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**Eldorado National Forest  
Barrett Lake 4WD Trail Bridge Development**

**Initial Study/  
Mitigated Negative Declaration**

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**August 2012**



**State of California  
Department of Parks and Recreation  
Off-Highway Motor Vehicle Recreation Division**

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Barrett Lake 4WD Trail Bridge Development

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August 2012

Prepared for:

State of California  
Department of Parks and Recreation  
Off-Highway Motor Vehicle Recreation Division



Prepared by:

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## MITIGATED NEGATIVE DECLARATION

**Project:** Barrett Lake 4WD Trail Bridge Development

**Lead Agency:** California Department of Parks and Recreation (CDPR), Off-Highway Motor Vehicle Recreation (OHMVR) Division

**Availability of Documents:** The Initial Study for this Mitigated Negative Declaration is available for review at:

Eldorado National Forest  
7887 Highway 50  
Pollock Pines, CA 95726-9602  
Contact: Charis Parker, Resource Officer, Pacific Ranger District  
Phone: (530) 647-5430

CDPR, OHMVR Division  
1725 23rd Street, Suite 200  
Sacramento, CA 95816  
Contact: George MacDougall  
Phone: (916) 324-3788

### PROJECT DESCRIPTION

The OHMVR Division proposes to award grant funds to the Eldorado National Forest for the construction of a bridge on the Barrett Lake 4WD Trail and the reroute of the existing trail to connect with the new bridge. A 45- to 50-foot-long wood and steel bridge would be constructed to span the Jones Fork of Silver Creek, replacing the current wet creek crossing of the creek (where vehicles drive through the creek). Approximately 0.5 miles of new trail would be constructed to connect the bridge with the existing trail alignment. Most of the new trail and the bridge would be located on granite outcroppings to minimize vegetation disturbance. The purpose of the project is to reduce sediment delivery to the Jones Fork of Silver Creek resulting from the existing wet crossing, while still providing for a high quality motorized trail experience. The project also includes restoration of the 0.4 mile segment of trail that would be abandoned, and creation of a small (2-3 car) parking area in a disturbed area south the creek. The parking area would provide pedestrian access to the creek.

## PROPOSED FINDING

The OHMVR Division has reviewed the attached Initial Study and determined that the Initial Study identifies potentially significant project effects, but:

1. Revisions to the project plans and incorporated herein as mitigation would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
2. There is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment. Pursuant to California Environmental Quality Act (CEQA) Guidelines Sections 15064(f)(3) and 15070(b), a Mitigated Negative Declaration has been prepared for consideration as the appropriate CEQA document for the project.

## BASIS OF FINDING

Based on the environmental evaluation presented in the attached Initial Study, and with the implementation of the mitigation measures listed below, the project would not cause significant adverse effects related to aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, geology/soils, greenhouse gas emissions, hazards/hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation/traffic, and utilities/service systems. In addition, substantial adverse effects on humans, either direct or indirect, would not occur. The project does not affect any important examples of the major periods of California prehistory or history. Nor would the project substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. The project does not have impacts that are individually limited, but cumulatively considerable.

## MITIGATION MEASURES

**Impact BIO-1:** Project construction, use of the new trail segment and parking area, and restoration of the abandoned trail may result in direct impacts to Forest Sensitive Species (FSS) and California rare plant ranked (CRPR) special-status plant species that may occur within the project area. Such impacts could include damage to aboveground plant parts, uprooting or death of underground root structures, and loss of reproductive potential for short or extended periods of time, which would be considered potentially significant. This may include adverse impacts to Kellogg's lewisia (*Lewisia kelloggii* ssp. *kelloggii*) and Hutchison's lewisia (*Lewisia kelloggii* ssp. *hutchisonii*), both of which are CRPR special-status plants. Implementation of Mitigation Measure BIO-1 would reduce this potential impact to a less-than-significant level.

**Mitigation Measure BIO-1:** Prior to the commencement of trail and parking area construction or any ground-disturbing restoration activities, a survey for Kellogg's lewisia and Hutchison's lewisia shall be conducted by a qualified botanist. The survey shall be timed to cover the blooming periods of these species and carried out according to California Native Plant Society protocol. The survey shall apply to all areas of the proposed project subject to ground disturbance during construction. If these species are detected within the proposed project area, plants shall be flagged, mapped on improvement plans, and fenced to protect the occupied area during project activities and later recreational use.

**Impact BIO-2:** Trail restoration at the creek crossing may harass and potentially harm Sierra Nevada yellow-legged frogs (*Rana sierrae*).

**Mitigation Measure BIO-2:** Within 24 hours prior to any project construction/restoration scheduled to occur at the creek crossing restoration area adjacent to the Jones Fork of Silver Creek, a qualified biologist shall survey the work area and if Sierra Nevada yellow-legged frog individuals are found, a forest service aquatic biologist shall move individuals downstream to suitable habitat considered a safe distance from project activities.

**Impact CUL-1:** Although unlikely, human remains could be discovered during ground disturbing activities while the project is being implemented.

**Mitigation Measure CUL-1:** In the event that human remains are accidentally discovered, the project must come to a complete stop and no further excavation or disturbance of the area or vicinity will occur. The county coroner is to be called immediately to determine that the remains are of Native American ancestry. If the coroner confirms that the remains are Native American, within a 24 hours of the discovery the coroner is to contact the Native American Heritage Commission (NAHC). The NAHC will identify the person(s) believed to be the Most Likely Descendent (MLD), and the MLD will decide, along with the property owner, to appropriate treatment or disposal of the human remains and associated grave goods as provided in PRC § 5097.98. If the Native American Heritage Commission cannot identify the MLD, the MLD fails to make a recommendation, or the property owner rejects the MLD's recommendations, the property owner can rebury the remains and associated burial goods in an area not subject to ground disturbance (14 CCR 15064.5).

## **RECORD OF PROCEEDINGS AND CUSTODIAN OF DOCUMENTS**

The record, upon which all findings and determinations related to the approval of the Project are based, includes the following:

1. The Mitigated Negative Declaration and all documents referenced in or relied upon by the Negative Declaration.
2. All information (including written evidence and testimony) provided by OHMVR Division staff to the decision-maker(s) relating to the Mitigated Negative Declaration, the approvals, and the Project.
3. All information (including written evidence and testimony) presented to the OHMVR Division by the environmental consultant who prepared the Mitigated Negative Declaration or incorporated into reports presented to the OHMVR Division.
4. All information (including written evidence and testimony) presented to the OHMVR Division from other public agencies and members of the public related to the Project or the Mitigated Negative Declaration.
5. All applications, letters, testimony, and presentations relating to the Project.
6. All other documents composing the record pursuant to Public Resources Code section 21167.6(e).

The OHMVR Division is the custodian of the documents and other materials that constitute the record of the proceedings upon which the OHMVR Division's decisions are based. The contact for this material is:

Contact: George MacDougall  
CDPR, OHMVR Division  
1725 23rd Street, Suite 200  
Sacramento, CA 95816  
gmacdougall@parks.ca.gov

Pursuant to Section 21082.1 of CEQA, the OHMVR Division has independently reviewed and analyzed the Initial Study and Mitigated Negative Declaration for the proposed project and finds these documents reflect the independent judgment of the OHMVR Division.

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## **Appendices**

Appendix A: Environmental Assessment and Decision Notice for Barrett Bridge and Reroute Project, Eldorado National Forest, January 2011

Appendix B: Water Quality Management for Forest System Lands in California, Relevant Best Management Practices (USDA 2000)

Appendix C: Air Quality and Greenhouse Gas Emission Estimates

## CHAPTER 1 INTRODUCTION

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### 1.1 INTRODUCTION AND REGULATORY GUIDANCE

This Initial Study/Mitigated Negative Declaration (IS/MND) has been prepared by the Off-Highway Motor Vehicle Recreation (OHMVR) Division of the California Department of Parks and Recreation (CDPR). This IS/MND evaluates the potential environmental effects of an OHMVR Division proposal to award grant funding for a trail bridge construction, reroute, and restoration project known as the Barrett Lake 4WD Trail Bridge Development project (project). The project area is in the Pacific Ranger District of the Eldorado National Forest in El Dorado County, California (Figure 1). The proposed project involves:

1. Rerouting a 0.5 miles segment of trail around a wet creek crossing
2. Installing a 45- to 50-foot long bridge over the Jones Fork of Silver Creek
3. Restoring 0.4 miles of trail that would be abandoned
4. Installing new trail signs
5. Establishing a small parking area on the south side to allow access to the creek

The Eldorado National Forest has already completed a National Environmental Policy Act (NEPA) Environmental Assessment (EA) for the project (Appendix A). The EA was completed in January 2011 (USFS 2011a), and the Decision Notice and Finding of No Significant Impact (FONSI) were prepared in April 2011 (USFS 2011b). Prior to releasing state funds for the project, the OHMVR Division must ensure the project also complies with the California Environmental Quality Act (CEQA; Public Resources Code § 21000 et seq.).

CEQA and the CEQA Guidelines (14 CCR §15000 et seq.) establish the OHMVR Division as the lead agency. The lead agency is defined in CEQA Guidelines section 15367 as “the public agency which has the principal responsibility for carrying out or approving a project.” The lead agency decides whether an Environmental Impact Report (EIR), Negative Declaration (ND), or Mitigated ND (MND) is required for the project and is responsible for preparing the appropriate environmental review document.

According to CEQA Guidelines Section 15070, a public agency shall prepare a proposed ND or a Mitigated ND when:

1. The IS shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or,
2. The IS identifies potentially significant effects, but:
  - Revisions in the project plans made before a proposed Mitigated ND and IS are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
  - There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

Pursuant to Section 15070, the OHMVR Division has determined an IS/MND is the appropriate environmental review document for the project. This IS has been prepared by the OHMVR Division of CDPR in accordance with CEQA and the CEQA Guidelines.

## 1.2 LEAD AGENCY CONTACT INFORMATION

The lead agency for the proposed project is the OHMVR Division, the agency that would be approving funding for the project. The contact person for the lead agency is:

George MacDougall, OHMVR Division  
1725 23<sup>rd</sup> Street, Suite 200  
Sacramento, CA 95816  
(916) 324-3788  
gmacdougall@parks.ca.gov

## 1.3 PURPOSE AND DOCUMENT ORGANIZATION

The purpose of this document is to evaluate the potential environmental effects of the Barrett Lake 4WD Trail Bridge Development project.

This document is organized as follows:

- Chapter 1 – Introduction

This chapter provides an introduction to the project and describes the purpose and organization of this document.

- Chapter 2 – Proposed Project

This chapter describes the project location, area, site description, objectives, and characteristics.

- Chapter 3 – Environmental Checklist and Responses

This chapter contains the Environmental (IS) Checklist that identifies the significance of potential environmental impacts (by environmental issue) and provides a brief discussion of each impact resulting from implementation of the proposed project. This chapter also contains the Mandatory Findings of Significance.

- Chapter 4 – References

This chapter identifies the references and sources used in the preparation of this IS/MND.

- Chapter 5 – Report Preparation

This chapter provides a list of those involved in the preparation of this document.

## 1.4 REQUIRED PERMITS AND APPROVALS

No other permits or approvals are required for this project. The Eldorado National Forest has already approved the project.

## CHAPTER 2 PROPOSED PROJECT

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### 2.1 PROJECT LOCATION, SITE DESCRIPTION, AND USE PERIOD

The OHMVR Division proposes awarding state funds to the Eldorado National Forest for a 0.5 mile reroute of the Barrett Lake 4WD Trail (Forest Trail 16E21) and the installation of a bridge across the Jones Fork of Silver Creek in order to eliminate the existing wet water crossing of the creek where OHV vehicles must drive through the creek. The project would be conducted by the Pacific Ranger District of the Eldorado National Forest (Figure 1). The location of the project is approximately one mile north of Wrights Lake (T11N, R16E, Sections 20 and 29; see Figure 7). Representative photos of the project area are included below (Photos 1 to 9).

The Barrett Lake 4WD Trail (commonly referred to as the Barrett Jeep Trail) lies in the Sierra Nevada near the famous Rubicon Trail. The Barrett Lake Trailhead is located approximately eight miles north of Highway 50 and is accessed from Wrights Lake Road. The entrance to the trail is at Dark Lake just north of Wrights Lake. The Barrett Lake 4WD Trail is rated by some jeep users to be tougher than the Rubicon because there are no bypasses or alternate routes around tougher sections of trail (Ohranger 2012). The trail travels approximately six miles where it dead-ends at Barrett Lake, which is over 7,500 feet in elevation. The round trip to Barrett Lake and back is about 12 miles. Due to the difficulty of the trail, average speeds along the trail are extremely low, 1.5 to 2 miles per hour (mph). Dispersed camping is allowed along the trail.

The Barrett Lake 4WD Trail is only open during the dry season after ponded water from melted snow has dried up. Thus the duration of trail use varies year to year with an average of about 12 weeks during normal weather years. Below is information provided by the Eldorado National Forest that provides the length of time the trail was open from years 2006-2011. Note 2011 was an unusually high snow year with cool temperatures in the spring, which prevented the snow from melting fast.

2011: Open for 4 weeks  
2010: Open for 11 weeks  
2009: Open for 14 weeks  
2008: Open for 14 weeks  
2007: Open for 13 weeks  
2006: Open for 11 weeks

### Pyramid Inventoried Roadless Area (IRA)

The project area is within the Pyramid IRA. The IRA designation refers to substantially natural landscapes without constructed and maintained roads. Some improvements and past activities are acceptable within IRAs. IRAs are identified in a set of maps contained in the U.S. Forest Service (USFS) Roadless Area Conservation Final Environmental Impact Statement (FEIS), Volume 2, November 2000.

The following features are common characteristics in IRAs (36 CFR 294):

- High quality or undisturbed soil, water, and air
- Sources of public drinking water
- Diversity of plant and animal communities
- Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land

- Primitive, Semi-Primitive Non- Motorized, and Semi-Primitive Motorized recreation opportunities
- Reference landscapes
- Natural appearing landscapes with high scenic quality
- Traditional cultural properties and sacred sites; other locally identified unique characteristics

The Barrett Lake 4WD Trail was an established use at the time the Pyramid IRA was delineated. The USFS has determined the project would not change the character of the Pyramid IRA and would not preclude any future actions related to the IRA (USFS 2011a).

## **2.2 PROJECT OBJECTIVES**

The current alignment of the Barrett Lake 4WD Trail crosses the Jones Fork of Silver Creek and a small tributary with a wet crossing where vehicles are allowed to drive through the creek to reach the other side. This can impact water quality and aquatic species habitat through sedimentation and damage to riparian vegetation. Natural granitic features downstream of the current alignment provide the opportunity to use a bridge crossing, and access would be on durable bedrock granite surface. The purpose of this project is to reduce sediment delivery to the stream by eliminating the wet crossing while continuing to provide a high quality motorized trail experience. It would also meet the need to improve habitat for the Sierra Nevada yellow-legged frog and maintain or improve the characteristics of the Pyramid IRA.

## **2.3 PROJECT CHARACTERISTICS**

The proposed Barrett Lake 4WD Trail Reroute project involves constructing a new trail segment, installation of a trail bridge over the Jones Fork of Silver Creek, restoration of the replaced trail segment, and establishment of a small parking area south of the creek crossing. The proposed activities are further described in the following sections.

### **2.3.1 New Trail Segment**

Approximately 0.5 miles of new trail would be constructed for the reroute. Since the new trail crosses primarily exposed bedrock granite and decomposed granite soil, most of the proposed trail is void of vegetation (see Photo 2). However, some manzanita and other brush removal and pruning would occur. Approximately 0.35 acres of land would be cleared of brush to develop the trail reroute (Figure 3, Photo 4). The cleared material would not be placed in concentrated piles; rather material (all lopped tops, shrubs, grubbed stumps, and roots) would be dispersed below the trail and outside of the clearing limits. Cleared material would not be placed in water courses, snow ponds, lakes, meadows, or in locations where it could impede the flows to, through, or from drainage structures.

Trail construction on granite would require removal of brushy vegetation by hand, although a small backhoe or trail tractor may be used if necessary. The rubber-tired backhoe would access the site using the existing trail. In certain locations, boulders would be placed as needed to better define the trail where there could be confusion regarding the direction of the trail. Temporary signage may also be posted until the route is established.

It is estimated that five trees would need to be removed in order to construct the new trail segment, including two western white pines less than 8 inches in diameter at breast height (dbh), one lodgepole pine less than 20 inches dbh, and 2 lodgepole pines less than 10 inches

dbh. It is also anticipated that two conifer snags approximately 20 inches dbh would likely need to be felled. All trees would be cut and left on site.

Excavation work includes digging and backfill construction required to shape and finish the trailbed, ditches, backslopes, fill slopes, drainage dips, trail passing sections, and turnouts. Since much of the new trail is on granite outcroppings, excavation would be limited to those areas of the new trail that are not on granite.

Directional and/or safety signing would be installed to direct users to appropriate trails.

### **2.3.2 Wooden and Steel Bridge across the Creek**

A new wooden and steel bridge approximately 45 to 50 feet long and 10 feet wide would be constructed across the creek at the new location (Figure 2 and Figure 3 and Photo 1 through Photo 3). The rail height has yet to be determined, but would likely be 4.5 feet high. The foundation of the new bridge would be granitic bedrock that is currently exposed at the proposed bridge site. The new bridge would be designed and constructed to Region 5 USFS Standards to meet all safety standards for the anticipated use (Figure 4). The bridge would be designed to blend in with the surrounding landscape as much as possible. Figure 5 shows an existing bridge located at China Flat also in the Eldorado National Forest that is similar (but it is larger, covering a wider span) to what would be built under this project.

In order to minimize construction impacts, the USFS proposes to use a helicopter to carry pieces of the pre-fabricated bridge to the construction site.

### **2.3.3 Restore Closed Trail Segment**

Approximately 0.4 miles of existing trail, comprising about 0.3 acres of land, would be abandoned and restored by using mechanized equipment and hand work to rip and re-contour the trail and place native materials on the abandoned trail surface (Figure 6). Native materials, such as rocks, logs, and vegetation, would be placed on the abandoned trail to discourage further use of the closed route once the new route is established (Photo 6). The closed approaches to the wet crossing at the Jones Fork of Silver Creek (Photo 9) would be ripped to break up compacted soil and then replanted with native vegetation (Photos 7-8). Weed free straw would be used to cover bare soil until native plants can reestablish in the old trail bed.

Native materials would be placed as a physical barrier to prevent intrusion into the restored area. Signs would be posted to inform users about the restoration project. USFS staff and volunteers would patrol the area to both educate the public and to monitor the success of the restoration. Additional physical barriers would be placed, if needed.

### **2.3.4 Establish a Small Parking Area**

A small existing disturbed area of less than 1/8 acre in size south of the restored creek crossing would be formalized to allow room for parking of two or three cars and pedestrian access to the creek. Boulders and logs would be placed to delineate the area and also block any encroachment into the restored area.

### **2.3.5 Project Construction**

#### Construction Staging Areas

In order to minimize construction impacts, the USFS proposes to use a helicopter to carry pieces of the pre-fabricated bridge to the construction site. The USFS would establish one or two small (less than 1/2 acre) helicopter staging areas outside of the jeep trail at one or two of the locations shown in Figure 7. The staging areas would be established within previously disturbed areas along existing roads, and no vegetation would be removed to create the staging site. The preferred location is on Forest Road 11N39 where there are two existing timber harvest landings that provide easy access off the Wrights Lake Road and would provide a flight path to the bridge location, thus avoiding populated areas such as the Wrights Lake Recreation Area and summer home tracts. The sites would hold construction materials and construction related equipment and vehicles.

#### Construction Times and Duration

Project construction would likely begin in the late summer or fall of 2013, after Labor Day but prior to the onset of winter storms. The entire trail would be closed to public use during construction and restoration. Construction of the bridge and re-route of the trail is expected to take two weeks; installation of the bridge using a helicopter is expected to take one to two days during this two-week period. Rehabilitation of the closed route is expected to take one week. It is possible that rehabilitation of the closed route, other than blocking access, could occur the following year (2013) in August or September.

It is estimated that the helicopter would be used for approximately eight hours either in one day or split over two days (four hours per day for two days). The helicopter would be used to sling larger bridge pieces from the staging area along Wright's Lake Road (at the existing log landing or parking area adjacent to the road) to the bridge. The large material staging areas would be located over one mile from the Wrights Lake Campgrounds.

