under any of the action alternatives.

Comment #	Comment	Response
		Therefore, it is unlikely that the project will contribute to competitive interactions between the two species, the decline of NSO, or perpetuation of barred owls within the project area (BA pg. 39). The FWS also discussed NSO-barred owl interactions in their LOC for the project (pg.3).
CC #31	"The Revised Recovery Plan and Dugger, 2011 recommend that where barred and spotted owls compete, maintaining larger amounts of older forest (N/R habitat) may help NSO to persist in the short term. Yet this project will degrade and remove older forest."	See also response to comment CC #30. The project will not degrade, downgrade or remove older forest, but may impact elements that contribute to older forest attributes in order to achieve the purpose and need. This includes felling of hazard trees/snags along existing roads and trails and at proposed trailhead sites (e.g., Mt. Eddy trail), small trees and/or shrubs to improve sight distances and increase turnout and driver safety and where needed to realign portions of road and/or trails to reduce impacts to riparian resources. The analysis completed for the project found that suitable habitat function (nesting/roosting/foraging) and dispersal habitat function for the NSO would not be degraded, downgraded or removed (BA pg. 40) by these proposed activities and that there would not be adverse effects to NSO or its critical habitat. The FWS concurred with this determination (LOC pg. 3; EA-Appendix A pg. A-85). While there are currently no documented barred owl detections within the project area or survey area, no habitat removal is proposed under any of the action alternatives and the project is not expected to contribute to any competitive interactions between barred owls and NSOs. Therefore, it is unlikely that the project will contribute to the decline of NSO or perpetuation of barred owls within the project area (BA pg. 39).

Comment #	Comment	Response
CC #32	"The Forest concluded that direct and indirect impacts to prey are not expected to occur from short-term changes in prey density or availability. This assumption is made because the Forest believes any prey species can simply move to another area. This rationale fails to account for carrying capacity of local prey populations and whether or not owls are/will forage in these areas."	As described in the BA, there may be a short-term (one season to five-year) reduction in individual prey item availability coinciding with the felling of hazard trees/snags and removal of minimal amounts of small brush and vegetation along existing roads and trails, though any effects will likely be immeasurable, discountable, and insignificant (BA pgs. 28, 29, 46; LOC pg. 3). While possible, it is unlikely that NSO would forage along main travel routes where the majority of the vegetation impacts will take place. NSOs are also nocturnal, foraging at night. Direct effects to prey that NSO may utilize are likely to be primarily temporal and would be restricted to linear, narrow areas along existing roads and trails and at existing/proposed trailhead areas, meaning that displacement effects to prey would be focused during the day while work is taking place near these areas. The vegetated areas outside of the narrow, linear road and trail prisms would remain unaffected and available for use by NSO prey.
CC #33	"There are two THPs approved in the Action Area. One is 588 acres and the other is 297 acres…If 885 acres are clearcut in the Action Area how will that impact NSO on federal lands?...The EA states these THPs have been approved but has failed to consider how the loss of potentially 885 acres of forest will impact NSO in the project and Action Area."	There is currently one ongoing THP, and one planned THP submitted for approval within the Action Area. The ongoing Deadfall THP (02-08-106), located southwest of the project area on privately managed timberlands, includes units that are partially within the Action Area, not yet reflected in the existing condition. The THP includes clear-cutting and meadow restoration treatments outside of suitable habitat for the NSO. The submitted but currently unapproved Dale Creek THP (2-14-016-SIS) is proposed on 297 acres of adjacent private timberland directly southeast of the project area, partially within the Action Area. It includes tractor and cable yarding within suitable