A small semi-truck would likely be used to transport the large bridge pieces such as trusses, girders, and/or decking to the bridge site from the staging area(s). Smaller materials and equipment such as concrete, mixer, small deck materials, etc. and workers would be transported to the site using 4WD trucks and trailers via the existing trail.

Construction would occur between the hours of 7:00 a.m. and 8:00 p.m. Monday through Friday.

### **2.3.6 USFS Design Criteria Incorporated into the Project**

The following Design Criteria were incorporated into the project by the USFS (USFS 2011a).

#### Aquatic and Terrestrial Wildlife

Should any federally listed threatened or endangered species (TES) be located before or during construction, the Pacific District Biologist, and/or Forest Aquatic Biologist would be immediately notified. Protection measures/mitigations would be implemented to reduce potential for effects to TES species as recommended by biologists.

### Heritage Resources

Should the project boundaries or activities be expanded beyond the current Area of Potential Effect (APE), the District Archaeologist would be notified immediately, as Section 106 compliance for this project would be incomplete until additional cultural resources review is conducted within the expanded area.

Should any previously unrecorded cultural resources be encountered during implementation of this project, all work would immediately cease in that area and the District Archeologist would be notified immediately. Work may resume only after it is approved by the District Archeologist. Should any cultural resources become damaged in unanticipated ways by the activities, the steps described in the Sierran Programmatic Agreement (SPA) for inadvertent effects would be followed.

### Sensitive Plants and Noxious Weeds

If sensitive plant occurrences are discovered during project implementation either along the proposed new route or within abandoned areas that are being restored, those occurrences would be flagged for avoidance. Newly discovered locations would be reported to the Forest Botanist and District Biologist.

All off-road equipment would be cleaned to ensure it is free of soil, seeds, vegetative matter, or other debris that could contain noxious weed seeds prior to entering the project area.

Any straw or mulch used for erosion control or in restoration of abandoned section of route would be certified weed-free or, if certified straw is not available, rice straw would be used. A certificate from the county of origin stating the material was inspected is required.

Any seed used for restoration or erosion control would be from a locally collected source (USFS 2011a).

Infestations of noxious weeds that are discovered during project implementation would be documented and locations mapped. New sites would be reported to the Forest Botanist.

### Hydrology and Soils

All applicable Best Management Practices (BMPs) would be used during project implementation including the following that are taken from the Water Quality Management for Forest System Lands in California, Best Management Practices (USDA 2000). The full description of these BMPs is contained in Appendix B.

- 2-1 General Guidelines for Location and Design of Road (Trails)
- 2-2 Erosion Control Plan
- 2-3 Timing of Construction Activities
- 2-4 Stabilization of Road (Trail) Slope Surfaces and Spoil Disposal Areas
- 2-5 Road (Trail) Slope Stabilization Construction Practices
- 2-6 Dispersion of Subsurface Drainage from Cut and Fill Slopes
- 2-7 Control of Road (Trail) Drainage
- 2-8 Constraints Related to Pioneer Road (Trail) Construction
- 2-9 Time Erosion Control Measures on Incomplete Road (Trail) and Stream Crossing Projects
- 2-12 Servicing and Refueling of Equipment
- 2-13 Control of Construction and Maintenance Activities Adjacent to Stream Maintenance Zones

- 2-14 Controlling In-Channel Excavation
- 2-17 Bridge and Culvert Installation
- 2-22 Maintenance of Roads (Trail)
- 2-23 Road (Trail) Surface Treatment to Prevent Loss of Materials
- 2-24 Traffic Control during Wet Periods
- 2-26 Obliteration or Decommissioning of Roads
- 4-9 Protection of Water Quality within Developed and Dispersed Recreation Areas

*Monitoring*

Monitoring for noxious weeds along the new route, as well as the abandoned route where there has been project related disturbance, would occur the year after completing construction and would continue for two to three years as needed (i.e., weeds are located).

The new reroute and restoration area would be patrolled by USFS staff and/or volunteers to educate the public, ensure users are utilizing the new route, and to monitor the success of restoration activities.

Figure 1 – Regional Location



Figure 2 – Project Site Map

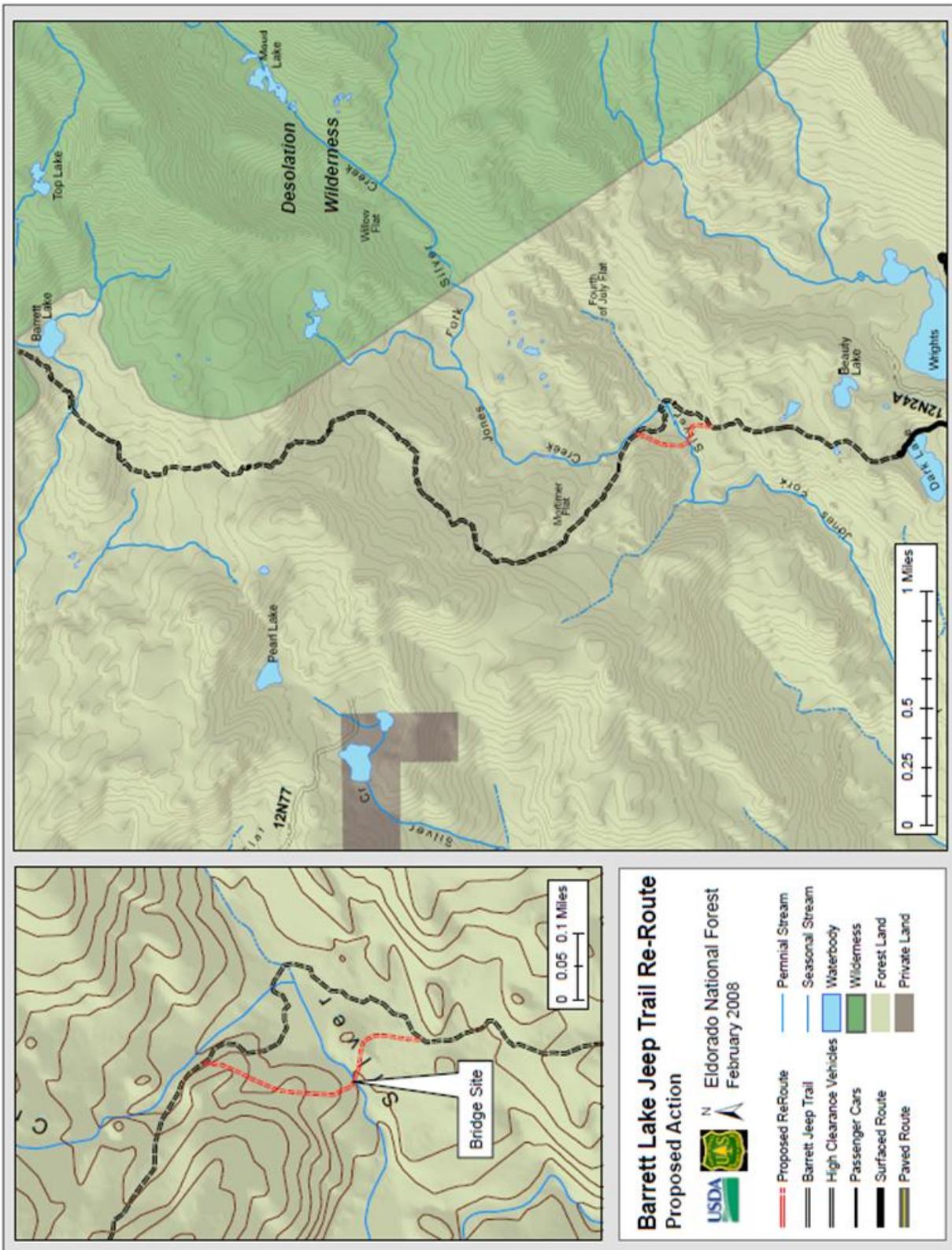
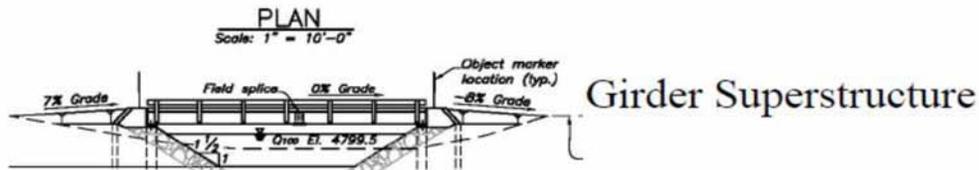


Figure 3 – Aerial Map of Reroute

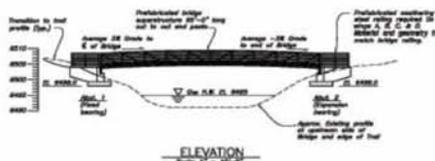
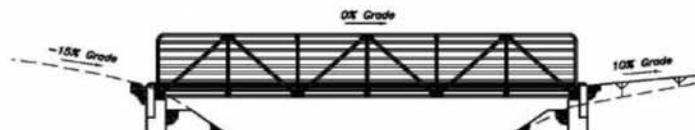


Figure 4 – Barrett Lake 4WD Trail Bridge Design

# Barrett Lake Trail Bridge Designs



Built-up Truss Superstructure



Pre-fabricated Truss Superstructure

Three conceptual drawings of bridge design. Most cost-effective design that will meet the need will be selected.

Eldorado National Forest, Pacific Ranger District

Figure 5 – Example of Proposed Bridge (from nearby China Flat Trail)



Figure 6 – Restored Trail Location

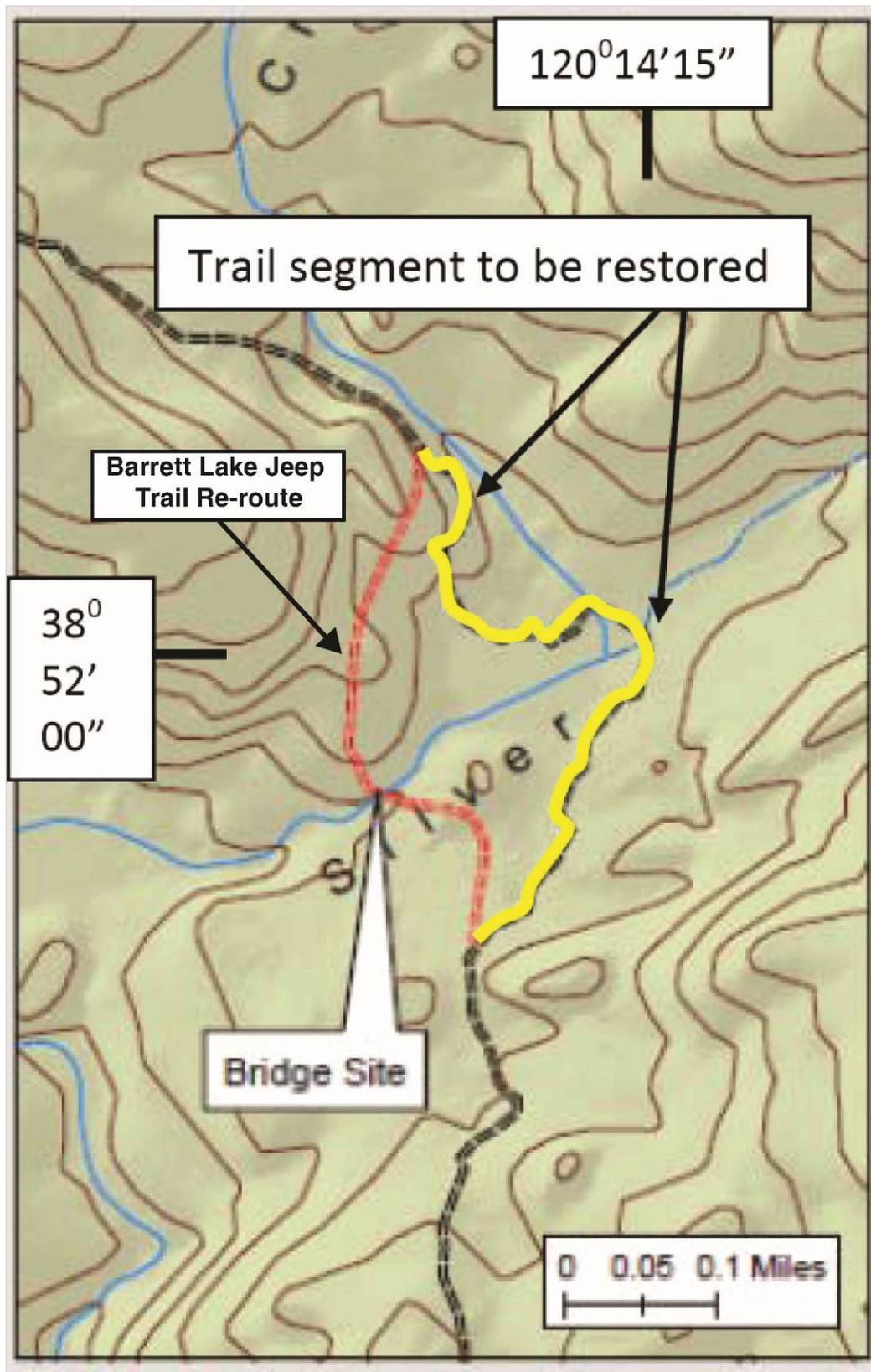


Figure 7 – Potential Construction Staging Areas

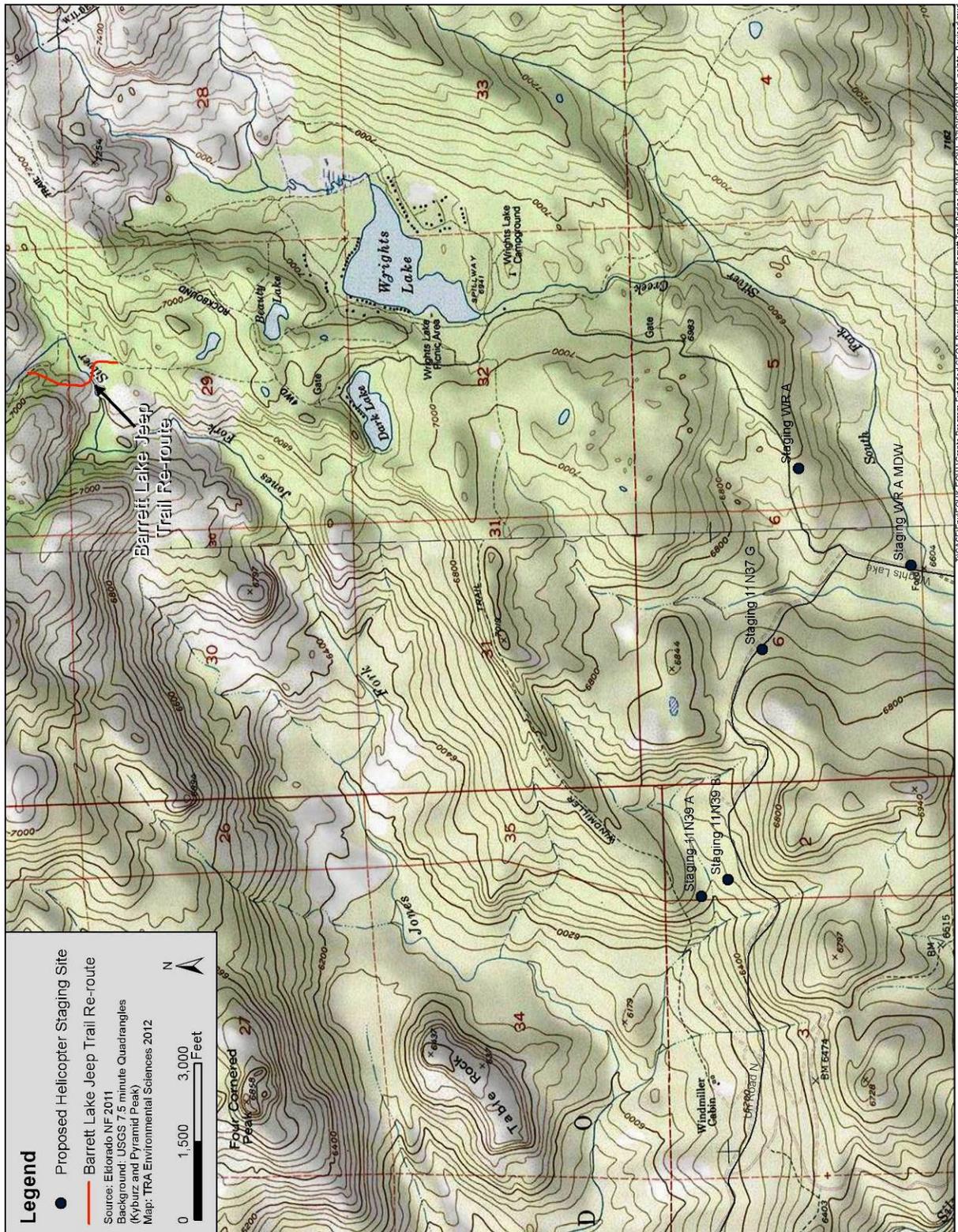


Photo 1 – Bridge Crossing Site Looking Upstream



Photo 2 – View North from New Bridge Site to Location of Trail Reroute



Photo 3 – View Southeast of Bridge Site

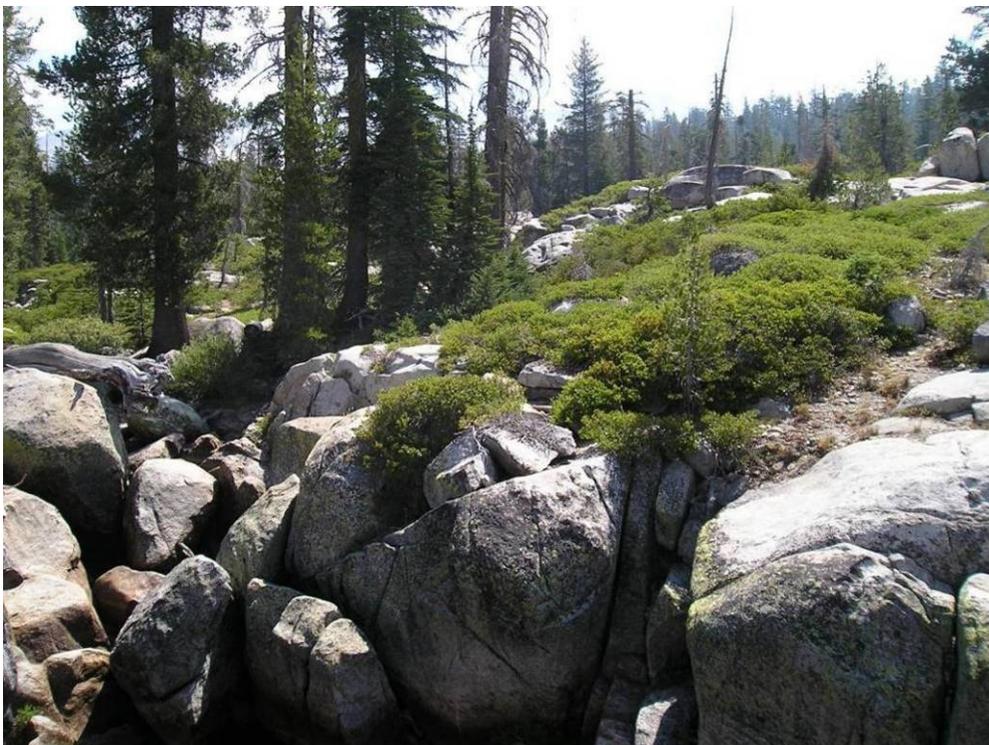


Photo 4 – Area of Brush to be Removed to Accommodate the Width of the Trail Reroute