Comment #	Comment	Response
		habitat in the Action Area not yet reflected in the existing condition (BA pg. 54). The California Forest Practice Rules contain specific guidelines regarding maintaining NSO habitat and treatments near nest sites (EA pg. 151). Based on the current proposed location of the THPs, no treatments will occur within a currently known home range or core for NSO. The Forest Practice Rules also contain strict guidelines regarding treatments within riparian areas. Based on the location of THP treatments there would be no combined significant or adverse cumulative effects from the effects of the Parks Eddy project when combined with the effects of the THPs (BA pgs. 53-54; EA pgs. 140-142).
CC #34	"Before any alternative is chosen the Forest needs to complete the analyses that are lacking as previously mentioned and re-consult with the FWS since information the agency should have had was obviously not given by the Forest Service. Once that is done the Forest has a unique opportunity to choose an action alternative that will actually benefit the owl and other late-successional species in the short term and the long term. Alternative 3 would permit almost 2/3 of the project to proceed as described."	See also the response to comment CC #7 regarding the Purpose and Need of the project. The analysis of the project's effects to NSO, their suitable and dispersal habitat and designated critical habitat contained in the BA is complete and was conducted through informal consultation with the FWS. The FWS issued a letter of concurrence for the project, and the Forest's determination of effects, including supporting rationale, on June 13, 2014 (see EA Appendix A, pgs. A-83 to A-86 for the LOC). The line officer, working with the responsible official, will determine which alternative best meets the purpose and need before making the final decision. The commenter has shown a preference for Alternative 3. The EA analyzed the effects of three action alternatives. This information will be presented in the Decision Notice document

Comment #	Comment	Response
		and the responsible official will have the opportunity to select the alternative that he feels is the best choice for meeting the project Purpose and Need and addressing the concerns in the project area. All three action alternatives would benefit NSO and other late-successional species and their habitat.
AK #1	Caldwell Lakes Road & Trail, 41N74 Sec 28…Deep V's and washouts are continuing to get motorized Traffic summer, winter & spring adding to the erosion. These areas and others need water bars if the road is closed or otherwise."	Under the proposed Action, roads being kept open will receive road maintenance activities that include cleaning, repairing, and re-establishing drainage features intended to mitigate erosion (EA pg. 19). Roads that are proposed for closure will be hydrologically stabilized with waterbars where needed (EA pg. 19). The Road Condition Inventory in 2012 did identify drainage and erosion issues on this portion of the Caldwell Lakes Road (41N74). Under the proposed action, the portion of 41N74 in section 28 will be decommissioned and re-vegetated in lieu of a new non-motorized trail directly uphill and parallel to the existing road. The short segment of 41N74 will be maintained from the Parks Creek Road to the junction with 41N74A and a parking area and trailhead will be developed at the intersection. Travel past this point will be on the new trail until it connects with the existing trail in Section 28 near the meadow (EA pg. 20).
AK #2	"I recommend that the road be closed at the junction of 41N74 & spur 74-A to all motorized vehicles. The junction is large enough without a big amount of earth moving and ground disturbing activity to accommodate parking and	The proposed action identifies that Road 41N74 will be closed to motorized access at the junction with Road 41N74A. Approximately 0.4 miles (beyond the junction) will be decommissioned and allow for non-motorized access only.

Comment #	Comment	Response
	trailhead."	The trailhead at the intersection of 41N74 and 41N74A (and sufficient parking for 3-5 vehicles) will be located at this junction to reduce safety concerns of vehicles parking on Parks Creek Road, which is a component of the Trinity-River Scenic Byway (EA, pgs. 20-21). (Note: The maps associated with the Draft EA included an error showing this section as motorized trail. This has been corrected for the Final EA.)
AK #3	"Recommendations [Caldwell Lakes area]: • Mark the trailhead and add directional signs to the lakes at road or trail junctions. • Waterbar all trails & roads used as trails. • Suggest using rocks to line trails in rocky open areas to mark foot pads. • Construct a bridge across the main stream crossing to prevent continued erosion. • Consider using volunteer local hiking clubs to do trail work. i.e. Mt. Shasta Trail Assn."	Some of these recommendations are included in the action alternatives. For example, road and trail maintenance activities will include the reestablishment of water bars and drainage dips while reconstruction activities will allow for the establishment of new ones. The proposed action contains an informational signboard providing forest and trail information that will be installed at the Caldwell Lakes Trailhead (junction of 417N4 and 41N74A) and directional signs will be placed on Parks Creek Road to identify the trailhead (EA pg. 21). Standard designs and procedures identified in Engineering Manual 7100-15 (Sign and Poster Guidelines for the Forest Service) will be used. In accordance with FSM 2350 (Trails, River, and Similar Recreation Opportunities), trails and trail bridges will be located, designed, constructed, and maintained so that they are suitable for the type of travel being served (Forest Plan, pg. 4-17). In addition, project work will comply with FSH 2309.18 (Trails