Photo 5 – Three Trees to be Removed to Accommodate Trail Reroute

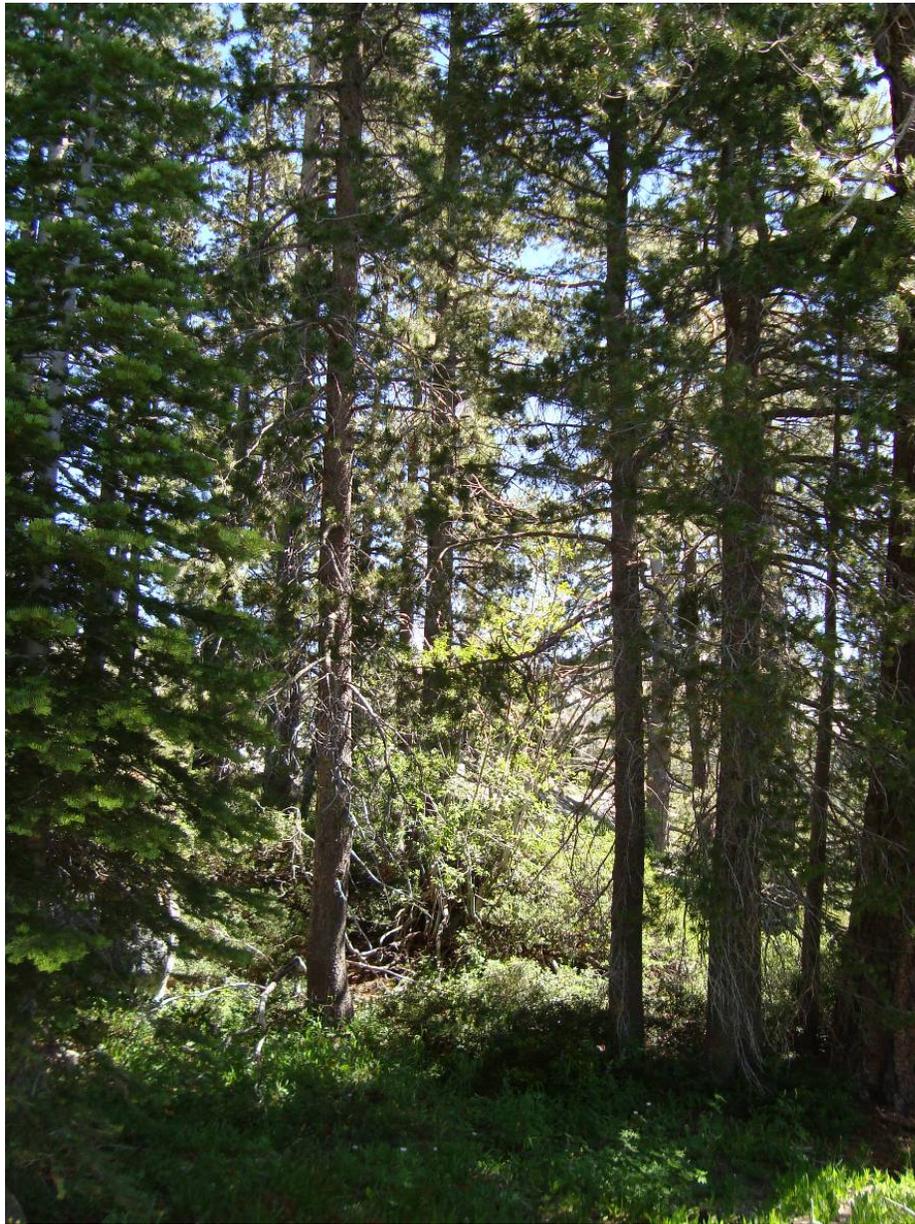


Photo 6 – View of East Bank of Creek Crossing to be Restored



Photo 7 – View of East Bank Dispersed Camping Area to be Restored



Photo 8 – Existing Trail to be Restored



Photo 9 – Existing Wet Creek Crossing



**CHAPTER 3 ENVIRONMENTAL CHECKLIST AND RESPONSES****PROJECT INFORMATION**

- 1. Project Title:** Barrett Lake 4WD Trail Bridge Development
- 2. Lead Agency Name & Address:** C DPR, OHMVR Division  
1725 23<sup>rd</sup> Street, Suite 200  
Sacramento, CA 95816
- 3. Contact Person & Phone Number:** George MacDougall, OHMVR Division, Grants Administrator, (916) 324-3788, E-mail: gmacdougall@parks.ca.gov
- 4. Project Location:** Eldorado National Forest, approximately 1 mile north of Wrights Lake in the Pacific Ranger District
- 5. Project Sponsor Name & Address:** Eldorado National Forest, 7887 Highway 50, Pollock Pines, CA 95726-9602, Contact: Charis Parker, Resource Officer, Pacific Ranger District, Phone: (530) 647-5430
- 6. General Plan Designation:** As a national forest, the property is owned by the federal government and therefore general plan designations assigned by the local land use authority do not apply.
- 7. Zoning:** As a national forest, the property is owned by the federal government and therefore zoning designations assigned by the local land use authority do not apply.
- 8. Description of Project:** See Chapter 2 Project Description
- 9. Surrounding Land Uses & Setting:** The project would take place in a national forest which comprises forested vegetation with a system of access and recreational roadways throughout the forest. The project would be located in the Pyramid IRA of the Eldorado National Forest.
- 10. Approval Required from Other Public Agencies:** none

**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:**

The environmental factors checked below would be potentially affected by this project involving at least one impact that is a "Potentially Significant Impact" if mitigation measures are not implemented as indicated by the checklist on the following pages. Note measures contained in this chapter can avoid or minimize all impacts to less than significant levels.

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Aesthetics                      | <input type="checkbox"/> Agricultural and Forestry Resources | <input type="checkbox"/> Air Quality                        |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources       | <input type="checkbox"/> Geology/Soils                      |
| <input type="checkbox"/> Greenhouse Gas Emissions        | <input type="checkbox"/> Hazards & Hazardous Materials       | <input type="checkbox"/> Hydrology/Water Quality            |
| <input type="checkbox"/> Land Use/Planning               | <input type="checkbox"/> Mineral Resources                   | <input type="checkbox"/> Noise                              |
| <input type="checkbox"/> Population/Housing              | <input type="checkbox"/> Public Services                     | <input type="checkbox"/> Recreation                         |
| <input type="checkbox"/> Transportation/Traffic          | <input type="checkbox"/> Utilities/Service Systems           | <input type="checkbox"/> Mandatory Findings of Significance |
| <input type="checkbox"/> None                            |  |   |

**RELATIONSHIP TO NEPA EA PREPARED IN JANUARY 2011**

The Barrett Bridge and Reroute Project EA and FONSI prepared by the USFS El Dorado National Forest, dated January 2011 and April 2011, respectively, cover the entire project (USFS 2011a and 2011b). As a result, and in accordance with Section 15221 of the CEQA Guidelines, the IS/MND relies on the previously prepared NEPA EA and FONSI for the following issues, which were addressed in those documents:

- Watersheds (including hydrology, geology, and soils)
- Fisheries (species on federal lists)
- Transportation
- Fire
- Wildlife (species on federal lists)
- Botany (species on federal lists)
- Cultural Resources
- Economics
- Environmental Justice

The other issues that are required to be addressed under CEQA, and which are addressed below in the CEQA IS Checklist, are:

- Aesthetics
- Agricultural and Forestry Resources
- Air Quality
- Biology (non-federal species)
- Greenhouse Gas emissions
- Hazards and Hazardous Materials
- Land Use/ Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Recreation
- Utilities/Service Systems
- Mandatory Findings of Significance

The IS/MND also addresses wildlife and botany to the extent that the project areas have the potential to support state special-status species that were not addressed in the EA/FONSI.

**DETERMINATION:**

On the basis of this initial evaluation:

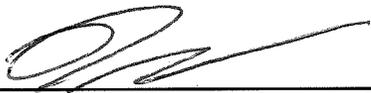
I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

I find that, although the original scope of the proposed project could have had a significant effect on the environment, there will not be a significant effect because revisions/mitigations to the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

I find that the proposed project may have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT or its functional equivalent will be prepared.

I find that the proposed project may have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment. However, at least one impact has been adequately analyzed in an earlier document, pursuant to applicable legal standards, and has been addressed by mitigation measures based on the earlier analysis, as described in the report's attachments. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the impacts not sufficiently addressed in previous documents.

I find that, although the proposed project could have had a significant effect on the environment, because all potentially significant effects have been adequately analyzed in an earlier EIR or NEGATIVE DECLARATION, pursuant to applicable standards, and have been avoided or mitigated, pursuant to an earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, all impacts have been avoided or mitigated to a less-than-significant level and no further action is required.



Dan Canfield, Planning Manager, Off-Highway Motor Vehicle Recreation Division

9-6-2012

Date

**EVALUATION OF ENVIRONMENTAL IMPACTS**

1. A brief explanation is required for all answers, except "No Impact," that are adequately supported by the information sources cited. A "No Impact" answer is adequately supported if the referenced information sources show that the impact does not apply to the project being evaluated (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on general or project-specific factors (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must consider the whole of the project-related effects, both direct and indirect, including off-site, cumulative, construction, and operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether that impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate when there is sufficient evidence that a substantial or potentially substantial adverse change may occur in any of the physical conditions within the area affected by the project that cannot be mitigated below a level of significance. If there are one or more "Potentially Significant Impact" entries, an Environmental Impact Report (EIR) is required.
4. A "Mitigated Negative Declaration" (Negative Declaration: Less Than Significant with Mitigation Incorporated) applies where the incorporation of mitigation measures, prior to declaration of project approval, has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact with Mitigation." The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less than significant level.
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR (including a General Plan) or Negative Declaration (CEQA Guidelines § 15063(c)(3)(D)). References to an earlier analysis should:
  - a) Identify the earlier analysis and state where it is available for review.
  - b) Indicate which effects from the environmental checklist were adequately analyzed in the earlier document, pursuant to applicable legal standards, and whether these effects were adequately addressed by mitigation measures included in that analysis.
  - c) Describe the mitigation measures in this document that were incorporated or refined from the earlier document and indicate to what extent they address site-specific conditions for this project.
6. Lead agencies are encouraged to incorporate references to information sources for potential impacts into the checklist or appendix (e.g., general plans, zoning ordinances, biological assessments). Reference to a previously prepared or outside document should include an indication of the page or pages where the statement is substantiated.
7. A source list should be appended to this document. Sources used or individuals contacted should be listed in the source list and cited in the discussion.
8. Explanation(s) of each issue should identify:
  - a) the criteria or threshold, if any, used to evaluate the significance of the impact addressed by each question **and**
  - b) the mitigation measures, if any, prescribed to reduce the impact below the level of significance.

**3.1 AESTHETICS**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.1.1 Environmental Setting**

The project is situated within mountainous, heavily forested lands in the Eldorado National Forest at an elevation just below 7,000 feet. Tree species include lodgepole pine (*Pinus contorta* ssp. *murrayana*), red fir (*Abies magnifica*), and Jeffery pine (*Pinus jeffreyi*). Mature trees within the project area average 40 to 65 feet in height. Interspersed among the trees are shrubs including huckleberry oak (*Quercus vacciniifolia*) and pinemat manzanita (*Arctostaphylos nevadensis*). An understory of herbaceous plants is present at creek and meadow margins. There are also a significant number of seedlings and saplings scattered throughout the project area. Finally, there are open areas of granite rock within the forested area, particularly in the vicinity of the new creek bridge. No buildings or structures are in the project area. Refer back to Photos 1 to 9 for representative photos of the area.

**3.1.2 Discussion**

*Would the proposed project:*

**a. Have a substantial adverse effect on a scenic vista?**

**Less Than Significant Impact.** The project is located in the Pyramid IRA of the Eldorado National Forest in El Dorado County, California. The Barrett Lake 4WD trail was an established use at the time the IRA was delineated, and the proposed project would not change the IRA characteristics of the area (USFS 2011a and b). The bridge would be designed to blend in with the surrounding landscape as much as possible by painting it a natural color and keeping the profile as low as possible (USFW 2011a). Restoration of the existing trail and wet crossing would lead to the reestablishment of native vegetation. The project site is not part of a scenic vista; therefore, the impact is considered less than significant.

**b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

**Less Than Significant Impact.** The project site contains scenic resources such as trees, rock outcroppings; however, none are within view of a state scenic highway. The project would remove approximately five trees as described in Project Description. The bridge would be placed on top of granite rock outcrops but would not damage the outcrop. There are no historic buildings on or near the project site. Therefore, there would be no impacts to scenic resources within a state scenic highway.

**c. Substantially degrade the existing visual character or quality of the site and its surroundings?**

**Less Than Significant Impact.** The installation of an approximately 50-foot long wooden and steel bridge would represent a change in visual character in the area as no other built features are visible from the bridge location. Views of the bridge from surrounding areas would be blocked by topography, rocky outcrops, and vegetation, and the bridge would not change the ridgeline of nearby slopes. The overall height of the bridge would not be taller than surrounding granite outcrops. The bridge would be painted to blend into the forest surroundings.

No riparian vegetation removal is required for bridge installation, the trail reroute, or the abandoned trail restoration. Some brush would be cleared to accommodate the new trail width on portions of the new trail alignment and five trees would be removed. The new reroute and bridge would not substantially degrade the existing visual character of the site or its surroundings.

**d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

**No Impact.** The project would not create a new source of substantial light or glare affecting day or nighttime views in the area as no lighting, reflective surfaces, or nighttime construction is proposed. The bridge structure would be similar to the one shown in Figure 5, which is not shiny or reflective.

**3.2 AGRICULTURE AND FOREST RESOURCES**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project*:</i>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

\*In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

**3.2.1 Discussion**

*Would the proposed project:*

- a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?**
- b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?**

- c. **Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland (as defined by Government Code section 51104(g))?**
- d. **Result in the loss of forest land or conversion of forest land to non-forest use?**
- e. **Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

**No Impact.** (Responses a-e) Although the trail and bridge installation would occur in a national forest, no commercial timberland would be affected by the work. The project area is also not considered Farmland. The work is primarily occurring on granite outcroppings. The project would not cause the rezoning of forest or timberland. There would be no conversion of forest land to a non-forest use due to implementation of the trail and bridge installation project. The new bridge crossing would ensure the trail can continue to function for public forest uses while reducing the impact of the trail on water quality.

**3.3 AIR QUALITY**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**3.3.1 Regulatory Setting**

The federal and state governments have established ambient air quality standards for “criteria” pollutants considered harmful to the environment and public health. National Ambient Air Quality Standards (NAAQS) have been established for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), fine particulate matter (particles 2.5 microns in diameter and smaller, or PM<sub>2.5</sub>), inhalable coarse particulate matter (particles between 2.5 and 10 microns in diameter, or PM<sub>10</sub>), and sulfur dioxide (SO<sub>2</sub>). California Ambient Air Quality Standards (CAAQS) are more stringent than the national standards for the pollutants listed above and include the following additional pollutants: hydrogen sulfide (H<sub>2</sub>S), sulfates (SO<sub>x</sub>), and vinyl chloride. In addition to these criteria pollutants, the federal and state governments have classified certain pollutants as hazardous air pollutants (HAPs) or toxic air contaminants (TACs), such as asbestos.

**Mobile Source Emission Standards**

In addition to ambient air quality standards, the federal and state governments have established exhaust emission standards for on- and off-road vehicles, such as cars, trucks, recreational vehicles, and heavy-duty diesel construction equipment as well as the fuels these vehicles use.

On-Road Vehicles

On-road vehicle exhaust emissions standards are regulated on a grams/mile basis according to the weight of the vehicle. The U.S. EPA has established progressive emission standards for on-road vehicles in a series of “tiers.” Most recreational Jeep and other similar vehicles would be considered light duty trucks with a gross vehicle rating less than 8,500 pounds. The most recent Tier 2 standards for light duty autos and trucks took effect for model year 2004 and later. In

California, the ARB adopted low-emission vehicle standards in 1990 and 1998, which covered vehicle model years 1994 – 2010, and currently has plans to adopt a third set of low-emission vehicle standards that will run through 2018. The state standards for on-road vehicles are contained in 13 California Code of Regulations (CCR), Division 3, Chapter 1, Motor Vehicle Pollution Control Devices.

### Off-Road Recreation Vehicles

The federal standards for off-road recreational vehicles are contained in 40 CFR Part 1051; these standards apply to model year 2006 and later engines. State standards are more restrictive than federal standards. State off-road recreational vehicle standards are contained in 13 CCR Section 2412 and apply to vehicles and engines produced on or after January 1, 1997.

### Off-Road Diesel Engines

Similar to on-road vehicles, the EPA has established progressive emission standards for non-highway diesel engines to be implemented in a series of “tiers.” Tier 2 standards apply for equipment manufactured between 2001 and 2006. Tier 3 standards apply for equipment manufactured between 2006 and 2008. The most stringent standards, Tier 4 standards, consist of an interim and final set of standards. The standards for engines less than 75 horsepower (hp) began in 2008, the standards for engines between 76 and 174 hp begin in 2012, and the standards for engines 175 hp and greater began in 2011. The U.S. EPA estimates that Tier 2 and Tier 3 standards will reduce ozone precursor and PM emissions from non-highway diesel vehicles by 50 and 40 percent by 2020, and that Tier 4 standards will achieve a further 90 percent NO<sub>x</sub> reduction and 95 percent PM reduction from these vehicles by 2030 (U.S. EPA 1998 and 2004).

In addition, the California Air Resources Board’s (CARB) In-Use Off-Road Diesel Vehicles Regulation (13 CCR §2449 – 2449.3), adopted in 2007 and amended in 2010, aims to reduce emissions of NO<sub>x</sub> and PM from in-use off-road (i.e., non-highway) diesel vehicles over 25 horsepower. The regulation requires equipment reporting, imposes limits on engine idling (no more than five consecutive minutes), and buying and selling older (typically pre-1996) off-road diesel vehicles and, beginning in 2014, requires fleets to gradually reduce emissions of oxides of nitrogen and particulate matter by getting rid of older engines, using newer equipment, and installing exhaust retrofits (ARB 2012).

### Aircraft

EPA has historically worked with the Federal Aviation Administration and the United Nations International Civil Aviation Organization to develop and harmonize international aircraft emission standards. In July 2011, the EPA published a proposed rulemaking to adopt NO<sub>x</sub> emission standards for aircraft gas turbine engines with rates thrusts greater than 26.7 kilonewtons; however, these standards do not apply to turboshaft engines such as those used in helicopters (U.S. EPA 2011d).

### ***Naturally-Occurring Asbestos (NOA)***

Naturally occurring asbestos (NOA) includes fibrous minerals found in certain type of rock formations, such as serpentine rock. Serpentinite is a metamorphic rock, derived from ultramafic rock, which is an igneous rock composed mostly of iron- and magnesium-rich minerals. Serpentinite is a rock composed mostly of the serpentine group of minerals. The serpentine mineral group includes at least twenty different hydrous, magnesium and iron silicate minerals

derived from the metamorphism of ultramafic rock. Only a few specific minerals in the serpentine group may exhibit a fibrous texture. Those minerals, such as chrysotile, are termed asbestos. Soil derived from serpentinite rock may contain asbestos.

The U.S. EPA, CARB, and the El Dorado County AQMD have adopted regulations to control emissions of asbestos-laden dust. The U.S. EPA's *National Emission Standard for Asbestos* (40 CFR Part 61, Subpart M) establishes inspection, notification, and asbestos emission control requirements for demolition and renovation activities. The standard defined demolition as the "wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility." Thus, this standard would not apply to the project.

CARB's *Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations* (17 CCR §93105) and El Dorado County AQMD's Rule 223-2, *Fugitive Dust – Asbestos Hazard Mitigation* applies to any road construction and maintenance or construction and grading operations on any property that is located in a geographic ultramafic rock unit or has NOA, serpentine rock, or ultramafic rock. According to asbestos hazard maps prepared by the California Geological Survey, El Dorado County, and El Dorado National Forest, however, the proposed project is not located in an ultramafic rock unit, an El Dorado County NOA Review Area, or an area otherwise known or suspected to contain naturally-occurring asbestos (CDC 2000 and 200a, El Dorado County 2005, USFS 2010b). Thus, these regulations would not apply to the project unless NOA, serpentine, or ultramafic rock is discovered by the National Forest. In this instance, the National Forest would be required to notify the El Dorado County AQMD no later than the next business day.

### ***Fugitive Dust Control***

El Dorado County AQMD Regulation 2 - Prohibitions, Rule 223-1, *Fugitive Dust—Construction, Bulk Material Handling, Blasting, Other Earthmoving Activities and Carryout and Trackout Prevention*, limits visible emissions, vehicle speeds, and activities under sustained winds that result in visible dust emissions. The rule also requires owner/operators to submit a Fugitive Dust Control Plan to the El Dorado County AQMD Air Pollution Control Officer prior to the start of construction activities requiring a grading permit. The proposed project does not require a grading permit and is also not expected to result in track-out onto a public road.

### **3.3.2 Environmental Setting**

Air quality is a function of pollutant emissions and topographic and meteorological influences. The physical features and atmospheric conditions of a landscape interact to affect the movement and dispersion of pollutants and determine its air quality. Federal, state, and local governments control air quality through the implementation of laws, ordinances, regulations, and standards.

The project area is in El Dorado County. The Sierra Nevada mountain range bisects and divides the County into two separate air basins, the Lake Tahoe Air Basin (LTAB) and the Mountain Counties Air Basin (MCAB). The LTAB includes the portion of the county east of the Sierra crest to the state line lies within the Lake Tahoe Air Basin. The portion of the County west of the Sierra crest to the Sacramento County line, where the project area lies, is located within the MCAB. In addition to western El Dorado County, the MCAB includes all of Amador, Calaveras, Mariposa, Nevada, Plumas, Sierra, and Tuolumne counties, as well as central Placer County.

Topography and climate throughout the MCAB varies. The foothills, mountain peaks, and valleys of the Sierra Nevada range influence and cause local differences in rainfall, temperature, and wind patterns. Elevations within El Dorado County range from a few hundred feet at the Sacramento County boundary to more than 10,000 feet above sea level at the Sierra Crest. In general, high elevation areas in close proximity to the Sierra Nevada crest have cooler temperatures and receive much more precipitation than lower elevation foothill areas. During the summer, strong eastward flowing winds transport pollutants from the San Francisco Bay Area Air Basin and Sacramento and San Joaquin Valley Air Basins into the MCAB (El Dorado County AQMD 2002). CARB officially recognizes the MCAB as an area impacted by ozone transport from upwind air basins (17 CCR §70500).

Air quality and attainment status within MCAB varies both inter- and intra-county. In general, western El Dorado County is either unclassified or in attainment of all state and federal ambient air quality standards except federal fine particulate matter (PM<sub>2.5</sub>), state suspended, or respirable particulate matter (PM<sub>10</sub>), state ozone, and federal ozone standards (CARB 2011, U.S. EPA 2011a and 2011b). Although the project area lies within western El Dorado County, it is not located within U.S. Environmental Protection Agency's (EPA) specific, federal PM<sub>2.5</sub> standard Sacramento, CA non-attainment area boundary (U.S. EPA 2011c).

Seven different county or regional governing authorities have responsibility for maintaining air quality and regulating emissions of criteria and toxic air pollutants from stationary sources within the MCAB. The El Dorado County AQMD is responsible for maintaining air quality and regulating emissions of criteria and toxic air pollutants within El Dorado County. The El Dorado County AQMD carries out its responsibility by preparing, adopting, and implementing plans, regulations, and rules that are designed to achieve attainment of state and national air quality standards. The El Dorado County AQMD currently has nine regulations containing approximately 100 rules designed to control and limit emissions from sources of air pollutants and administer state and federal air pollution control requirements (CARB 2009). For air quality planning purposes, the El Dorado County AQMD works with neighboring air districts including the Sacramento Metropolitan Air Quality Management District (SMAQMD), to address ozone non-attainment on a regional level. In 2008, the SMAQMD submitted the *Sacramento Regional 8-Hour Ozone 2011 Reasonable Further Progress Plan Draft Report*. This plan demonstrates how existing control strategies will provide the emission reductions through 2011 necessary for reasonable progress towards attaining the federal 8-hour ozone standard. Also in 2008, the SMAQMD requested EPA reclassify the Sacramento Metropolitan Area (including western El Dorado County) to severe non-attainment for ozone, providing additional time for the region to attain the 8-hour ozone standard.

### ***Sensitive Receptors***

A sensitive receptor is generically defined as a location where human populations, especially children, seniors, and sick persons, are located where there is reasonable expectation of continuous human exposure to air pollutants. These typically include residences, hospitals, and schools.

### **3.3.3 Discussion**

*Would the proposed project:*

**a. Conflict with or obstruct implementation of the applicable air quality plan?**

**Less Than Significant Impact.** The proposed project would not conflict with or obstruct implementation of the regional ozone or particulate matter attainment plans. These plans include ozone and PM<sub>10</sub> emissions from area-wide sources such as roads and construction activities, as well as mobile sources, such as off-road equipment and aircraft, in emission inventories and plans for achieving attainment of air quality standards. The project would not result in new land uses, increase urban growth, or introduce new stationary sources of air pollutants into the El Dorado County AQMD and would therefore not conflict with or obstruct an applicable air quality plan.

**b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

**Less Than Significant Impact.** The proposed project would generate less than significant short-term construction and long-term operational emissions.

Project construction activities include establishing a new 0.5-mile trail segment, including installation of a small bridge, and restoration of 0.4-miles of existing trail segment. These activities would generate fuel combustion and fugitive dust emissions. The USFS is not proposing any paving or coating operations as part of the proposed project.

Trail construction and restoration activities would occur with hand tools augmented by one or two off-road, diesel powered tractors/backhoes as necessary. This equipment could operate for two to eight hours per day as needed. The USFS would use a helicopter, which would operate for approximately eight hours total, to install the proposed bridge. Construction of the 0.5-mile new trail segment and small parking area would take approximately two weeks; installation of the bridge via helicopter is expected to take one to two days during this two-week period. Restoration of the existing 0.4-mile trail segment would take approximately one week. Much of the new trail construction and existing trail restoration would take place on exposed granite rock, reducing the potential for fugitive dust generation. Any excavated material, however, would be placed along the trail segment and re-graded and would not be transported off site. Table 1 presents the project's short-term construction emissions, as estimated using URBEMIS2007 Version 9.2.4.

Table 1. Project Construction Exhaust Emissions

Scenario	Construction Exhaust Emissions (pounds per day)			
	ROG	NOx	CO	PM10
Tractors/backhoes (2) <sup>A</sup>	0.9	5.5	4.7	0.5
Helicopter <sup>B</sup>	22.5	48.9	27.6	1.4
Total	23.4	54.4	32.3	1.9

A. Estimate calculated using URBEMIS2007 Version 9.2.4. Estimate based on two, 108 horsepower tractors/backhoes operating for seven hours per day. See Appendix C.

B. Estimate based on twin engine turboshaft powered helicopter operation for eight hours, assuming 65% mean engine load for helicopter landing and takeoff cycle (FOCA 2009). See Appendix C.

The El Dorado County AQMD has established significance thresholds for emissions of the ozone precursor pollutants reactive organic gases (ROG) and oxides of nitrogen (NOx) of 82 pounds per day. As Table 1 shows, the project would not exceed this threshold and would therefore result in less than significant ROG and NOX impacts. The El Dorado County AQMD has not established a mass significance threshold for PM10 or other related criteria pollutants, but rather considers a project to have a significant air quality impact if it would cause or contribute significantly to a violation of an applicable state or national ambient air quality standard (El Dorado County AQMD 2002). During the single worst case day the project would result in approximately 32.3 lbs of carbon monoxide (CO) and two pounds of PM10; typical daily emissions during project construction (i.e., when helicopter is not operating) would be less than five pounds of CO and one pound of PM10. These typical and worst-case daily emission rates would not cause or contribute significantly to a violation of an applicable state or national ambient air quality standard. The El Dorado County AQMD does not require fugitive dust emissions to be quantified and permits lead agencies to assume fugitive dust emission are less than significant if a project includes measures to prevent visible dust beyond project property lines. Accordingly, given the remote and rugged nature of the trail segments where work would occur, the USFS would implement the following basic construction management practices to further reduce the less than significant magnitude of the project's potential construction exhaust and fugitive dust emissions:

*Basic Construction Best Management Practices*

- 1) Water or apply weed free straw to all inactive exposed soil surfaces (e.g., road surfaces, staging areas)
- 2) Vehicle speeds on unpaved roads shall not exceed 15 miles per hour
- 3) All land clearing, grading, earthmoving, or excavation activities shall be suspended when average winds are expected to exceed 20 miles per hour
- 4) Require a certified mechanic to check and determine that all equipment is running in proper condition prior to construction operations
- 5) Properly maintain and tune all construction equipment in accordance with manufacturer's specifications

Implementation of the proposed project would result in a net increase in emissions and recreational vehicle activity associated with the 0.1 mile increase in trail distance. The project would not increase the number of visitors to the El Dorado National Forest and, as described in Section 2.1 of the Project Description, the increase in activity would be limited to an average of 12 weeks per year. The project, therefore, would have less than significant operational effects.

- c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

**Less Than Significant Impact.** Consistent with El Dorado County AQMD CEQA guidelines, the proposed project does not require a change in the existing land use designation and, as discussed in a) and b) above, would not result in construction or operational emissions that exceed established thresholds of significance. The project, therefore, would result in less than significant cumulative air quality impacts.

**d. Expose sensitive receptors to substantial pollutant concentrations?**

**Less Than Significant Impact.** The project is in a remote location absent of sensitive receptors. The project, therefore, would not expose sensitive receptors to substantial pollutant concentrations.

**e. Create objectionable odors affecting a substantial number of people?**

**Less Than Significant Impact.** The project is in a remote location absent of sensitive receptors or other populations. The project's potential construction and operational odors, including odors associated with fuel combustion, would not affect a substantial number of people and would not result in a significant impact.

**3.4 BIOLOGICAL RESOURCES**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.4.1 Background**

As discussed in Chapter 2), the Eldorado National Forest has already prepared a NEPA document in the form of an EA with a FONSI for the Barrett Bridge and Reroute Project (USFS 2011a and b). The EA, and its supporting documentation, only analyzed federal and USFS special-status species. The CEQA Guidelines allow a lead agency to use a NEPA document to support a CEQA decision; therefore, this Initial Study only analyzes CEQA special-status species not covered by the EA and FONSI, as the USFS determined as stated in the FONSI no significant impact would occur to federal special-status species.

### 3.4.2 Regulatory Setting

#### ***Federal Endangered Species Act***

The Federal Endangered Species Act (ESA) of 1973 (16 USC §§ 1531 et seq.) protects fish and wildlife species that are listed as threatened or endangered, and their habitats. “Endangered” refers to species, subspecies, or distinct population segments that are in danger of extinction in all or a significant portion of their range. “Threatened” refers to species, subspecies, or distinct population segments that are considered likely to become endangered in the future.

Federal ESA Section 9 protects federally listed endangered and threatened wildlife species from unlawful take (16 U.S.C. § 1538 (a)(1)). “Take” is defined to mean “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (16 U.S.C. § 1532 (19)). “Harm” is defined as an act that “actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering” (50 CFR 17.3). The ESA also prohibits removing, digging up, cutting, or maliciously damaging or destroying federally listed plants on federal land.

Section 7 of the ESA requires federal agencies, in consultation with and with the assistance of, the Secretary of the Interior or the Secretary of Commerce, as appropriate, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modifications of critical habitat for these species. Critical habitat is defined as specific geographic areas, whether occupied by listed species or not, that are determined to be essential for the conservation and management of listed species, and that have been formally described in the Federal Register. Section 10 of the ESA provides a means whereby a nonfederal action with a potential to result in the take of a listed species could be allowed under an incidental take permit. An incidental take permit is required when non-federal activities would potentially result in the take of a threatened or endangered species.

Under the ESA, the Secretary of the Interior and the Secretary of Commerce have the authority to list species as threatened or endangered. The ESA is enforced by the USFWS and National Marine Fisheries Service (NMFS). NMFS’s jurisdiction under ESA is limited to the protection of marine mammals, marine fishes, and anadromous fishes; all other species are subject to USFWS jurisdiction. The USFWS also publishes a list of candidate species. Species on this list receive “special attention” from federal agencies during environmental review, although they are not protected otherwise under the ESA. The candidate species are those for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened.

#### ***Migratory Bird Treaty Act***

The federal Migratory Bird Treaty Act (MBTA) (16 USC §§ 703 et seq.) enacted the provisions of treaties between the United States, United Kingdom, Mexico, Japan, and the Soviet Union, and authorizes the Secretary of the Interior to protect and regulate take of migratory birds. The MBTA is administered by the USFWS. It establishes seasons and bag limits for hunted species, and renders taking, possession, import, export, transport, sale, purchase, and barter of migratory birds, their occupied nests, and their eggs illegal except when authorized by a federal permit. Take is defined more narrowly under the MBTA than under the ESA and includes only the death or injury of individuals of a migratory bird species or their eggs. As such, take under the MBTA does not include the concepts of harm and harassment as defined under the ESA.

More than 800 species of birds are protected under the MBTA. Specific definitions of migratory bird are addressed in the international treaties. In general, birds that migrate to complete different stages of their life history or to take advantage of different habitat opportunities during different seasons are “migratory birds” subject to the MBTA.

### ***Bald and Golden Eagle Protection Act***

The federal Bald and Golden Eagle Protection Act (16 USC §§668 et seq.) makes it unlawful to import, export, take, sell, purchase, or barter any bald eagle or golden eagle, or their parts, products, nests, or eggs. “Take” includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing. Exceptions may be granted by the USFWS for scientific or exhibition use, and for cultural use by Native Americans; however, no permits may be issued for import, export, or commercial activities involving eagles.

### ***Federal Code of Regulations: USFS Land and Resources, USFS Sensitive Species***

Each national forest must adopt a Land and Resource Management Plan (LRMP) that provides standards and guidelines (S&Gs) for managing each national forest’s resources. The purpose of an LRMP is to guide efficient use and protection of forest resources, fulfill legislative requirements, and balance local, regional, and national needs. An LRMP emphasizes the maintenance or improvement of endangered, threatened, and sensitive species habitat, and game species habitat. The S&Gs provide direction for managing sensitive species and their habitats. The Eldorado National Forest adopted a LRMP in 1989, which includes general forest-wide S&Gs as well as management area specific S&Gs (USFS 1988).

USFS Sensitive (FSS) species are species identified by the Regional Forester for which population viability is a concern as defined in the USFS Manual Chapter 2670. The USFS develops and implements management practices to ensure that plants and animals do not become threatened or endangered and to ensure their continued viability on national forests. It is USFS policy to analyze impacts to FSS species to ensure forest management does not cause a significant trend toward federal listing or loss of viability.

### ***California Endangered Species Act***

The California Endangered Species Act (CESA), administered by CDFG, protects wildlife and plants listed as “threatened” or “endangered” by the California Fish and Game Commission, as well as species identified as candidates for listing. CESA restricts all persons from taking listed species except under certain circumstances. The state definition of take is similar to the federal definition, except that CESA does not prohibit indirect harm to listed species by way of habitat modification. Under CESA, an action must have a direct, demonstrable detrimental effect on individuals of the species.

CDFG maintains lists of animal species of special concern (CSSC) that serve as “watch lists.” A CSSC is not subject to the take prohibitions of CESA. The CSSC are species that are declining at a rate that could result in listing under the federal ESA or CESA and/or have historically occurred in low numbers, and known threats to their persistence currently exist. This designation is intended to result in special consideration for these animals and is intended to focus attention on the species to help avert the need for costly listing under federal and state endangered species laws. This designation also is intended to stimulate collection of additional information on the biology, distribution, and status of poorly known at-risk species, and focus research and management attention on them.

State agencies should not approve projects as proposed that would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy (Fish and Game Code § 2053). Under Sections 2080.1 or 2081(b) of the California Fish and Game Code, CDFG may permit incidental take of species listed under CESA, except for species that are designated as fully protected.

### **California Fish and Game Code**

The California Fish and Game Code protects a variety of species, separate from the protection afforded under CESA. The following specific statutes afford some limits on take of named species: Section 3503 (nests or eggs), 3503.5 (raptors and their nests and eggs), 3505 (egrets, osprey, and other specified birds), 3508 (game birds), 3511 (fully protected birds), 4700 (fully protected mammals), 4800 et seq. (mountain lions), 5050 (fully protected reptiles and amphibians), and 5515 (fully protected fish). Fully protected species may not be taken or possessed except for scientific research or through approval and implementation of a Natural Communities Conservation Plan.

Section 3503 simply states, "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." The exceptions generally apply to species that are causing economic hardship to an industry. Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted." Section 3505 prohibits taking, selling, or purchasing egrets, osprey, and other named species or any part of such birds.

### **California Native Plant Protection Act**

The California Native Plant Protection Act (CNPPA) of 1977 preserves, protects, and enhances endangered and rare plants in California by specifically prohibiting the importation, take, possession, or sale of any native plant designated by the California Fish and Game Commission as rare or endangered, except under specific circumstances identified in the Act. Various activities are exempt from the CNPPA, although take as a result of these activities may require other authorization from CDFG under the California Fish and Game Code.

### **Regulated Waters**

Impacts to stream channels (bed and bank) are specifically addressed by Fish and Game Code Sections 1600 *et seq.* and may fall under the jurisdiction of the Clean Water Act Section 404 and Section 401 permit process and the Porter-Cologne Water Quality Control Act. Permit provisions of the Porter-Cologne Water Quality Control Act are enforced by the Regional Water Quality Control Board (RWQCB).

### **Clean Water Act, Section 401**

Any applicant for a federal permit to impact wetlands under Section 404 of the Clean Water Act, including Nationwide permits (NWP) where pre-construction notification is required, must also provide to the U.S. Army Corps of Engineers (USACE) a certification from the State of California. The "401 Certification" is provided by the State Water Resources Control Board through the local RWQCB.

The RWQCB recommends the application be made at the same time that any applications are provided to other agencies, such as the USACE or the USFWS. Application is not final until completion of environmental review under CEQA. The application to the RWQCB is similar to the pre-construction notification that is required by the USACE (see discussion of Section 404, below). It must include a description of the type of wetland habitat that is being impacted, a description of how the impact is proposed to be minimized and proposed mitigation measures with goals, schedules, and performance standards. The RWQCB looks for mitigation that is on site and in-kind, with functions and values as good as or better than the wetland that is being removed.

#### Clean Water Act, Section 404

As part of its mandate under the Clean Water Act, the EPA regulates the discharge of dredged or fill material into "Waters of the US" under Section 404 of the Act. "Waters of the U.S." include territorial seas, tidal waters, and non-tidal waters in addition to wetlands and drainages that support wetland vegetation, exhibit ponding or scouring, show obvious signs of channeling, or have discernible banks and high water marks. The EPA also regulates excavation and changes in drainage. The discharge of dredged or fill material into Waters of the U.S. is prohibited under the Clean Water Act except when it is in compliance with Section 404 of the Act. Enforcement authority for Section 404 was given to the USACE, which it accomplishes under its regulatory branch.

#### **Fish and Game Code Section 1602**

Specifically, Section 1602 requires an entity to notify CDFG of any proposed activity that may substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing pavement where it may pass into any stream, river, or lake. CDFG uses the USFWS definition of wetlands when regulating these activities.

#### **CDFG and CEQA**

As a trustee agency, CDFG comments on the biological impacts of development projects reviewed under CEQA. CEQA gives CDFG jurisdiction to comment on the protection of habitats deemed necessary for any species to survive in self-sustaining numbers, but does not allow CDFG to govern land use. It stipulates that the state lead agency shall consult with, and obtain written findings from, CDFG in preparing an EIR on a project, as to the impact of the project on the continued existence of any endangered or threatened species (Public Resources Code § 21104.2).

### **3.4.3 Environmental Setting**

#### **Vegetation Communities**

Project activities related to the development of the 0.5 mile (0.35 acre) reroute would take place in an area dominated by open granitic bedrock. Scattered trees within the project area include lodgepole pine, red fir, and Jeffrey pine. In addition, there is a small grove of mountain hemlock (*Tsuga mertensiana*) near the proposed bridge construction. Where granite gives way to topsoil, areas of scrub dominated by huckleberry oak and pinemat manzanita are found. An understory of herbaceous species is present at creek and meadow margins. Mature trees within the project area average 40 to 65 feet in height. There are also a significant number of seedlings and saplings.

The section of route that would be abandoned and restored is approximately 0.4 acres in size and is located primarily in upper montane forest with some areas of granite. This section of route is predominately on soil, with or without boulders, as opposed to crossing bedrock.

The section of the Jones Fork of the Silver Creek where the bridge would cross runs through granite rock. The creek is steep sided and principally devoid of vegetation (refer back to Photos 1-3). The section of the creek where wet crossing currently takes place is also devoid of vegetation. The creek in this location has shallow banks of sand and loose soil (see Photo 9).