Comment #	Comment	Response
		Management Handbook), which provides trail specifications that are based on the recreational activities the trail is intended to provide, amount of use, and the physical characteristics of the land. The final engineering design will consider the commenter's recommended tools and will use them where appropriate. The construction of a bridge on Road 41N73 (access to West Park Lakes) was not considered given existing use levels. A low water crossing would be more compatible with existing uses, would require less maintenance, and cost considerably less than a bridge. The low water crossing would also lessen the risk of failure and increased sedimentation during high flow events. Thank you for suggestion of using volunteers to assist with the trail work and maintenance. When opportunities present themselves, the Forest Service utilizes these partnerships to the fullest. In addition, we seek out other partnership opportunities from organizations like the Student Conservation Association, American Hiking Society, International Mountain Bicycling Association, and the California State Parks Off-Highway Vehicle Recreation program.
KSWC/KFA/EPIC #1	"Our organizations and members are very supportive of the agency's proposal to reduce the long-term road maintenance costs and stream sedimentation in this project area."	Your support of the Parks Eddy project is appreciated. The intention of the project includes reducing water quality impacts from sedimentation and better managing the Forest transportation system.
KSWC/KFA/EPIC #2	"We are not convinced that public comments demanding closure of all roads in the LSR and the completion of an EIS for this restoration project are informed by knowledge of the site-specific conditions and restoration needs of this	Closing and/or decommissioning all of the roads in the LSRs would not meet the purpose and need for the project from the standpoint of providing recreation opportunities in the area (which is currently lacking in those opportunities). The Forest is

Comment #	Comment	Response
	particular project area. We are willing to provide examples of similar restoration projects that have also been supported by a Finding of No Significant Impact if such information would aid project implementation."	also required to provide access to private property, special use permit areas, for Forest management, and firefighting access. Alternative 3 was developed to decommission more roads in LSR than Alternative 2, but still retain roads needed for these purposes. A preliminary EA was completed based on initial consideration of the possible effects of the project, and to determine if an EIS was needed to analyze potentially significant impacts. The preliminary EA determined that there will be no significant impacts with any of the action alternatives.
KSWC/KFA/EPIC #3	"Perhaps an element of the project could include a kiosk or signs that describe the ecological and riparian values that the project is designed to protect as well as the many remaining opportunities for motorized recreation. In other words, we recommend that public education and law enforcement as well as physical restoration be included as part of this project so as to ensure its long-term success.	Public education in the form of information and interpretive signage is included in the action alternatives. The information board at the Parks Creek Trailhead will be retained and improved. The West Parks Lakes Trailhead will include an information board. Interpretive information will be included on these information boards and is key to informing the public of the value of the area's natural resources. As discussed in Alternative 2 (proposed action), interpretive and directional signing will be provided, where needed, for resource protection (EA pg. 22) in accordance with Engineering Manual 7100-15 (Sign and Poster Guidelines for the Forest Service) and FSM 2390, (Interpretive Services). In addition, kiosks (or informational signboards) will be installed at the Parks Creek, Eddy Creek, Caldwell Lakes, and West Parks Lakes Trailheads. Examples of trailhead information may include, but is not limited to, a trail map of both non-motorized

Comment #	Comment	Response
		and motorized trails within the area, stay limit information, OHV regulations, Leave No Trace principles, and ecological information (such as a description of the unique geology and soils of the Klamath Siskiyou region and the endemic species that occur here, as well as the fens and meadows which support unique wetland species like the California Pitcher Plant). The Shasta-McCloud Management Unit personnel conduct patrols with fire prevention and forest protection officers, and law enforcement officers when they are in the area. These patrols consist of educating the recreating public on rules and regulations and, if needed, have the authority to issue citations. MVUMs show the location of roads, trails, and designated motor vehicle use. MVUMs are made available to the public free of charge and help ensure that motorized vehicles are being operated legally.
KSWC/KFA/EPIC #4	Tamarack Flat: "…We propose converting roads 40N46 and 41N47 to non-motorized trails and encouraging use of the Tamarack Flat area for non-motorized recreation…This proposed change to non-motorized use would necessitate a public education effort in which signs and information regarding the values and appropriate use of the area should be developed."	Tamarack Flat (access via Road 40N46) is an extremely popular dispersed recreation area. Due to the steep and rocky topography, there are few areas accessible by vehicles for dispersed recreational activities. Only 16 dispersed recreation areas were inventoried along roads, during analysis within the entire project area. A number of those areas are located at Tamarack Flat. The project purpose and need identified that the "need exists to protect access to dispersed camping opportunities to ensure that the public can easily access their forest and recreate" (EA pg. 9). A project level TAP was conducted for the project that considered the conditions, risks and benefits associated Roads