The areas proposed for helicopter staging are all previously disturbed and along existing roads. The staging sites are primarily devoid of vegetation and thus no vegetation would be removed to create the staging site.

### **Wildlife**

Wildlife habitat values depend on the availability of water, food, and cover. While some wildlife species are restricted to specific vegetation communities, others range across communities and biotic zones. Many species are active in a higher zone in the summer and hibernate or migrate away from these zones in the winter. Common species that may be found in the project area include mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), coyote (*Canis latrans*), western gray squirrel (*Sciurus griseus*), golden-mantled ground squirrel (*Spermophilus lateralis*), chipmunks (*Neotamias* spp.), big brown bat (*Eptesicus fuscus*), fringed myotis (*Myotis thysanodes*), Steller's jay (*Cyanocitta stelleri*), mountain chickadee (*Poecile gambeli*), common yellowthroat (*Geothlypis trichas*), red-tailed hawk (*Buteo jamaicensis*), red-breasted nuthatch (*Sitta canadensis*), downy woodpecker (*Picoides pubescens*), brown creeper (*Certhia americana*), western fence lizard (*Sceloporus occidentalis*), rubber boa (*Charina bottae*), Pacific chorus frog (*Pseudacris regilla*), and rainbow trout (*Oncorhynchus mykiss*). Rare species are described below under "Special-status Species."

### **Wildlife Movement Corridors**

Habitat corridors facilitate wildlife migration and movement within landscapes and are essential to the viability and persistence of many wildlife populations. Wildlife movement includes migration (i.e., usually one-way per season), inter-population movement (i.e., long-term genetic flow), and small travel pathways (i.e., daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities, such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow among populations. These linkages among habitats can extend for miles and occur on a large scale throughout California.

A variety of species such as those listed under "Wildlife" above move through the Eldorado National Forest and the project area.

### **Special-Status Species**

Special-status species are those plants and animals that are legally protected or otherwise recognized as vulnerable to habitat loss or population decline by federal, state, or local resource conservation agencies and organizations. Species listed as endangered, threatened or a candidate for listing under the federal Endangered Species Act and USFS Sensitive Species were already analyzed in the Biological Assessment and Evaluation (USFS 2009a and b), Biological Evaluation for Sensitive Plants (USFS 2008), and EA (USFS 2011a) prepared for this project. The EA, which summarizes the biological assessments and evaluations, is contained in

Appendix A. The following summarizes the results of the biological assessment as described in the EA (USFS 2011a):

Biological Evaluations (BEs) were prepared for plant and wildlife species. The plant BE concluded that no threatened, endangered, or proposed plant species would be affected by this project. Layne’s butterweed, *Senecio layneae*, a threatened plant would have no effect by this project, because its habitat is not present in the project area. For USFS Sensitive species, the project may affect individuals but would not likely contribute to a trend towards federal listing for Kellogg’s lewisia, *Lewisia kelloggii* spp. *kelloggii*, or Hutchison’s lewisia, *Lewisia kelloggii* spp. *hutchisonii*, (Biological Evaluation for Sensitive Plants for the Proposed Barrett Jeep Trail Bridge Crossing and ReRoute Project). The wildlife BE concluded that threatened, endangered, or proposed wildlife species would be not affected by the proposed action. Implementation of this project may affect individual USFS sensitive species of California spotted owl, northern goshawk, Pacific fisher, American marten, Sierra Nevada red fox, or Sierra Nevada yellow-legged frog, but is not likely to result in a trend toward federal listing under the Endangered Species Act or loss of species viability ((BA/BE for Barrett Bridge and Reroute Project)).

For the CEQA analysis special-status species include the following species categories not addressed in the NEPA documents:

- Species that are state listed threatened or endangered
- Species considered as candidates or proposed for state listing as threatened or endangered
- CDFG Species of Special Concern
- Fully protected species per California Fish and Game Code
- Plants considered by the California Native Plant Society (CNPS) and CDFG to be rare, threatened, or endangered (CRPR]

The special-status species with potential for occurrence in the project area are listed in Table 2 and Table 3. The tables were prepared consistent with the CEQA Guidelines using information from the California Natural Diversity Database (CNDDB 2011), CNPS Rare Plant Inventory (CNPS 2011), and the USFS Eldorado National Forest Habitat Management Plan (USFS 2011c). For the CNDDB search, the Pyramid Peak USGS 7.5 minute quad and 8 adjacent quads were searched.

Table 2. Special-status Plant Species Potentially Occurring Within the Project Area				
Species	Listing Status	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Three-bracted onion ( <i>Allium tribracteatum</i> )	CRPR 1B.2	Grows on gravelly lahar (volcanic mud flow soils) in chaparral and lower and upper montane coniferous forest from 3,300 to 10,000 ft.	No. No suitable habitat present.	Yes

Table 2. Special-status Plant Species Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Nissenan manzanita ( <i>Arctostaphylos nissenana</i> )	CSSC, CRPR 1B.2	Species grows on highly acidic slate and shale soils, often associated with closed-cone conifer forest, 1,400 to 3,600 ft.	No. No suitable habitat present.	Yes
Big-scale balsamroot ( <i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i> )	CRPR 1B.2	Grows in chaparral, vernal moist meadows and grasslands, grasslands within oak woodland, and ponderosa pine forest below 4,600 ft.	No. No suitable habitat present.	Yes
Upswept moonwort ( <i>Botrychium ascendens</i> )	CRPR 2.3	Grows in lower montane coniferous forest, meadows and seeps from 4,900 to over 7,500 ft.	Low. Not found during USFS surveys.	Yes
Scalloped moonwort ( <i>Botrychium crenulatum</i> )	CRPR 2.2	Grows in fens, lower montane coniferous forest, meadows and seeps from 4,900 to 10,500 ft.	Low. Not found during USFS surveys.	Yes
Common moonwort ( <i>Botrychium lunaria</i> )	CRPR 2.3	Grows in meadows, seeps, subalpine and upper montane coniferous forest from 7,450 to over 11,000 ft.	No. No suitable habitat present.	Yes
Mingan moonwort ( <i>Botrychium minganense</i> )	CRPR 2.2	Grows in fens, lower and upper montane coniferous forest, meadows and seeps from 4,900 to 6,750 ft.	No. Project does not occur within known or suspected species range.	Yes
Mountain moonwort ( <i>Botrychium montanum</i> )	CRPR 2.1	Grows in lower and upper montane coniferous forest, meadows and seeps from 4,900 to 7,000 ft.	Low. Not found during USFS surveys.	Yes
Watershield ( <i>Brasenia schreberi</i> )	CRPR 2.3	Freshwater marshes and swamps. Aquatic from water bodies both natural and artificial in California.	No. No suitable habitat present.	No
Bolander's bruchia ( <i>Bruchia bolanderi</i> )	CRPR 2.2	Grows in meadows and fens in montane and subalpine communities from 5,500 to 9,000 ft. Grows in ephemeral habitats such as erosional ditches or small streamlets through wet meadows.	Moderate. Not found during USFS surveys.	Yes

Table 2. Special-status Plant Species Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Pleasant Valley mariposa-lily ( <i>Calochortus clavatus</i> var. <i>avius</i> )	CSSC, CRPR 1B.2	Found in pine/oak woodlands, between 3,000 and 5,500 feet in elevation.	No. No suitable habitat present.	Yes
Davy's sedge ( <i>Carex davyi</i> )	CRPR 1B.3	Moist meadows in subalpine coniferous forest, upper montane coniferous forest. 4,920 to 10,500 ft.	No. No suitable habitat present.	No
Woolly-fruited sedge ( <i>Carex lasiocarpa</i> )	CRPR 2.3	Bogs and fens, marshes and swamps. Sphagnum bogs, freshwater marsh, and probably other moss-dominated habitats as well.	No. No suitable habitat present.	No
Mud sedge ( <i>Carex limosa</i> )	CRPR 2.2	Bogs and fens, lower montane coniferous forest, meadows, marshes and swamps, upper montane coniferous forest. In floating bogs and soggy meadows and edges of lakes. 3,940 to 9,100 ft.	No. No suitable habitat present.	No
Western single-spiked sedge ( <i>Carex scirpoidea</i> ssp. <i>pseudoscirpoidea</i> )	CRPR 2.2	Alpine boulder and rock field, meadows and seeps, subalpine coniferous forest. Often on limestone; mesic sites. 10,500 to 12,000 ft.	No. Outside of species' range.	No
Alpine dusty maidens ( <i>Chaenactis douglasii</i> var. <i>alpina</i> )	CRPR 2.3	Alpine boulder and rock fields. Open, subalpine to alpine gravel and crevices; granitic substrate. 8,950 to 11,150 ft.	No. Outside of species' range.	No
Mountain lady's slipper ( <i>Cypripedium montanum</i> )	CRPR 4.2	Occurs in undisturbed, deep, loamy soil, on north facing slopes in the shade of mature pine and fir stands from 3,500 to 5,700 ft.	No. No suitable habitat present.	Yes
Tahoe draba ( <i>Draba asterophora</i> var. <i>asterophora</i> )	CRPR 1B.2	Restricted to rocky ledges and talus slopes in subalpine and alpine habitats above 8,200 ft.	No. No suitable habitat present.	Yes
Cup Lake draba ( <i>Draba asterophora</i> var. <i>macrocarpa</i> )	CRPR 1B.1	Restricted to sandy slopes, rocky ledges and talus slopes in subalpine and alpine habitats above 8,200 ft.	No. No suitable habitat present.	Yes

Table 2. Special-status Plant Species Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Subalpine fireweed ( <i>Epilobium howellii</i> )	CRPR 4.3	Grows in moist to seasonally wet meadows, fens, and mossy seeps in subalpine coniferous forest, above 7,800 ft.	No. No suitable habitat present.	Yes
Tripod buckwheat ( <i>Eriogonum tripodum</i> )	CRPR 4.2	Grows on serpentine soils in foothill and cismontane woodlands below 5,300 ft.	No. No suitable habitat present.	Yes
American manna grass ( <i>Glyceria grandis</i> )	CRPR 2.3	Meadows. Wet meadows, ditches, streams, and ponds in valleys and lower elevations in the mountains. 50 to 6,500 ft.	No. Outside of species' range.	No
Blandow's bog moss ( <i>Helodium blandowii</i> )	CRPR 2.3	Grows in wet meadows, fens and seeps in subalpine coniferous forests and alpine lakes from 6,100 to 9,000 ft.	No. No suitable habitat present.	Yes
Parry's horkelia ( <i>Horkelia parryi</i> )	CRPR 1B.2	Found in open chaparral and cismontane woodland on lone formation soils below 3,400 ft.	No. No suitable habitat present.	Yes
Hutchison's lewisia ( <i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i> )	CRPR 3.3	Grows in openings in upper montane coniferous forest, often on slate soils and on soils that are sandy granitic to erosive volcanic, 4,800 to 7,000 ft.	Low. USFS survey not conducted during blooming period for this species.	Yes
Kellogg's lewisia ( <i>Lewisia kelloggii</i> ssp. <i>kelloggii</i> )	CRPR 3.3	Grows on granitic and volcanic balds from 5,000 to 8,000 ft.	Moderate. USFS survey not conducted during blooming period for this species.	Yes
Long-petaled lewisia ( <i>Lewisia longipetala</i> )	CRPR 1B.3	Alpine boulder and rock field, subalpine coniferous forest. Mesic rocky sites; in cracks of granite or gravelly volcanic soils above 8,200 ft.	No. No suitable habitat present.	Yes
Saw-toothed lewisia ( <i>Lewisia serrata</i> )	CRPR 1B.3	Restricted to steep, nearly vertical cliffs in inner gorges of perennial streams and rarely near seeps and intermittent streams, 2,800 to 4,800 ft.	No. No suitable habitat present.	Yes

Table 2. Special-status Plant Species Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Three-ranked hump-moss ( <i>Meesia triquetra</i> )	CRPR 4.2	Grows in cold, permanently saturated, spring-fed fens and meadows in montane to subalpine coniferous forest from 4,200 to 9,700 ft.	No. No suitable habitat present.	Yes
Broad-nerved hump-moss ( <i>Meesia uliginosa</i> )	CRPR 2.2	Grows in permanently wet, primarily spring-fed meadows and fens in montane to subalpine coniferous forest from 4,200 to 9,200 ft.	No. No suitable habitat present.	Yes
Yellow bur navarretia ( <i>Navarretia prolifera</i> ssp. <i>lutea</i> )	CRPR 4.3	Grows in openings in or adjacent to mixed conifer forest or cismontane woodland on rocky ridgelines, saddles, or eroding drainages from 2,300 to 5,000 ft.	No. No suitable habitat present.	Yes
Northern adder's-tongue ( <i>Ophioglossum pusillum</i> )	CRPR 2.2	Marshes and swamps, meadows and seeps. Marsh edges, low pastures, grassy roadside ditches. 3,280 to 6,560 ft.	No. No suitable habitat present and outside of species' range.	No
Layne's ragwort ( <i>Packera layneae</i> )	CRPR 1B.2	Grows on rocky, gabbroic or serpentinitic soils in chaparral and cismontane woodland below 3,000 ft.	No. No suitable habitat present.	Yes
Stebbins' phacelia ( <i>Phacelia stebbinsii</i> )	CRPR 1B.2	Lower montane coniferous forest, cismontane woodland, meadows and seeps, riparian woodland. Among rocks and rubble on metamorphic rock benches. 2,000 to 6,800 ft.	Moderate. Not found during USFS surveys.	Yes
Nuttall's ribbon-leaved pondweed ( <i>Potamogeton epihydrus</i> )	CRPR 2.2	Marshes and swamps. Shallow water, ponds, lakes, streams, irrigation ditches. 1,300 to 6,900 ft.	No. No suitable habitat present.	No
Tahoe yellow cress ( <i>Rorippa subumbellata</i> )	SE, CRPR 1B.1	Lower montane coniferous forest, meadows and seeps. Sandy beaches, on lakeside margins and in riparian communities on decomposed granite sand. 6,200 to 7,800 ft.	No. No suitable habitat present.	No

Table 2. Special-status Plant Species Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Water bulrush ( <i>Schoenoplectus subterminalis</i> )	CRPR 2.3	Marshes and swamps. Montane lake margins, in shallow water. 2,500 to 7,660 ft.	No. No suitable habitat present.	No
Marsh skullcap ( <i>Scutellaria galericulata</i> )	CRPR 2.2	Marshes and swamps, lower montane coniferous forest, meadows and seeps. Swamps and wet places. 0 to 7,000 ft.	No. No suitable habitat present.	No
Slender-leaved pondweed ( <i>Stuckenia filiformis</i> )	CRPR 2.2	Marshes and swamps. Shallow, clear water of lakes and drainage channels. 50 to 7,500 ft.	No. No suitable habitat present.	No
Felt-leaved violet ( <i>Viola tomentosa</i> )	CRPR 4.2	Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest. In open, conifer forest in dry, gravelly soils. 3,380 to 6,500 ft.	No. Outside of species' range	No
<sup>1</sup> Listing Status Key: SE – State Endangered California Rare Plant Rank: CRPR 1B: Plants rare, threatened, or endangered in California and elsewhere. CRPR 2: Plants rare, threatened, or endangered in Calif. but more common elsewhere. CRPR 3: Plants about which we need more information CRPR 4: Plants of limited distribution (Watch List). CRPR Threat Code extensions and their meanings: .1 – Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat) .2 – Fairly endangered in California (20-80% occurrences threatened) .3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)				

Source: CNDDDB 2011; CNPS 2010; USFS 2008

Table 3. Special-status Animals Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Chinook salmon – Central Valley spring-run ESU ( <i>Oncorhynchus tshawytscha</i> )	ST	Deep pools and cool thermal refuge in the summer. Found in the Sacramento River and its tributaries.	No. Silver Creek is a tributary to American River, but the project would not affect downstream water quality or quantity.	No

Table 3. Special-status Animals Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Winter-run Chinook salmon, Sacramento River ( <i>Oncorhynchus tshawytscha</i> )	SE	Central Valley delta and up rivers to manmade and natural barriers.	No. Silver Creek is a tributary to American River, but the project would not affect downstream water quality or quantity.	Yes
Hardhead ( <i>Mylopharodon conocephalus</i> )	CSSC	Sacramento-San Joaquin delta, S. Fork American River below Slab Creek Reservoir.	No. Project does not occur within known or suspected species range.	Yes
Sacramento splittail ( <i>Pogonichthys macrolepidotus</i> )	CSSC	Backwaters of Sacramento-San Joaquin delta system.	No. Project would not affect downstream water quality or quantity.	Yes
Delta smelt ( <i>Hypomesus transpacificus</i> )	ST	Sacramento-San Joaquin delta.	No. Project does not occur within known or suspected species range.	Yes
Mount Lyell salamander ( <i>Hydromantes platycephalus</i> )	CSSC	Massive rock areas in mixed conifer, red fir, lodgepole pine, and subalpine habitats, 4000 to 11,600 feet in elevation.	Low.	No
Yosemite toad ( <i>Anaxyrus canorus</i> )	CSSC	High elevation wetland areas and meadows above 6,400 ft.	No. No suitable habitat present.	Yes
Foothill yellow-legged frog ( <i>Rana boylei</i> )	CSSC	Found within partly-shaded, shallow streams and riffles with rocky substrates in a variety of habitats below 6,000 ft.	No. Project does not occur within known or suspected species range.	Yes
California red-legged frog ( <i>Rana draytonii</i> )	CSSC	Found within permanent and semipermanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation; may aestivate in rodent burrows or cracks during dry periods.	No. Project does not occur within known or suspected species range.	Yes
Sierra Nevada yellow-legged frog ( <i>Rana sierra</i> )	SC, CSSC	Requires streams, lakes, and ponds within montane riparian, lodgepole pine, subalpine conifer, and wet meadow habitats, ranging in elevation from 4,500 to 12,000 ft.	High. Species is known from ponds and creeks upstream of the project area.	Yes

Table 3. Special-status Animals Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Northern leopard frog ( <i>Lithobates pipiens</i> )	CSSC	Requires shoreline, submerged, and emergent aquatic vegetation. Cattail and sedge marshes, as well as weedy ponds, are preferred for reproductive habitats.	No. No suitable habitat present.	No
Western pond turtle ( <i>Emys marmorata</i> )	CSSC	An aquatic turtle found in ponds, marshes, rivers, streams, and irrigation ditches. Requires basking sites and suitable (sandy banks or grassy open fields) upland habitat.	No. Project does not occur within known or suspected species range.	Yes
Northern goshawk ( <i>Accipiter gentilis</i> )	CSSC	Found within coniferous forests, and usually nests on north slopes near water. Red fir, lodgepole pine, Jeffrey pine, and aspens are typical nest trees.	Moderate. Suitable foraging and nesting habitat on site.	Yes
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	SE, SFP	Nests in large, old-growth, or dominant live trees with open branches (particularly ponderosa pine) and roosts communally in winter. Generally associated with lake margins and rivers for both nesting and wintering.	Low. Site does not support preferred foraging or nesting habitat.	Yes
Golden eagle ( <i>Aquila chrysaetos</i> )	SFP	Rolling foothills, mountain areas, sage-juniper flats, & desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Moderate. Site supports suitable foraging habitat and moderately suitable nesting habitat.	No
Peregrine falcon ( <i>Falco peregrinus anatum</i> )	SFP	Includes most of California during migrations and winter. The breeding range includes the Cascades and Sierra Nevada. Nests on ledges in rock outcrops and needs open or edge areas for foraging.	Low. Suitable foraging habitat. Unlikely to nest on site.	Yes
Great gray owl ( <i>Strix nebulosa</i> )	SE	Forested habitats near meadows. Wet meadow systems must be associated with the conifer stands, which provide rodent food types, which are a primary food source. Nests are established in broken top snags.	Low. Project is not in immediate vicinity of meadow habitat.	Yes