Comment #	Comment	Response
		40N46 and 41N47. The TAP recommended maintenance of the roads as they currently exist and mitigation of associated risks. Converting these roads to non-motorized use would reduce access to the dispersed recreation areas and limit the area to non-motorized access only. This action would not meet the Purpose and Need for transportation management and dispersed campsite management as well as Alternatives 2 and 4. Impact to Parks Creek from adjacent dispersed recreation areas will be mitigated by stabilizing the streambanks and restricting vehicular access to riparian areas (EA pg. 22).
KSWC/KFA/EPIC #5	Trailheads: "We are supportive of the proposal to establish trailhead parking areas for Parks Creek, Caldwell Lakes and Parks Lakes…We also support the development of toilets to reduce the impacts of human waste. We believe that opposition to the proposed trailhead establishment is not supported by the site-specific conditions…"	Establishing trailhead parking areas will reduce existing safety concerns for vehicles parking on Parks Creek Road, a designated Scenic Byway, as well as reduce resource damage to surrounding vegetation since areas will be created specifically for vehicle parking. Furthermore, installing a toilet at the Parks Creek Trailhead will resolve health and safety issues as well as protect natural resources since this location receives a tremendous amount of use (EA pg. 21).
KSWC/KFA/EPIC #6	West Parks Lakes: "Please consider managing the trail to West Parks Lakes as a non-motorized trail…User conflict could also be reduced by designation of the trail for non-motorized use…Motorized use encourages and allows for significantly more impacts to the aquatic and terrestrial values of this special place and does little to improve the recreational experience."	West Parks Lakes is a popular destination for the OHV user group (Recreation Report, pg. 15), which includes OHV enthusiasts maintaining a section of the road, as well as hunters who utilize OHVs to access this area. By providing a designated trail for motor vehicles 50 inches wide or less, the Forest is continuing to provide access to hunting, fishing, and wildlife view areas and providing for managed use (Forest Plan, pgs. 4-

Comment #	Comment	Response
		24 and 4-25). Approximately 1.5 miles of the existing road prism will be converted to a designated motorize trail for vehicles 50 inches wide or less. The remaining trail access (0.28 miles) to the lake will be reconstructed and designated for non-motorized activities, complying with FSH 2309.18 (Trails Management Handbook). Development of the trailhead, maintenance of the access road and reconstruction of the trail should provide improved management of the site and discourage illegal activities. If the meadows are damaged, options are available to provide temporary vehicle closures until corrective actions can be taken.
KSWC/KFA/EPIC #7	Eddy Creek Trail: "...We again suggest that an education and enforcement strategy be incorporated into project planning. Kiosks, information signs, law enforcement presence and the use of wildlife cameras can be part of a comprehensive effort to protect public lands that belong to all Americans."	As identified in the draft EA, kiosks (informational signboards) will be installed at the Parks Creek, Eddy Creek, Caldwell Lakes, and West Parks Lakes Trailheads (EA, pgs. 21-22). Examples of trailhead information may include, but is not limited to, a trail map of both non-motorized and motorized trails within the area, stay limit information, OHV regulations, ecological information, Leave No Trace principles, etc. Interpretive and directional signing will be provided in accordance with Engineering Manual 7100-15 (Sign and Poster Guidelines for the Forest Service) and FSM 2390 (Interpretive Services). In addition, improvements at both ends of the Eddy Creek trail will help prevent unauthorized use. The Shasta-McCloud Management Unit personnel conduct patrols with fire prevention and forest protection officers, and law enforcement officers when they are in the area. These patrols consist of educating the recreating public on rules and

Comment #	Comment	Response
		regulations and if needed, have the authority to issue citations. The MVUMs (showing roads, trails, and areas on NFS lands that are designated for motor vehicle use) are a tool the Forest Service uses for compliance purposes by showing where motorized vehicles can drive/ride legally.
KSWC/KFA/EPIC #8	"Our organizations strongly support the proposed restoration activities and would like to be informed of, and participate in, any objection resolution meetings that occur regarding the Parks Eddy Restoration Project."	The Final EA, FONSI, and draft Decision Notice will be available for public review via publication of a Notice to Object in the newspaper of record. Objections will be considered by the objection review team and objection resolution meetings will be held with any objectors. Objection resolution meetings are open to the public. Pursuant to the regulations found at 36 CFR 218.11, "Meetings are not required to be noticed but are open to attendance by the public, and the reviewing officer will determine whether those other than objectors may participate."
BH #1	Commenter supports closure of 42N19 with either a berm or gate, but would prefer a gate to allow for fire access.	The Project proposes to maintain Road 42N19 to the project boundary north of the Dewey Mine, which will address road surface and drainage issues. While a berm or gate is not proposed within the project boundary, the Forest supports owners in protecting their property and looks forward to cooperating with adjacent landowners. To prevent unlawful access to areas and roads not open to the public, the Forest relies on Public Education, the MVUM, law enforcement, and physical barriers.
BH #2	The 42N42 road system is popular for deer hunting. Commenter supports closing/decommissioning the road system in that area however, due to the wet meadow systems and large sized trees.	Thank you for your support of the project.
SN #1	Mr. Nelson had questions about Eddy Creek Road: • Where is the new campground going?	The project does not propose additional campgrounds, but is addressing access to popular dispersed recreation locations.

Comment #	Comment	Response
	• How far up the road will project implementation take place? • Will the road be paved?	The reconstruction for Eddy Creek Road (Road 41N26) is proposed to take place over the entire road. Reconstruction activities will vary depending on road conditions; segments in serviceable condition may only receive minor surface work.
SL #1	"The Forest Service should refrain from closing or decommissioning any roads but the repairs would certainly be welcome."	A project level TAP was conducted that considered the conditions, risks (geologic hazards, road user safety, erosion and sediment delivery, etc.) and benefits associated with roads in the project area (TAP Chapter 4, pgs. 19-29). The TAP made recommendations on which roads to close, keep open, reconstruct and decommission. Those recommendations were reviewed for consistency with the Purpose and Need and incorporated into the project. For some roads in the project area, the risks exceeded the benefits and the roads were recommended for closure or decommissioning. Where the benefits outweigh the risks, the project will reconstruct, stormproof and maintain many roads that are currently impassable which will improve safe public access in the Project Area.
SL #2	"The Forest Service should act as a partner with road users, and not an adversary."	Public involvement is encouraged when Forest Service projects are developed, and NEPA requires that there are opportunities for additional public involvement. The public, including road users and local residents, has been included in the development and planning of the project. During proposed action development, letters about the project were sent to the Siskiyou County Sheriff's Office and the Siskiyou County Board of Supervisors, and a short presentation was given to the Board. A public meeting was also held with residents on Eddy Creek Road,

Comment #	Comment	Response
		and another meeting with various local, state, and federal agencies was held. Signs were posted in the project area in June 2013 encouraging comments from the public. The project was included in the Shasta-Trinity National Forest Schedule of Proposed Actions (Shasta-Trinity National Forest website). A Legal Notice describing the proposed action and requesting public comments was published in the Redding Record Searchlight in December 2013, a notice was also published in the Mount Shasta Herald, and was included on the Forest website. The comments from this "public scoping" period were considered when the final proposed action and alternatives were developed. The public also had the opportunity to comment on the preliminary Environmental Assessment (Legal Notice published on June 18, 2014, also in the Record Searchlight, notice published in the Mount Shasta Herald around the same time, and the notice and documents were also made available on the Forest website). Those who have submitted comments during any comment period will have the opportunity to file objections to the final Environmental Assessment, Finding of No Significant Impact, and draft Decision Notice if so desired.
SL #3	"I would like to congratulate the Forest Service for making the latest round of maps more legible and accessible; it's a difficult task but was well done."	Thank you for feedback on the project maps. Maps may be updated as needed for the final NEPA document(s) and all efforts will be made to provide legible, readable maps in both the documents and on the Forest website.
SL #4	"…I am gratified to see camping sites reflected on Eddy Creek which have been used and loved for years. These sites are a favorite of locals, many of whom cannot afford	The Purpose and Need for this project is watershed restoration to promote long-term ecological integrity while providing safe and efficient access for administration of NFS lands and