Table 3. Special-status Animals Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
California spotted owl ( <i>Strix occidentalis caurina</i> )	CSSC	Mature forested habitats with large trees, dense canopy cover with at least two canopy layers, and abundant snags and downed logs.	Low. Moderately suitable foraging and nesting habitat on site.	Yes
Bank swallow ( <i>Riparia riparia</i> )	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	No. No suitable habitat present.	No
Willow flycatcher ( <i>Empidonax traillii</i> )	SE	Dense willow thickets are required for nesting and roosting. Summer resident in wet meadow and montane riparian habitats.	Low. Moderately suitable foraging habitat on site.	Yes
Yellow-headed blackbird ( <i>Xanthocephalus xanthocephalus</i> )	CSSC	Nests in freshwater emergent wetlands with dense vegetation & deep water. Often along borders of lakes or ponds. Nests only where large insects such as odonata are abundant.	No. No suitable habitat present.	No
Pallid bat ( <i>Antrozous pallidus</i> )	CSSC	Most commonly found in open, dry habitats with rocky areas for roosting within deserts, grasslands, shrublands, woodlands, and forests. Below 6,000 ft.	No. Project does not occur within known or suspected species range.	Yes
Western red bat ( <i>Lasiurus blossevillii</i> )	CSSC	Typically associated with riparian areas for foraging and roosting below 3,000 ft. They tend to roost in trees and shrubs, especially near water.	No. Project does not occur within known or suspected species range.	Yes
Townsend's big-eared bat ( <i>Corynorhinus townsendii</i> )	CSSC	Requires mines, caves, tunnels, and buildings for roosting, which are limiting factors. Strongly correlated with availability of caves and cave like roosting. Below 6,000 ft.	No. Project does not occur within known or suspected species range.	Yes
Sierra Nevada showshoe hare ( <i>Lepus americanus tahoensis</i> )	CSSC	Found in young, upper montane forests favoring habitats with a dense shrub layer. This species occurs within riparian habitats with thickets of alders and willows, and in stands of young conifers interspersed with chaparral	No. No suitable habitat present.	No

Table 3. Special-status Animals Potentially Occurring Within the Project Area				
Species	Listing Status <sup>1</sup>	Habitat	Potential for Occurrence in Project Area	Addressed by USFS in EA and/or Its Supporting Documents?
Western white-tailed jackrabbit ( <i>Lepus townsendii townsendii</i> )	CSSC	Sagebrush, subalpine conifer, juniper, alpine dwarf shrub & perennial grassland in the eastern Sierra Nevada and southern Cascades	No. No suitable habitat present and outside of species range.	No
Sierra Nevada mountain beaver ( <i>Aplodontia rufa californica</i> )	CSSC	Dense growth of small deciduous trees & shrubs, wet soil, & abundance of forbs. Needs dense understory for food & cover. Burrows into soft soil. Needs abundant supply of water.	No. No suitable habitat present.	No
Sierra Nevada red fox ( <i>Vulpes vulpes necator</i> )	ST	High-elevation alpine habitats, very rare. Requires areas with dense vegetation and rocks for denning sites and cover. Requires forests interspersed with meadows or alpine fields. Open areas are used for hunting, while forested areas are used for reproduction and cover.	Low. Suitable habitat present, however species is very rare.	Yes
California wolverine ( <i>Gulo gulo</i> )	ST, SFP	Found in a wide variety of high elevation habitats; uses caves, logs, and burrows for cover and dens.	No. Project does not occur within known or suspected species range.	Yes
American badger ( <i>Taxidea taxus</i> )	CSSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils & open, uncultivated ground.	No. No suitable habitat present. Project area is primarily bedrock and thin, hard soils.	No
Pacific fisher ( <i>Martes pennant pacifica</i> )	CSSC	Found within coniferous forests and deciduous riparian areas containing a high percentage of canopy closure. Uses cavities, snags, logs, and rocky areas for cover and denning.	Low. Suitable habitat present, however fisher has never been detected on the ENF.	Yes
ENF – Eldorado National Forest <sup>1</sup> Listing Status Key: SE – State Endangered ST – State Threatened SC – State Candidate SFP – State Fully Protected CSSC – California Species of Special Concern				

Source: CNDDDB 2011; USFS 2009

## Plants

Based on surveys to date, no sensitive plant occurrences are known from the project area. The Eldorado National Forest completed a targeted field survey on July 29, 2008, for USFS Sensitive and federally-listed plants, unique habitats, and noxious weeds with an additional site visit on August 4, 2008, in the area of the proposed Barrett Trail Bridge Crossing and Reroute Project (USFS 2008). This analysis included 26 of the 40 species listed in Table 2 (species with a “Yes” in the last column of Table 2). The Eldorado National Forest analysis found that the project would have no impact on all but two of the species analyzed. As described in the BE for Sensitive Plants, the survey conducted occurred too late to detect Hutchison’s lewisia and Kellogg’s lewisia based on their phenology (refer to the BE for Sensitive Plants [USFS 2008] for species accounts). The nearest known location of Kellogg’s lewisia is five miles to the southeast. Hutchison’s lewisia has not been identified on the Eldorado National Forest (USFS 2008). There is the potential that the project area could support undiscovered individuals of these taxa. To ensure that undetected populations of these plants are not disturbed during construction, the Design Criteria for Sensitive Plants described in the BE for Sensitive Plants states “if Sensitive plant occurrences are discovered during project implementation either along the proposed new route or within abandoned areas that are being restored, those occurrences would be flagged for avoidance. Newly discovered locations would be reported to the Forest botanist and District biologist” (USFS 2008).

Of the 40 plant species listed in Table 2, 14 species were not evaluated by the Eldorado National Forest. These species were not included in the NEPA analysis because they are not USFS Sensitive or listed on the federal ESA. These species came up in a CNDDDB search of the Pyramid Peak USGS 7.5 minute quad where the project is located and/or the eight adjacent quads. These species include watershield (*Brasenia schreberi*), Davy’s sedge (*Carex davyi*), woolly-fruited sedge (*Carex lasiocarpa*), mud sedge (*Carex limosa*), western single-spiked sedge (*Carex scirpoidea* ssp. *pseudoscirpoidea*), alpine dusty maidens (*Chaenactis douglasii* var. *alpina*), American manna grass (*Glyceria grandis*), northern adder’s-tongue (*Ophioglossum pusillum*), Nuttall’s ribbon-leaved pondweed (*Potamogeton epihydrus*), Tahoe yellow cress (*Rorippa subumbellata*), water bulrush (*Schoenoplectus subterminalis*), marsh skullcap (*Scutellaria galericulata*), slender-leaved pondweed (*Stuckenia filiformis*), and felt-leaved violet (*Viola tomentosa*). None of these species have potential to occur within the project area either because the project is outside of the species’ range, or the species’ habitat requirements are not met on site.

## Wildlife

A total of 31 state-listed (CESA, CSSC, or fully protected) wildlife species are included in Table 3. Of these, 20 species were determined to have no potential to occur on site, either because the project is outside of the species’ range, or the species’ habitat requirements are not met on site. Of the remaining 11 species with potential to occur on site, 9 of these are federally-listed or USFS Sensitive and thus have already been analyzed by the USFS in the BA/BE (USFS 2009a). These include Sierra Nevada yellow-legged frog (*Rana sierra*), northern goshawk (*Accipiter gentilis*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus anatum*), great gray owl (*Strix nebulosa*), California spotted owl (*Strix occidentalis caurina*), willow flycatcher (*Empidonax traillii*), Sierra Nevada red fox (*Vulpes vulpes necator*), and Pacific fisher (*Martes pennant pacifica*). The USFS determined the project would have no effect on the bald eagle, peregrine falcon, great gray owl, or willow flycatcher. The BA/BE did not address the Mount Lyell salamander (*Hydromantes platycephalus*) or the golden eagle (*Aquila chrysaetos*).

The USFS determined that the project may affect individuals or habitat but is not likely to result in a trend toward federal listing or loss of viability for the Sierra Nevada yellow-legged frog, northern goshawk, California spotted owl, Sierra Nevada red fox, or Pacific fisher. The following five species accounts are taken in part from the BA/BE (USFS 2009a). Because potential impacts to these species were addressed in the BA/BE, the impact discussions from the BA/BE are included here.

Sierra Nevada Yellow-legged Frog. The Sierra Nevada yellow-legged frog is a California species of special concern and candidate for state listing under CESA. The species inhabits lakes, ponds, meadow streams, isolated pools, and sunny riverbanks in the Sierra Nevada Mountains. Preferred microhabitat includes open stream and lake edges with a gentle slope up to a depth of 5-8 centimeters. Waters that do not freeze to the bottom and which do not dry up are required. The frog's range is from approximately 1,000 to over 12,000 feet elevation. Sierra Nevada yellow-legged frogs eat a variety of terrestrial and aquatic invertebrates and tadpoles. The species is primarily diurnal and is usually found close to water. Adults tend to live around the breeding pond, and thus most do not need to travel to the breeding site. Frogs emerge shortly after snow melts. In years of heavy snow, the species may only be active for about three months.

The Jones Fork of the Silver Creek provides suitable habitat for Sierra Nevada yellow-legged frog. The species has not been detected in this creek, but ponds and creeks upstream in Desolation Wilderness have known populations of Sierra Nevada yellow-legged frogs. Thus there is potential for this species to be in the creek within the project area. There would be no disturbance to the creek as part of the Barrett Trail Bridge Crossing and Reroute Project. Construction of the re-route is within granitic bedrock and outside of frog habitat. The bridge would be constructed approximately 20 feet above the creek and no construction is proposed within the creek. Restoration of the current trail would occur adjacent to the creek. The USFS determined that the risk of disturbing, injuring, or crushing individual frogs is similar to current recreational use of the trail (USFS 2008). Because restoration activities could potentially directly affect Sierra Nevada yellow-legged frog (e.g., crushing), however, those impacts are discussed further below.

The current trail route is a wet crossing that contributes to sediment to the creek. Sediment delivery degrades aquatic habitat for the frog. Restoration of the existing route would increase sediment delivery for 1 to 2 years after project activities are completed, but in the long term, sediment delivery is expected to substantially decrease with implementation of the project. Riparian vegetation is anticipated to increase after restoration activities, improving habitat structure for the frog.

Northern Goshawk and California Spotted Owl. California spotted owl and northern goshawk are both California species of special concern. The present trail goes through a patch of suitable spotted owl and northern goshawk habitat. Rerouting the trail to the proposed new location (with bridge) would move the trail outside of this patch of suitable habitat, potentially reducing current effects of the motorized trail upon spotted owls and northern goshawks. This patch is moderately suitable habitat, approximately nine acres large, and is isolated from other suitable habitat in the area. Also the project is at the upper range of suitable habitat, and thus it is unlikely that this isolated habitat patch is used by these species. However, as no surveys have been done for either spotted owl or northern goshawk in this area, it is assumed that they could be within suitable habitat.

Project activities within spotted owl and northern goshawk habitat would involve ripping and restoration of the existing road. Noise and human presence associated with these activities is

expected to be temporary, lasting no more than several days, and is not expected to be beyond the noise and activity levels of maintenance and normal use of the current route. Therefore, potential disturbance to spotted owls and northern goshawks caused by road ripping and restoration is not expected to be beyond current disturbance levels. Use of a helicopter to transport the prefabricated bridge pieces would result in short periods of elevated noise over the course of one to two days. As the elevated noise disturbance is brief and temporary, no negative impact to spotted owl or northern goshawk is anticipated.

Sierra Nevada Red Fox. The Sierra Nevada red fox is an extremely rare species and a state threatened species. Although habitat requirements are met on site, it is highly unlikely that this species occurs on site. Sierra Nevada red fox was known only from a small population in Lassen Volcanic National Park until 2010, when a single Sierra Nevada red fox was discovered at a bait station trail camera near Sonora Pass (USFS 2010a). Project activities are temporary and are confined to the staging areas, current trail route, and the 0.40 mile reroute. No negative impact to the fox or its habitat is anticipated.

It is known that meadows and riparian areas are important to the Sierra Nevada red fox. This project in the long term would improve riparian habitat along the creek by reducing sediment delivery and removing motorized wet crossing; the improved riparian habitat would have a higher biological value for species such as the Sierra Nevada red fox.

Pacific Fisher. The Pacific fisher is a California species of special concern. The present trail goes through a patch of suitable fisher habitat. Rerouting the trail to the proposed new location (with bridge) would move the trail outside of this patch of suitable habitat, potentially reducing current effects of the motorized trail upon Pacific fisher. Also, rerouting the trail would reduce habitat fragmentation. This patch of suitable habitat is approximately nine acres and is isolated from other suitable habitat in the area. The nearest patch of preferred habitat is over 0.5 mile away, where preferred habitat is habitat used for denning and resting by the fisher. Surveys have been conducted for the fisher near the project in the Wrights Lake area, and no fishers have been detected on the Eldorado National Forest. Since nearby surveys have not detected the fisher, and suitable habitat is patchy and limited in this area, it is unlikely that fishers are present at the project location.

Project activities within suitable habitat for Pacific fisher would involve ripping and restoration of the existing road. Noise and human presence associated with these activities is expected to be temporary, lasting no more than several days, and is not expected to be beyond the noise and activity levels of maintenance and normal use of the current route. Therefore, disturbance to potential fisher within this habitat patch caused by road ripping and restoration is not expected to be beyond current disturbance levels. As ripping and restoration are within the existing road prism, there is no potential for fisher dens to occur within the area that would be disturbed. Use of a helicopter to transport the prefabricated bridge pieces would result in short periods of elevated noise over the course of one to two days. As the elevated noise disturbance is brief and temporary, no negative impact to Pacific fisher is anticipated.

Two special-status species have potential to occur in the project area and were not addressed by the USFS NEPA documents. These are the Mount Lyell salamander and golden eagle. Potential project impacts to these species are discussed.

Mount Lyell Salamander. The Mount Lyell salamander is a California species of special concern. The Mount Lyell salamander is endemic to California, and occurs only in the Sierra Nevada from Sierra County south to Tulare County. Populations are discontinuously distributed in isolated patches of suitable habitat. Usually common where they occur, individuals are active

on the surface only when free water in the form of seeps, drips, or spray is available. This salamander is nocturnal, cold-tolerant, and inhabits caves, granite exposures, rock fissures, and seepages from springs and snowfields that melt well into the summer. Cover is provided during the period of surface activity primarily by flat granite rocks. Winter hibernation probably occurs within deep rock fissures or under slabs of exfoliating granite. This species occurs in massive rock areas in mixed conifer, red fir, lodgepole pine, and subalpine habitats. Elevation range extends from 4,130 to about 11,940 feet (Jennings and Hayes 1994). The project area may support rock fissures and seepages that would provide habitat for Mount Lyell salamander.

**Golden Eagle.** The golden eagle is a California fully protected species. Golden eagles generally inhabit open country in prairies, tundra, open coniferous forest, and barren areas, especially in hilly or mountainous regions. They range from sea level to approximately 12,000 feet. They nest on cliff ledges and in trees. Golden Eagles usually mate for life. They build several nests within their territory and use them alternately for several years. Golden Eagles prey upon virtually any small to mid-sized animal if encountered.

### 3.4.4 Discussion

*Would the proposed project:*

- a. **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife?**

**Less Than Significant with Mitigation.**

#### ***Special-status Plants***

Of the 40 plant species listed in Table 2, 38 have no potential for occurrence within the project area. Either no occurrences were found during USFS surveys for the species, no appropriate habitat is found within the project area, or the project area is outside of the geographic range of the species.

There is the potential that the project area (excluding staging sites) could support undiscovered individuals of Kellogg's lewisia or Hutchison's lewisia and that these individuals could be negatively impacted by the proposed project.

**Impact BIO-1:** Project construction, use of the new trail segment and parking area, and restoration of the abandoned trail may result in direct impacts to FSS and CRPR special-status plant species that may occur within the project area. Such impacts could include damage to aboveground plant parts, uprooting or death of underground root structures, and loss of reproductive potential for short or extended periods of time, which would be considered potentially significant. This may include adverse impacts to Kellogg's lewisia and Hutchison's lewisia, both of which are CRPR special-status plants. Implementation of Mitigation Measure BIO-1 would reduce this potential impact to a less-than-significant level.

**Mitigation Measure BIO-1:** Prior to the commencement of trail and parking area construction or any ground-disturbing restoration activities, a survey for Kellogg's lewisia and Hutchison's lewisia shall be conducted by a qualified botanist. The survey shall be timed to cover the blooming periods of these species and carried out according to California Native Plant Society protocol. The survey shall apply to all areas of the proposed project subject to ground

disturbance during construction. If these species are detected within the proposed project area, plants shall be flagged, mapped on improvement plans, and fenced to protect the occupied area during project activities and later recreational use.

<b>Implementation:</b>	Eldorado National Forest
<b>Effectiveness:</b>	Locating plants within the project area would enable plants to be protected and avoided during project activities.
<b>Monitoring:</b>	Eldorado National Forest shall submit mapped locations of Kellogg's lewisia and Hutchison's lewisia if found to OHMVR Division for review prior to commencement of project activities.

### ***Special-status Wildlife***

The Eldorado National Forest BA/BE states that no trees would be affected by this project. In fact, an estimated two western white pines less than 8" diameter at breast height (dbh), one lodgepole pine less than 20" dbh, and two lodgepole pines less than 10" dbh would be felled for trail reroute construction. Also, two conifer snags approx 20" dbh would likely need to be cut. All would be cut and left on-site. Trees would be removed outside of the bird nesting season (which is from February 1 to August 31), and no impacts to occupied nests or eggs would result from project activities. Thus, the BA/BE effects analysis on avian species is unchanged.

Of the 31 species listed in Table 3, 11 have potential of occurring within the project area. The USFS determined the project would have no effect on the bald eagle, peregrine falcon, great gray owl, or willow flycatcher. As discussed in the species accounts above, the project would not significantly adversely affect the northern goshawk, California spotted owl, Sierra Nevada red fox, or Pacific fisher (USFS 2009a). The USFS determined the project may affect individuals or habitat but is not likely to result in a trend toward federal listing or loss of viability for these species. The northern goshawk, California spotted owl, Sierra Nevada red fox, and Pacific fisher may be affected by temporary noise disturbance and human presence resulting from project activities (USFS 2009a). The BA/BE did not address the Mount Lyell salamander or the golden eagle. Potential impacts to these species are discussed here. Additionally, although the USFS did not determine potentially significant impacts could occur to the Sierra Nevada yellow-legged frog, trail restoration could potentially directly affect individuals of the species (e.g., crushing). Those potential impacts are thus discussed here.

Mount Lyell salamander is a California species of special concern and was not addressed by the USFS in the EA. The project area may support rock fissures and seepages that would provide habitat for Mount Lyell salamander; however, these microhabitats would not be disturbed by project activities. The only location where rock would be drilled is at the location of the bridge. Holes would be drilled directly into bedrock where there are no seeps or fissures. Therefore, significant disturbance or other potential adverse impacts to Mount Lyell salamander are not expected.

The project area supports suitable habitat for golden eagles, and this species has a moderate likelihood to occur on site. Foraging habitat is suitable, although most trees within the project area are not large enough to provide optimal nesting habitat. As project activities are scheduled outside of the nesting season, there would be no potential impact on nesting golden eagles. Noise and human presence associated with project activities may disturb golden eagles, if present. However, noise is expected to be temporary, lasting no more than several days. Trail ripping and restoration is not expected to be beyond the noise and activity levels of maintenance and normal use of the current route. Use of a helicopter to transport the fabricated

bridge will result in brief periods of elevated noise over one to two days. Therefore, potential disturbance to golden eagles would not be significant.

Sierra Nevada yellow-legged frogs may be disturbed, injured, or crushed during restoration of the current trail, which would be a significant impact. Implementation of Mitigation Measure BIO-2, however, would ensure that restoration activities would not impact the yellow-legged frog. Bridge construction would not impact the frog.

**Impact BIO-2:** Trail restoration at the creek crossing may potentially harm Sierra Nevada yellow-legged frogs.

**Mitigation Measure BIO-2:** Within 24 hours prior to any project construction/restoration scheduled to occur at the creek crossing restoration area adjacent to the Jones Fork of Silver Creek, a qualified biologist shall survey the work area and if Sierra Nevada yellow-legged frog individuals are found, a forest service aquatic biologist shall move individuals downstream to suitable habitat considered a safe distance from project activities.

**Implementation:** by Eldorado National Forest

**Effectiveness:** Preconstruction surveys, avoidance, and removal of individuals from the work area would ensure project activities have a less than significant impact to this species.

**Monitoring:** Eldorado National Forest shall submit mapped locations of Sierra Nevada yellow-legged frog if encountered and relocation sites.