Comment #	Comment	Response
	a four wheel drive vehicle to access areas further up the canyon. Inclusion of these sites is an important success for justice issues…It is those with modest and lower incomes that depend on the Forest Service to defend their access to the National Forests. The Forest Service is well positioned to be an instrument of justice by ensuring that even middle and lower class persons can continue to have broad access to national Forest lands. Inclusion of these camp sites is a step in the right direction."	recreation opportunities (EA, pg. 8). This project provides an opportunity for continued management for multiple resources, and provides a multitude of recreation opportunities including hiking, OHV riding, hunting, or dispersed camping. With RPMs for soil and water quality protection, recreation areas will be enhanced by developing trailheads and trail designation and construction. Informational signboards and directional signing will be constructed, and dispersed recreation areas will be restored, including boulder placement near sensitive riparian areas, and streambank stabilization to reduce resource damage. The Purpose and Need of the project notes that "a need exists to protect access to dispersed camping opportunities to ensure that the public can easily access their forest and recreate" (EA, pg. 9). This opportunity will still be available in the Eddy Creek area. Furthermore, where known dispersed recreation areas do not pose a threat to resources such as meadows, streams, or wetlands, the user created routes accessing the sites will be incorporated into the Forest transportation system and included on the MVUM (EA, pg. 22). The Parks Eddy project road actions affect all users in terms of motorized and non-motorized access to roads, trails, dispersed recreation areas, and for other forest uses, regardless of income. A Civil Rights Impact Analysis was completed for the MTM FEIS (FEIS Appendix H), which considered the potential impacts of implementing MTM on various groups, including

Comment #	Comment	Response
		elderly, disabled, Native Americans, and other groups. This project was developed consistent with MTM.
SL #5	"…Forest Service is still planning to close or decommission miles and miles of road...I know the roads slated for closure/decommissioning and there is no basis for their closure. In almost every case the road surfaces are almost entirely sound with little or no sign of erosion and the roads have adequate and functioning drainage facilities…Every one of these roads provides access that is important to somebody for legitimate, sound and non-destructive activities…"	Not all segments of roads proposed for closure or decommissioning are actively eroding, and factors other than active erosion contributed to the decision to include some roads in the decommissioning or closure category. The road system in the Parks Eddy area was designed and built to accommodate a timber program that is no longer active. Road maintenance funding has been reduced making it difficult to maintain roads in areas where no other funding sources exist to support road maintenance. Also, some of the smaller spurs proposed for decommissioning are overgrown and have not been used in decades. Many of the road segments that have problems with erosion and drainage are located on road systems that are targeted for maintenance or reconstruction activities that are designed to address drainage issues. Sediment source inventories (SSIs) completed in the watershed in 2002, 2011, and more recent road condition surveys completed in 2012 have documented erosion and drainage concerns on in many areas of the Parks Eddy Project (Hydrology Report pg. 19). Problems include plugged and undersized culverts, interception of sub-surface flows (from roadcuts), rilling, gullying, and undercutting of unstable areas due to poor road location.
SL #6	"…excluding the majority of responsible users will only penalize them, while those very few who are irresponsible road users will simply continue to cause problems. Shutting out responsible persons will eliminate one of the	The project area is popular for a variety of recreation uses including hunting, fishing, hiking, horseback riding, OHV travel and firewood gathering, but the lack of road maintenance over the past few decades has reduced the opportunities for safe

Comment #	Comment	Response
	few checks that presently may mitigate damage caused by a few irresponsible road users…"	access for these activities. While the project does propose permanent decommissioning of some routes, a larger percentage will be reconstructed or maintained. Without the project, the recreating public will lose access to much of the road systems in the area. We agree that maintenance and development in the project will encourage responsible uses, and will discourage the irresponsible and illegal use.
SL #7	"Existence of Forest Service roads in this drainage provide substantial net benefits, and closure of these roads would have long-term disastrous consequences for the environment, for individuals who become arbitrarily shut out of their favorite places, for economic justice and for the economy."	See response to SL #6. The current lack of road maintenance in the area effectively prevents motorized access for most individuals who do not have short wheel-base, high clearance 4-wheel drive vehicles. While the project does propose some road decommissioning, overall motorized access will improve and those who do not have the use of a high-clearance vehicle will have safer and more extensive motorized access. Simultaneously, by adding currently unauthorized routes (that access dispersed recreation areas) to the Forest transportation system, legal access will be improved since these routes will be identified on the MVUM. Eddy Creek Road (41N26) and the two main connecting roads (41N20 and 41N26) are currently nearly impassable for most vehicles. Post project, these roads will be managed as Maintenance Level 2 roads. The effects analyses of road closures and decommissioning for natural resources determined that closure or decommissioning roads may have minor temporary effects on resources but