**b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?**

**No Impact.** Project activities would not impact riparian habitat or other sensitive natural communities. Ground work is primarily within an area of open granitic bedrock with scattered lodgepole pine, Jeffery pine, and red fir. Maintenance of pedestrian creek access and vehicle parking south of the existing creek wet crossing would not impact riparian habitat, and no vegetation would be removed. Rather, vegetation would be restored while still allowing for user access. According to the EA, lacustrine/riverine habitat would also benefit from the proposed project over the long term by reducing sediment delivery to the stream and restoring native vegetation.

**c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

**No Impact.** Project activities would not result in the discharge of fill, removal of, interruption of, or other negative impact to wetlands or Waters of the U.S. Aquatic habitat would benefit from reduced disturbance.

**d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

**Less Than Significant Impact.** Project construction could impact wildlife in areas immediately adjacent to the new trail alignment and the bridge construction site by temporarily altering movement patterns, or causing animals to temporarily avoid those areas. Mobile species including birds and larger mammals are expected to disperse into adjacent areas during project construction. Vegetation removal activities, restoration, and trail construction could temporarily interfere with movement patterns for wildlife that use the Jones Fork of Silver Creek or lodgepole pine/red fir forest for dispersal. Although local wildlife movement may be impacted near the project, the project area is confined to a small area of disturbance within large tracts of undeveloped public land providing established native vegetation and habitat for a range of common and special-status native wildlife species. In addition, the project work is of short duration, estimated at three weeks, which minimizes the effects on wildlife movement. Therefore, disruption to wildlife movement from project construction is considered less than significant. Effects to fish migration corridors or nursery sites are not expected to occur as no work would take place in the creek.

Since the trail reroute would not change the existing operational use of the trail system, there would be no change in operational use that would impact movement of established native resident or migratory fish or wildlife species.

**e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

**No Impact.** The project does not conflict with any local policies or ordinances protecting biological resources. There would be no impact, directly or indirectly, on local policies or ordinances by the implementation of this project.

Finally, the USFS concluded in the Decision Notice that the project “is consistent with the Eldorado National Forest Land Management Plan” (USFS 2011b).

**f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

**No Impact.** The project area is not covered under a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, there would be no impact, either directly or indirectly, on a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

**3.5 CULTURAL RESOURCES**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**3.5.1 Background**

Please see page 9 in the attached EA (Appendix A) for a discussion of project effects on cultural resources. The following is excerpted from the EA.

All of the project area has been surveyed and a comprehensive Archaeological Reconnaissance Report (ARR No. R2005-05-03-50028) was completed (USFS 2005). None of the known sites are within or near the area of potential impact and no archaeological sites are at risk from the proposed project. Based on the analysis documented in the ARR, the proposed action would not cause loss or destruction of significant scientific, cultural, or historical resources (USFS 2011a).

**3.5.2 Discussion**

*Would the proposed project:*

- a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?**
- b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**
- c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

**Less Than Significant Impact.** (Responses a-c). Please see page 9 in the attached EA (and excerpted in the discussion above) for a complete discussion of project effects on cultural resources (Appendix A). A summary of the conclusions from the EA follows:

[A]ll of the project area has been surveyed and a comprehensive Archaeological Reconnaissance Report (ARR No. R2005-05-03-50028) was completed. None of the known sites are within or near the area of potential impact and no

archaeological sites are at risk from the proposed project. Based on the analysis documented in the ARR, the proposed action would not cause loss or destruction of significant scientific, cultural, or historical resources.

In addition the EA included the following the following provisions to assure significant scientific, cultural, or historical resources are not affected:

- Should the project boundaries or activities be expanded beyond the current Area of Potential Effect (APE), the District Archaeologist would be notified immediately, as Section 106 compliance for this project would be incomplete until additional cultural resources review is conducted within the expanded area.
- Should any previously unrecorded cultural resources be encountered during implementation of this project, all work would immediately cease in that area and the District Archeologist would be notified immediately. Work may resume only after it is approved by the District Archeologist. Should any cultural resources become damaged in unanticipated ways by the activities, the steps described in the Sierran Programmatic Agreement (SPA) for inadvertent effects would be followed.

**d. Disturb any human remains, including those interred outside of formal cemeteries?**

**Less Than Significant Impact with Mitigation.** The EA did not address the possibility that human remains would be encountered during project activities. Therefore, the following mitigation measure is recommended.

**Impact CUL-1:** Although unlikely, human remains could be discovered during ground disturbing activities while the project is being implemented.

**Mitigation Measure CUL-1:** In the event that human remains are accidentally discovered, the project must come to a complete stop and no further excavation or disturbance of the area or vicinity will occur. The county coroner is to be called immediately to determine that the remains are of Native American ancestry. If the coroner confirms that the remains are Native American, within a 24 hours of the discovery the coroner is to contact the Native American Heritage Commission (NAHC). The NAHC will identify the person(s) believed to be the Most Likely Descendent (MLD), and the MLD will decide, along with the property owner, to appropriate treatment or disposal of the human remains and associated grave goods as provided in PRC § 5097.98. If the Native American Heritage Commission cannot identify the MLD, the MLD fails to make a recommendation, or the property owner rejects the MLD's recommendations, the property owner can rebury the remains and associated burial goods in an area not subject to ground disturbance (14 CCR 15064.5).

**Implementation:** by Eldorado National Forest

**Effectiveness:** Would assure that any human remains encountered would be properly handled.

**Monitoring:** Eldorado National Forest shall notify the OHV Division Archaeologist if any human remains are encountered.

In the event that human remains are accidentally discovered, the project must come to a complete stop and no further excavation or disturbance of the area or vicinity will occur. The county coroner is to be called immediately to determine that the remains are of Native American ancestry. If the coroner confirms that the remains are Native American, within a 24 hours of the

discovery the coroner is to contact the Native American Heritage Commission (NAHC). The NAHC will identify the person(s) believed to be the Most Likely Descendent (MLD), and the MLD will decide, along with the property owner, to appropriate treatment or disposal of the human remains and associated grave goods as provided in PRC § 5097.98. If the Native American Heritage Commission cannot identify the MLD, the MLD fails to make a recommendation, or the property owner rejects the MLD's recommendations, the property owner can rebury the remains and associated burial goods in an area not subject to ground disturbance (14 CCR 15064.5).

**3.6 GEOLOGY AND SOILS**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.6.1 Discussion**

*Would the proposed project:*

**a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**

**i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?**

- ii. **Strong seismic ground shaking?**
- iii. **Seismic-related ground failure, including liquefaction?**
- iv. **Landslides?**

**No Impact.** (Responses i-iv). No Alquist-Priolo earthquake fault zones occur in the project area (El Dorado County 2004 and California Geological Survey 2012). In addition the bridge would be installed to USFS Region 5 standards, which would ensure the new bridge would be built to appropriate building standards, including consideration of seismic ground shaking and ground-failure. Liquefaction at the bridge site is unlikely due to the exposed granite bedrock located there. Landslides are also unlikely as nearby slopes are also composed of exposed granite bedrock and the slopes at the bridge crossings are relatively gentle.

**b. Result in substantial soil erosion or the loss of topsoil?**

**Less Than Significant Impact.** The new location of the trail route would be mostly on bedrock granite and decomposed granite soil and therefore provides a more stable trail surface with less erosion compared to the segment of trail that would be abandoned and closed. There would be short-term direct impacts related to disturbance from brush removal; however, there is a long-term net benefit and reduction of sediment from the trail. Furthermore, the project would be subject to USFS BMPs related to soil and ground disturbance (refer to Appendix B for this list of BMPs).

Approximately 0.5 miles of existing trail would be abandoned and restored by using mechanized equipment and hand work to rip and re-contour the trail, and placing native materials on the abandoned trail surface. The work restoration work would be performed according to USFS standards and would incorporate USFS BMPs for soil erosion and protection. The ripping of the existing trail and the re-contouring of the trail surface may cause some limited erosion as new drainage patterns are implemented. This erosion would be controlled by implementing the BMPs related to preventing soil erosion (Appendix B). Impacts would be less than significant.

**c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?**

**Less Than Significant Impact.** The new trail segment primarily traverses granite rock, which is not expected to become unstable as a result of the trail construction. Furthermore, the bridge footings would be installed on granite rock, as shown in Photos 1 to 3. Granite is resistant to lateral spreading, subsidence, liquefaction, and collapse; therefore, impacts are not considered significant. Given the surrounding topography and granite substrate, landslides are also considered unlikely.

- d. **Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?**
- e. **Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

**No Impact.** (Responses d-e). None of the project activities would be located on or affected by expansive soils. The trail reroute would be located mostly on granite rock and decomposed

granite soil, both of which are not considered expansive. The bridge would also be located on exposed granite bedrock. There would be no substantial risks to life or property due to the presence of project elements on expansive soils. In addition, no septic tanks or other alternative wastewater disposal systems are proposed as part of this project.

### 3.7 GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions or greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### 3.7.1 Environmental and Regulatory Setting

Gases that trap heat in the atmosphere and affect regulation of the Earth’s temperature are known as greenhouse gases (GHG). Common GHG include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF<sub>6</sub>).

GHG emissions from human activities contribute to overall GHG concentrations in the atmosphere, and climate scientists have become increasingly concerned about the effects of these emissions on global climate change. Human (anthropogenic) production of GHGs has increased steadily since pre-industrial times and atmospheric CO<sub>2</sub> concentrations have increased from a pre-industrial value of approximately 280 ppm to a global monthly mean of 393 ppm in 2012 (NOAA 2012). The United Nations’ International Panel on Climate Change (IPCC) fourth assessment report (AR4) concluded that recent regional climate changes, particularly temperature increases, are affecting many natural systems including water, ecosystems, food, coasts, and health (IPCC 2007). The AR4 concluded that most of the observed increase in global average temperature since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations (IPCC 2007a).

GHGs can remain in the atmosphere long after they are emitted. The potential for a GHG to absorb and trap heat in the atmosphere is considered its global warming potential (GWP). The reference gas for measuring GWP is CO<sub>2</sub>, which has a GWP of one. By comparison, CH<sub>4</sub> has a GWP of 21, which means that one molecule of CH<sub>4</sub> has 21 times the effect on global warming as one molecule of CO<sub>2</sub>. Multiplying the estimated emissions for non-CO<sub>2</sub> GHGs by their GWP determines their carbon dioxide equivalent (CO<sub>2</sub>e), which enables a project’s combined global warming potential to be expressed in terms of mass CO<sub>2</sub> emissions.

In 2006, the California State Legislature adopted the California *Global Warming Solutions Act of 2006*, Assembly Bill (AB) 32, which required CARB to: 1) determine 1990 statewide GHG emissions, 2) approve a 2020 statewide GHG limit that is equal to the 1990 emissions level, 3) adopt a mandatory GHG reporting rule for significant GHG emission sources, 4) adopt a Scoping Plan to achieve the 2020 statewide GHG emissions limit, and 5) adopt regulations to achieve the maximum technologically feasible and cost-effective reductions.

In 2007, CARB approved a statewide 1990 emissions level and corresponding 2020 GHG emissions limit of 427 million metric tons of carbon dioxide equivalents (MMTCO<sub>2</sub>e) (CARB 2007). In 2009, CARB adopted its 2008 *Climate Change Scoping Plan*, which projects, absent regulation or under a “business as usual” (BAU) scenario, 2020 statewide GHG emissions

levels of 596 million MTCO<sub>2</sub>e and identifies the numerous measures (i.e., mandatory rules and regulations and voluntary measures) that will achieve at least 174 MMTCO<sub>2</sub>e of reductions and reduce statewide GHG emissions to 1990 levels by 2020 (ARB 2009a). In 2011, CARB released a supplement to the 2008 Scoping Plan Functional Equivalent Document (FED) that included an updated 2020 BAU statewide GHG emissions level projection of 507 million MTCO<sub>2</sub>e (CARB 2011a). CARB has also adopted a Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Title 17, CCR, Section 95100 – 95133 (17 CCR §95100 – 95133)), which requires facilities that emit greater than or equal to 25,000 metric tons of CO<sub>2</sub> annually to report their GHG emissions to CARB.

Regionally, the Sacramento Area Council of Governments Climate Change and Air Quality Committee is responsible for developing recommendations relative to air quality, energy conservation, climate change, and related issues.

### 3.7.2 Discussion

*Would the proposed project:*

- a. **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

**Less Than Significant Impact.** Project construction activities would emit approximately 13 total MTCO<sub>2</sub>e (Appendix C; see Table C-4 Helicopter GHG [8.7 metric tons] plus URBEMIS report for Construction Emission Estimates Annual Unmitigated Mass Grading [4.68 metric tons]). Project operation (OHV use of the trail) also creates minor amounts of GHG emissions during the typical 12 weeks that the trail is open to OHV activity. Neither the El Dorado County AQMD nor the SMAQMD maintain numeric significance thresholds for GHG emissions, however, as a point of reference, the Bay Area Air Quality Management District considers land use projects that result in more than 1,100 MTCO<sub>2</sub>e of operational GHG emissions per year to have a significant GHG impact. The magnitude of the project's GHG emissions would not impede state GHG reduction goals and is considered a less than significant impact.

- b. **Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

**Less Than Significant Impact.** The project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Off-road and intrastate aviation GHG emissions are identified and planned for in the CARB's GHG emissions inventory and Scoping Plan, which contains measures designed to achieve the state's GHG reduction goals outlined in AB32. The project would not contain any stationary sources that are subject to state or federal GHG permitting or reporting regulations.

**3.8 HAZARDS AND HAZARDOUS MATERIALS**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.8.1 Regulatory Setting

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. Chemical and physical properties such as toxicity, ignitability, corrosivity, and reactivity cause a substance to be considered hazardous. These properties are defined in CCR, Title 22, Sections 66261.20-66261.24. A “hazardous waste” is any hazardous material that is discarded, abandoned, or to be recycled. The criteria that render a material hazardous also make a waste hazardous (Health and Safety Code § 25117). According to this definition, fuels, motor oil, and lubricants in use at a typical construction site and airborne lead built up along roadways could be considered hazardous.

### 3.8.2 Discussion

*Would the proposed project:*

- a. **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**
- b. **Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

**No Impact.** (Responses a-b) The project site does not contain any hazardous materials nor are any hazardous materials planned to be brought to the project site. Construction vehicles would be fueled off site, at the USFS maintenance facility. No fluids or fuels would be transported to the construction site. The project would not cause an impact either through transport, use, or disposal of hazardous materials or by posing a risk of release of hazardous materials into the environment.

- c. **Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or hazardous waste within one-quarter mile of an existing or proposed school?**

**No Impact.** The project sites do not contain any hazardous materials nor are any aspects of project implementation expected to emit hazardous emissions or wastes, other than the burning of fuel needed to power the equipment used to conduct the trail and bridge installation. There are no schools within one-quarter mile of the project site.

- d. **Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

**No Impact.** The project site is not located on the list of hazardous materials sites pursuant to Government Code Section 65962.5. Implementation of the project would not pose an impact related to the presence of hazardous materials.

- e. **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?**

**f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

**No Impact.** (Responses e-f) The project site is not located within an area that has an airport land use plan. There are no private airstrips near the project site. The nearest airport is the Lake Tahoe Airport more than 10 miles away.

**g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

**No Impact.** Implementation of the bridge and trail work would facilitate the use of the trail by emergency personnel as it would eliminate wet crossings in the trail and make them more durable. The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

**h. Expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands?**

**No Impact.** The bridge site is in a remote location on exposed granite bedrock and would not expose people or structures to a significant risk of loss, injury, or death involving wild land fires. The project is being proposed to eliminate impacts associated with the existing trail and the wet crossing. The project would not be introducing a new use to the area and is not intended to result in more people using the trail.

**3.9 HYDROLOGY AND WATER QUALITY**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.9.1 Regulatory and Environmental Setting

The project is located within the Eldorado National Forest and includes the Jones Fork of Silver Creek. Silver Creek is a major tributary of the South Fork American River. The section of the Jones Fork of the Silver Creek where the bridge would cross runs through granite rock. The creek in the project area steep sided and principally void of vegetation. The current wet crossing has potential to adversely affect water quality through sedimentation and damage to riparian vegetation.

Because the project would take place on National Forest lands, water quality protection is guided by the LRMP for the Eldorado National Forest. Relevant excerpts from the LRMP are included below:

Water quality is an important aspect of management of the Forest. Intensive resource activities such as timber harvesting, road building, mining, and livestock grazing can increase sedimentation in streams and reduce the capacities of reservoirs. The public wants to maintain the existing high water quality found throughout the Eldorado. Forest practices must keep sediment production and transport within a tolerable amount that does not cause either short-term or cumulative impacts to that high quality condition. Riparian areas must be protected to maintain wildlife habitat and streamside recreation values, as well as serve downstream needs for domestic water. All forest activities are guided by the application of Best Management Practices for the prevention of nonpoint pollution impacts. These BMPs are identified in the publication named Water Quality Management for National Forest Lands in California, April 1979, USDA USFS, Region Five. Future monitoring of BMPs and cumulative watershed impacts would be employed to assure that high water quality is retained (USFS 1988).

Note that the BMPs mentioned above are included in Appendix B of this document.

### 3.9.2 Discussion

*Would the proposed project:*

- a. **Violate any water quality standards or waste discharge requirements?**
- b. **Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?**

**No Impact.** (Responses a-b). The project would not cause the violation of any water quality standards or waste discharge requirements. Erosion would be reduced. Groundwater supplies would be unaffected by the project as the project occurs mostly on exposed granitic bedrock and decomposed granite soil where groundwater recharge would be unaffected by project activities. Restoration of the old route would involve ripping and recontouring the trail and placing native material on the disturbed surface. This would increase permeability of the restored area soils.

- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?**
- d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?**

**Less Than Significant Impact.** (Responses c-d). The project is being proposed to eliminate the erosion and water quality impacts associated with the existing trail alignment and the wet crossing. Current use of the trail causes erosion of the creek banks and siltation of the water as vehicles drive through the creek. The proposed trail reroute and the construction of the bridge would eliminate these impacts, significantly reducing sedimentation that is occurring now and improving overall water quality of the creek.

Restoration of the closed segment of trail would involve ripping and recontouring the trail and placing native material on the disturbed surface. This would increase permeability of the restored area soils. The restoration work would be done according to USFS practices and would include USFS BMPs for erosion control. These BMPs are contained in Appendix B. The restoration activities would not alter the course of the creek.

Since much of the rerouted trail takes place on exposed granite bedrock and no grading of the bedrock is proposed, significant changes in topography are not anticipated due to the construction of the new trail alignment. Therefore the existing drainage pattern of the area is not expected to change substantially nor would it substantially increase the rate or amount of surface runoff which would result in on- or off-site flooding. Project construction would create loose debris from trail clearing activities in areas where the proposed trail is currently covered with brush, but this would only occur on a temporary basis. The trail is being moved off of loose soil to a surface of harder material including decomposed granite soil and exposed granite outcrops.

- e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?**
- f. Otherwise substantially degrade water quality?**
- g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?**
- h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?**
- i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?**
- j. Result in inundation by seiche, tsunami, or mudflow?**

**No Impact.** (Responses e-j). The project is the reroute of a 4WD trail and installation of a bridge over a creek. The project would increase permeability of the restored area soils and reduce erosion; it would not contribute runoff water or otherwise degrade water quality. It would not expose people or structures to a significant risk of loss injury or death involving flooding, including flooding as a result of a levee or dam failure as the project site is not located downstream of a levee or dam and the route would be closed during flood prone conditions. The trail is only open when trail conditions are dry. The trail typically opens the last weekend of July and is only open for about two months, usually closing around mid-October.

The project is not located near a large body of water that would inundate the project area with water from a seiche, tsunami or near hills that would result in a mudflow. The nearest body of water is Dark Lake, located approximately one mile south of the project area and at a lower elevation than the project area. Barrett Lake is located approximately three miles north of the project site.

**3.10 LAND USE AND PLANNING**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.10.1 Discussion**

*Would the proposed project:*

**a. Physically divide an established community?**

**No Impact.** The project has no components that would divide an established community. All trail work and bridge installation would take place on largely undeveloped national forest lands.