Comment #	Comment	Response
		would not have negative long term effects on those resources.
SL #8	"These roads provide access to vast firewood resources. While these resources constitute a sustainable, renewable and locally grown fuel and a source of income for our local economy, these same resources pose a hazard if they are not removed."	No data is available regarding the cutting of fuelwood as an income-generating activity in the County, although the project area is open for fuelwood cutting and is known to be utilized for fuelwood. Fuelwood cutting is open in a portion of the Project Area, and is limited to dead and down wood within 100 feet of the roadway in a large portion of the Project Area. No changes to the rules for fuelwood cutting will be made by implementing any of the action alternatives. Removal of woody debris along roads with fuelwood cutting may reduce the fire hazard along roads by reducing the volume of woody debris. However, while down woody debris along closed or decommissioned roads would not be available for fuelwood cutting (and hence fuels reduction), the opportunity for human-caused fire starts would be reduced on those closed/decommissioned roads.
SL #9	"Access to firewood is a boon to the Forest Service via woodcutting permit sales 'free' forest fuel load reductions. Access to the firewood is a boon to the local economy because it provides income and low-cost heating for low-income persons. Emissions for California Certified woodstoves are clean, cleaner than will be the case when this wood, if left in the Forest, is consumed in a wildfire."	The closing and/or decommissioning of some roads will reduce access to available roadside fuelwood for cutting. However, the maintenance and reconstruction of other roads, making them more passable, may increase the availability of roadside fuelwood to non-four wheel drive vehicles, countering the loss from road closure/decommissioning. This suggests that the accessibility of roadside fuelwood would not be significantly increased or reduced to any population, including the low-income group.
SL #10	"Woodcutters and other persons accessing these roads with vehicles constitute a huge "volunteer" labor force, each doing their own small part to maintain the roads by	The project will not have significant adverse effects on the human environment (EA, Environmental Impacts section, pgs. 36-203) and the draft FONSI (EA pgs.204-211), and will have

Comment #	Comment	Response
	cutting low-hanging branches, rolling boulders off the roadway, and filling ruts and other forms of naturally occurring erosion with rocks to check erosion. Closing these roads is a catastrophe for personal liberty, the environment, the economy and justice and social equity—a very poor management decision made all the more egregious because any theoretical environmental benefits of these closures are miniscule and terribly outweighed by long-run environmental costs via delayed wildfire response times that will result from these closures."	beneficial effects to sensitive plants (EA pgs. 48-51), water quality (EA pgs. 64-80), wildlife and habitat (EA pgs. 142-143, and pgs. 145-195), cultural resources (EA pg. 57), soils (EA pgs. 106-110), geology (EA pgs. 60-63), and recreation (EA pgs. 88-94). The project will have a temporary positive effect to the local economy during implementation (EA pgs. 98-101). Fire and fuels specialists were involved in the project level TAP process, and have also evaluated the Parks Eddy Project proposed action (Alternative 2). The proposed action was developed based on the TAP recommendations. Special attention was given to the Wildland Urban Interface (WUI) to ensure that there was adequate access for suppression resources to protect homes, and suggested road closures where roads were parallel and duplicated access or where roads were located in creek drainages. Alternative 3 is the least desirable action alternative in that it would reduce the miles of roads in the WUI more than Alternatives 2 and 4.
SL #11	Firefighting and public safety personnel have come on record in this proceeding clearly indicating that public access to the roads ensures they remain passable for swift access in times of fire or emergency response. The Forest Service has not adequately considered the implications of this fact..."	As noted in the response to comment SL #10, fire and fuels specialists were involved in the TAP process and evaluated the proposed action. They determined that the project would result in a road system that will meet the needs from a fire management perspective.
SL #12	"A risk-weighted analysis of the long-term consequences of closing these roads indicates the roads should remain open: the probability of the closure exacerbating fire-related incidents that lead to erosion, and the magnitude of the erosion impacts when they do occur, indicates that	As noted in response to comment SL #10, fire and fuels specialists determined that the project would result in a road system that will meet the needs from a fire management perspective.

Comment #	Comment	Response
	a road closure is a net loss for water quality."	In past years fire response times in the Eddy Creek watershed have been hindered by poor conditions on open roads due to lack of maintenance. Fire events in the project area could also trigger erosion events in the future that could affect water quality. The proposed action will improve access within the Project Area for all activities (including fire response). The proposed action will also reduce erosion and sedimentation into adjacent waterways, improving water quality. Reduction of road sediment sources is one of the main purposes for the Parks Eddy project. The effects of roads on other disciplines were also considered. Each road in the project area was evaluated for resource values and risks in the Travel Analysis Plan (TAP). Access for fire suppression was considered as a component of the TAP analysis along with the risks and benefits that each road posed for other resources in the project area (e.g. recreation, hydrology, soils, geology, wildlife, vegetation, etc.). All resource risks and benefits were considered collectively in order to develop a recommendation for each road. Road closures may also benefit water quality provided that drainage problems are corrected prior to closure.
BR #1	"Is there a legal responsibility for the forest service to maintain the road as specified in the easement, which I think is level 3?"	Road 41N26 is currently a Maintenance Level 3 road, and although the maintenance level , maintenance frequency, and maintenance intensity is not part of the easement description, the Forest Service standards for a Maintenance Level 3 road are defined as: Assigned to roads open and maintained for travel by

Comment #	Comment	Response
		a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. The Manual on Uniform Traffic Control Devices (MUTCD) is applicable. Warning signs and traffic control devices are provided to alert motorists of situations that may violate expectations (FSH 7709.59, 62.32). Part of the Purpose and Need of the Projects is to address transportation system maintenance (EA, pg. 8). The proposed action also includes reconstruction of Road 41N26 which will improve current road conditions.
BR #2	"Can the USFS arbitrarily decide not to adhere to the easement as written?"	The Forest has and will continue to adhere to the written requirements of the Easement. The maintenance level, maintenance frequency, and maintenance intensity is not included in the easement description for any part of any easement for Road 41N26. Easements for Road 41N26 do describe maintenance and reconstruction as being acceptable activities under the easement, but no conditions or requirements for maintenance of the easement are included. Current road conditions throught the private section meet the requirements of a Maintenance Level 3 road and the proposed action intends to improve those conditions while also reducing the maintenance level to reflect the service capabilities and Forest access needs of the entire length of Eddy Creek Road. All Forest Service needs on the Eddy Creek Road are met with a Maintenance Level 2 road. As previously discussed, residents along the lower portion may determine that a higher maintenance level is preferred along the lower portion. Interested residents could create a Road Association (FSM 7730)

Comment #	Comment	Response
		and secure a Road Use Permit to maintain the road at a higher standard. The Forest is willing to work with a Road Association to discuss proposed improvements that would meet the specific needs of residents.
BR #3	"It seems that the forest service should relinquish the easement if they can't live up the original terms and return the road to the land owners. A lot was given to the US Government with this easement in exchange for a maintained road. It sounds like we are expected to maintain the road for the public if we form an association."	The Forest Service has and will continue to adhere to the written requirements of the Easement. The maintenance level, maintenance frequency, and maintenance intensity is included in the easement description for any part of any easement for Road 41N26. Easements for Road 41N26 do describe maintenance and reconstruction as being acceptable activities under the easement, but no conditions or requirements for maintenance of the easement are included. Currently, the road conditions of 41N26 under easements across private lands are acceptable for a Maintenance Level 3 road; however the proposed action intends to improve those conditions while also reducing the maintenance level to reflect the current vehicle service capabilities, Forest maintenance capabilities and Forest access needs of the entire length of 41N26. Road user comfort and convenience is not considered a priority for a Maintenance Level 3 road and user comfort and convenience is not considered at all for a Maintenance Level 2 road (FSH 7709.59, 62.32).
DM #1	Mr. Marshall requested the status of the Parks Eddy project in relation to Eddy Creek Road.	Mr. Marshall is included on the mailing list for project information and documents.