**b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?**

**No Impact.** None of the proposed work would change the nature of any land use within the area or conflict with any land use plans. The USFS determined the proposed action is consistent with the Eldorado National Forest LRMP as amended by the Sierra Nevada Forest Plan Amendment (USFS 2011a). The project is located in the Pyramid IRA, but the Barrett Lake 4WD trail was an established trail at the time the IRA was delineated, and the proposed project would not change the IRA characteristics of the area (USFS 2011a and b). Additionally, numerous design criteria apply to the project, minimizing adverse impacts and ensuring consistency with applicable plans and regulations (see Section 2.3.6). Discussion in the project EA of effects and the related references in the project file document that this project would not adversely affect soils, water quality, or threatened or endangered species (USFS 2011a).

Within the LRMP, the project area is contained in Management Area Number 20. A list of management practices applicable to this Management Area is contained in the Visual Foreground Retention section of the LRMP. These practices primarily pertain to visual impacts resulting from timber harvesting. No aspects of the trail reroute project would conflict with the visual foreground retention policies.

**c. Conflict with any applicable habitat conservation plan or natural community conservation plan?**

**No Impact.** None of the project sites are located in an area covered by a habitat conservation plan or natural community conservation plan.

**3.11 MINERAL RESOURCES**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local -general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.11.1 Discussion**

*Would the proposed project:*

- a. **Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**
- b. **Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**

**No Impact.** (Responses a-b). There are no important mineral resources within the project area (El Dorado County 2004). Furthermore, no important mineral resources would be removed from the project area, nor would availability of any mineral resources be affected by work in the project area.

**3.12 NOISE**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project result in:</i>				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.12.1 Discussion**

*Would the proposed project:*

- a. Expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

**Less Than Significant Impact.** Noise levels would increase during construction of the new trail and installation of the bridge to the extent that heavy equipment would be used for restoration of the closed section of trail, and a helicopter would be used for a total of approximately eight hours to aid in the bridge construction. A small semi-truck would likely be used to transport the large bridge pieces to the bridge site such as trusses, girders, and/or decking to the staging area. A helicopter would likely be used to sling larger bridge pieces from the staging area along Wright’s Lake Road (at the existing log landing or parking area adjacent to the road) to the bridge. The large material staging areas are located over one mile from the Wrights Lake Campgrounds.

Smaller materials and equipment such as concrete, mixer, small deck materials, etc., and workers would be transported to the site using 4WD trucks and trailers via the existing trail. Noise from construction equipment would be limited to the hours between 7:00 a.m. and 8:00 p.m., Monday through Friday, and for a period of approximately two weeks in late September, early October 2012. Rehabilitation of the closed route would take approximately one week.

There are no sensitive receptors in the vicinity of the specific project sites that would be affected by heavy equipment noise. Construction is proposed to occur after Labor Day, after the height of the recreation season, to minimize disturbance to recreationists. The nearest campground is Wrights Lake Campground located approximately one mile south of the project site. There are also recreation residence tracts (Dark Lake and Wrights Lake) in the same area. Campers and residents in this area would hear the helicopter when it is being used and may hear heavy equipment (especially back-up alarms which tend to carry in quiet settings). Because of the short duration of the work (three weeks) and the project's distance from these receptors construction noise is considered less than significant.

**b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?**

**No Impact.** Localized ground vibrations may occur during implementation of the project at the specific project sites due the use of heavy equipment. However, ground vibrations from heavy equipment would be limited to the hours between 7:00 a.m. and 8:00 p.m., Monday through Friday, and for a period of approximately three weeks (two weeks for bridge installation, one week for restoration activities). The trail would be closed to all users during construction and restoration activities. Therefore, no trail users would be affected by construction noise, groundborne or otherwise. There are no sensitive receptors in the vicinity of the specific project sites (potential staging areas, rerouted trail, bridge location, and restored trail location) that would be affected by any ground borne vibration or noise. The nearest sensitive receptors are located approximately a mile south of the bridge site, at Wrights Lake.

**c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

**No Impact.** The project involves the installation of a bridge, reroute of trail, and trail restoration. Bridge installation and trail reroute would occur over two weeks and the abandoned trail restoration would occur over one week. After that time, the heavy equipment used to conduct the work would be removed and the trail would return to normal use. As stated in the EA (USFS 2011a), the installation of the bridge and reroute is not expected to change the level or type of use by the public. Therefore, a substantial permanent increase in ambient noise levels is not expected as a result of the project.

**d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?**

**Less Than Significant Impact.** A helicopter would be used to sling large bridge pieces from the potential large materials staging areas identified in Figure 7. Helicopters are approximately 100 dB at 100 feet (Airport Noise Law 2011). However, the closest sensitive receptors, at Wrights Lake and Dark Lake, are located over a mile north of the potential staging areas, and about a mile south of the bridge location. The trail would be closed to users during construction and restoration activities. Therefore, no trail users would be affected by construction noise.

- e. **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**
- f. **For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?**

**No Impact.** (Responses e-f) The nearest airport to the project site is the Lake Tahoe Airport, located more than ten miles from the project site. The project site is not located within the 60 dBA CNEL zone of the airport and does not involve a change in recreational or other human use of the area, and implementation of the project would not affect or result in exposure to excessive noise levels from an airport. None of the specific project sites are within the vicinity of a private airstrip.

**3.13 POPULATION AND HOUSING**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.13.1 Discussion**

*Would the proposed project:*

- a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?**

**No Impact.** The project is located in a national forest and would not induce population growth. The proposed project consists of the construction of a bridge for OHV use, the closure and restoration of a short segment of trail, and the construction of a 0.5 mile stretch of new trail. Project activities would not provide services that support or induce population growth.

- b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?**

**No Impact.** The project would not displace any existing houses.

- c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?**

**No Impact.** There are no people living in the immediate vicinity of specific project sites (bridge location, trail reroute, and trail restoration). Summer homes are located at Dark Lake and Wrights Lake; however, the residences of these houses would not be directly affected by project activities. Therefore, there would be no displacement of people requiring the construction of replacement housing elsewhere.

**3.14 PUBLIC SERVICES**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.14.1 Discussion**

*Would the proposed project:*

**a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:**

**i. Fire protection?**

**No Impact.** The project would not increase the need for fire protection services or create an adverse impact on fire protection services.

**ii. Police protection?**

**No Impact.** The project would not increase the need for police protection services or create an adverse impact on police protection services. The project area is monitored by National Park Service rangers.

**iii. Schools?**

**No Impact.** The project would neither affect the number of students served by local schools, nor bring in new residents requiring the construction of additional schools.

**iv. Parks?**

**No Impact.** The project would not result in an increased number of residents or visitors in the area using community parks. The project is not expected to increase visitor use within the national forest or OHV use of the trail. It is not expected that the bridge would substantially lengthen the duration of use of the trail. Other wet areas persist on the trail even as flows recede in the creek. The main conditions for opening the trail is if trail conditions are dry enough on most of the trail to avoid the majority of adverse impacts from utilizing the route during the wet season. The wet crossing is not the only factor. The trail is primarily used by high clearance 4WD vehicles that are less than 82 inches wide. Motorcycles and ATVs are also allowed to use the trail. Access to the trail is controlled by a gate at the trailhead that remains locked when the trail is not open for use.

**v. Other public facilities?**

**No Impact.** No other public facilities would be affected by the project.

**3.15 RECREATION**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.15.1 Discussion**

*Would the proposed project:*

- a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?**

**No Impact.** The project would not increase visitor use at the national forest such that new recreational facilities would be needed, nor would the new bridge and associated trail cause motorized recreationists to intensify uses on other facilities. No neighborhood or regional parks are located in the vicinity of specific work sites.

- b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?**

**No Impact.** The project would not include nor would it facilitate any new recreational facilities or activities. The road reroute and bridge installation would not cause an expansion of OHV use within the national forest. As mentioned previously, other wet areas persist on the trail, and therefore the existing wet crossing that would be bypassed by installation of the proposed bridge are not the only factor in the timing of the opening of the trail.

**3.16 TRANSPORTATION/TRAFFIC**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.16.1 Discussion**

*Would the proposed project:*

- a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit?**
- b. Conflict with an applicable congestion management program, including, but not limited to a level of service standards and travel demand measures, or**

**other standards established by the county congestion management agency for designated roads or highways?**

- c. **Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?**
- d. **Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**
- e. **Result in inadequate emergency access?**
- f. **Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities supporting alternative transportation (e.g., bus turnouts, bicycle racks)?**

**No Impact.** (Responses a-f). Project activities would take place on Eldorado National Forest lands in a very sparsely populated area of Eldorado County. The Barrett Lake 4WD trail is typically open from the last weekend in July until about mid-October when the first fall/winter snow falls. Since 2006, the average number of weeks the trail has been open is just over 11 weeks per year. The installation of the bridge is not expected to significantly change the “open season” for the trail as there are other wet areas that persist on the trail dictating when it can be opened. The project would not allow other vehicles previously not allowed on the trail to use the trail. A gate measuring 82 inches wide is located at the start of the trail and effectively limits the size and type of vehicles allowed on the trail. Average speed on the 6-mile long trail is 1.5 to 2 mph. The bridge and trail reroute do not include sharp turns or intersections. Once completed, emergency access would remain unchanged. Public transit facilities would be unaffected by the project.

**3.17 UTILITIES AND SERVICE SYSTEMS**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<i>Would the project:</i>				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 3.17.1 Discussion

Would the proposed project:

- a. **Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?**
- b. **Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** (Responses a-b) No project activities would involve or affect wastewater treatment facilities. The project would not require construction of new or expanded water or wastewater treatment facilities. The project has no wastewater disposal needs. Portable toilets would be provided to construction crews.

- c. **Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?**

**No Impact.** The bridge installation and trail work is needed to improve water quality by removing wet stream crossings that cause excessive siltation of downstream water bodies.

- d. **Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?**

**No Impact.** No new water supplies or entitlements would be needed to complete the project because there would be no change of existing water use associated with the project.

- e. **Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

**No Impact.** The project would not trigger the need for wastewater treatment and would not affect any commitments by wastewater treatment providers. Portable toilets would be available for construction workers. Pit toilets are located at Barrett Lake, Wrights Lake, and at the Rockbound Trail trailhead.

- f. **Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?**

**No Impact.** The project has no solid waste disposal needs. Cleared vegetation would be dispersed in the restored trail area.

- g. **Comply with federal, state, and local statutes and regulations related to solid waste?**

**No Impact.** The project has no solid waste disposal needs and thus would not violate any federal, state, or local statutes or regulations related to solid waste.

**3.18 MANDATORY FINDINGS OF SIGNIFICANCE**

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means the incremental effects of past projects, the effects of other current projects, and the effects of probably future projects as defined in Section 15130.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**3.18.1 Discussion**

*Would the proposed project:*

- a. **Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

**Less Than Significant Impact with Mitigation.** Work at the project site would employ BMPs during implementation to preserve the quality of the environment and to protect sensitive habitats and species. Mitigation measures (BIO-1 and BIO-2) are recommended to protect special-status plants and animals from significant harm. These actions would prevent substantial degradation of the environment, specifically loss of species below self sustaining levels. No important examples of the major periods of California history or prehistory are present at specific project sites.

- b. **Does the project have possible environmental effects that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means the incremental effects of past projects, the effects of other current projects, and the effects of probable future projects as defined in Section 15130)?**

**No Impact.** The EA includes an analysis of cumulative impacts for each environmental issue addressed in the EA. The following is from the EA (USFS 2011a):

Biological Evaluations prepared for this project considered potential cumulative impacts of the proposal on habitat for wildlife and plants. These documents support the finding that this proposal would not cause significant cumulative effects on biological or physical resources, even when considered in relation to other actions. The Wildlife Biologist determined there are no cumulative effects on the California spotted owl, northern goshawk, Pacific fisher, American marten, Sierra Nevada red fox, and Sierra Nevada yellow-legged frog from this project (BA/BE for Barrett Bridge and Reroute Project).

This project would be expected to reduce the potential for adverse cumulative watershed effects in spite of the new disturbance proposed, as replacing the wet crossing with a bridge, rerouting the trail, and restoring the old crossing are designed to reduce erosion and sedimentation and improve water quality.

Based on the analysis conducted, implementation of the project would not have cumulative effects on Proposed, Threatened and Endangered or Region 5 sensitive plant species potentially occurring on the project area (Biological Evaluation for Sensitive Plants for the Proposed Barrett Jeep Trail Bridge Crossing and Reroute Project).

**c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?**

**No Impact.** The project involves rerouting a trail that crosses through a creek and installation of a bridge over the creek. The project is needed to improve water quality in the forest. Measures have been incorporated into the project that would prevent significant environmental effects. No substantial unavoidable adverse effects, either direct or indirect, are identified in this Initial Study.

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**Eldorado National Forest**

**Barrett Lake 4WD Trail Bridge Development**

**Initial Study/ Mitigated Negative Declaration**

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**Appendix A**

**Environmental Assessment and Decision Notice for Barrett Bridge and Reroute Project, Eldorado National Forest, January 2011**



United States  
Department of  
Agriculture

**Forest  
Service**

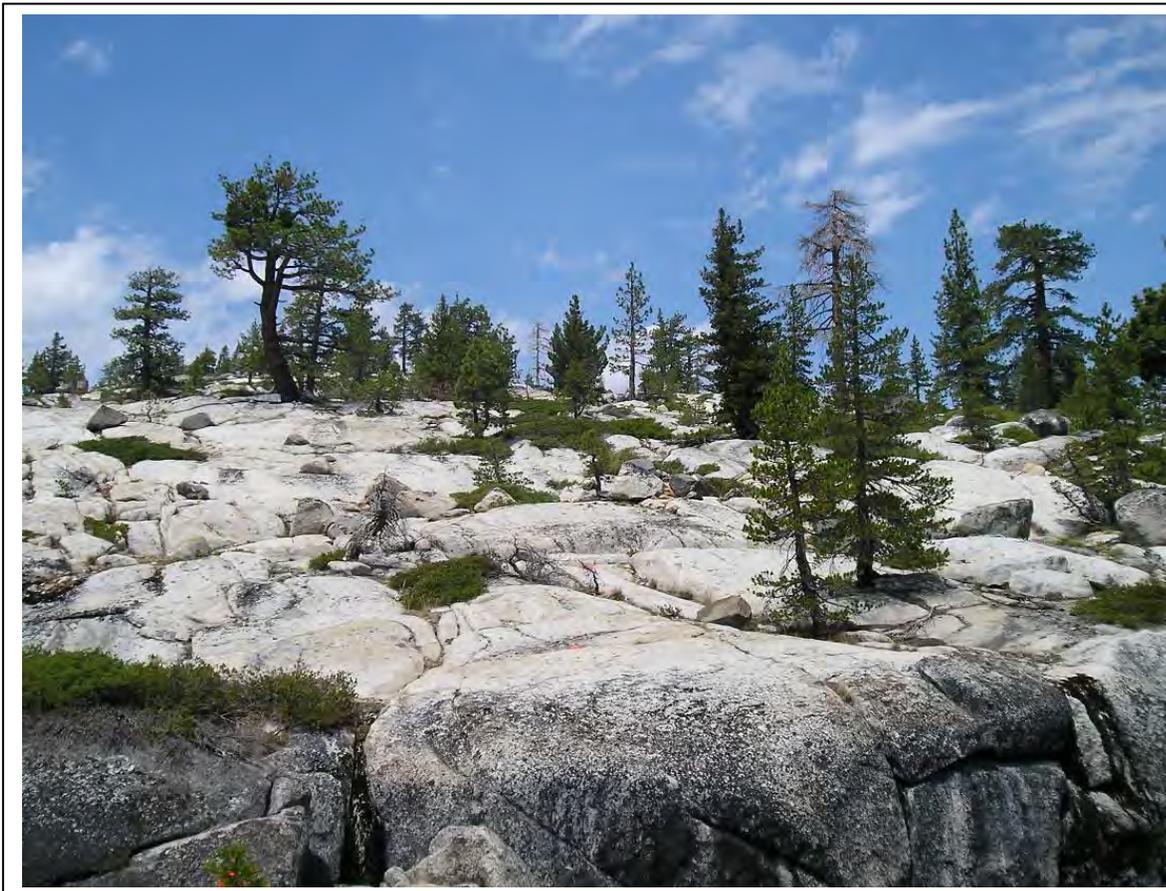
Pacific  
Southwest  
Region

January 2011

# Environmental Assessment for

## **Barrett Bridge and Reroute Project**

### **Eldorado National Forest**



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## **INTRODUCTION**

The Barrett Lake 4WD Trail is a popular off-highway vehicle route located on the Eldorado National Forest that has been utilized by recreationists since at least the 1960s. It is also located within the Pyramid Inventoried Roadless Area (IRA). Access to the trail is restricted during the wet season and is only open to vehicle use during periods when trail conditions warrant (generally late July until first measurable rain in October). The HiLanders 4WD Club has adopted the trail and performs monitoring and maintenance of the route. A reroute was completed on the trail in 2004 to avoid travel through a meadow. The current Barrett Lake 4WD Trail, however, still traverses the Jones Fork of Silver Creek and a small tributary in a wet crossing, where vehicles drive through the water to cross the creek. The location of the project is approximately one mile north of Wrights Lake on the Pacific Ranger District, Eldorado National Forest (T11N, R16E, Sections 20 and 29; refer to the attached map).

## **NEED FOR ACTION**

The current alignment of the Barrett Lake 4WD Trail crosses the Jones Fork of Silver Creek and a small tributary with a wet crossing. This can impact water quality and aquatic species habitat through sedimentation and damage to riparian vegetation. Natural granitic features downstream of the current alignment provide the opportunity to use a bridge crossing and access would be on durable bedrock granite surface. The purpose of this project would be to reduce sediment delivery to the stream while continuing to provide a high quality motorized trail experience. It would also meet the need to improve habitat for the Sierra Nevada yellow-legged frog and maintain or improve the characteristics of the Pyramid Creek IRA.

## **PUBLIC INVOLVEMENT**

A brief description of location and type of project was included in the Eldorado National Forest Schedule of Proposed Actions (SOPA) each quarter since May 2005. A scoping letter, dated February 21, 2008, was mailed or emailed out to adjacent property owners, state and local agencies, local interested groups, and interested individuals. The letter contained the detailed proposed action, map, and methods for participation. The mailing list is included in the project record. Two responses to the scoping were received (See Appendix A).

## **Issues**

An issue is a point of debate, dispute, or disagreement regarding anticipated effects of the proposed action. Issues may be “important” or “unimportant.” Issues may be unimportant for any of four reasons: 1) the issue is outside the scope of the proposed action; 2) the issue is already decided by law, regulation, or Forest Plan; 3) the issue is irrelevant to the decision being made; or 4) the issue is conjectural and not supported by scientific or factual evidence. Important issues are used to develop reasonable alternatives to the proposed action that respond to the argument or controversy presented in the issue and substantially accomplish the purpose and need. No important issues were identified, and no alternatives beyond the proposed action were developed for analysis based on scoping.

## **ALTERNATIVES**

### **Alternative 1 - Proposed Action**

The Forest Service proposes to reroute the Barrett Lake 4WD Trail (Forest Trail 16E21) to reduce resource impacts of the current trail. The current Barrett Lake 4WD Trail crosses the Jones Fork of the Silver Creek in a wet crossing, where vehicles drive through the water to cross the creek. If the proposed reroute is approved, the following activities would occur:

- Approximately 0.5 miles of new trail would be constructed for the reroute. Since the new trail crosses primarily exposed bedrock granite and decomposed granite soil, most of the proposed trail is void of vegetation. However, some brush removal and brush pruning will occur.
- A new wooden and steel bridge approximately 50 feet long would be constructed to cross the creek at the new location. The foundation of the new bridge will be granitic bedrock that is currently exposed at the proposed bridge site. Bridge design would meet R5 Forest Service standards.
- Approximately 0.5 miles of existing trail would be abandoned and restored by using mechanized equipment and hand work to rip and re-contour the trail, and placing native materials on the abandoned trail surface. Native materials will be from weed-free sources.

Implementation would likely occur in the late summer or fall of 2011 or 2012, after Labor Day but prior to the onset of winter storms. The trail would be closed to public use during construction and restoration.

### **Design Criteria –**

#### **Aquatic and Terrestrial Wildlife**

- Should any TES species be located before or during implementation, the Pacific District Biologist, and/or Forest Aquatic Biologist would be immediately notified. Protection measures/mitigations would be implemented to reduce potential for effects to TES species as recommended by biologists.

#### **Heritage Resources**

- Should the project boundaries or activities be expanded beyond the current Area of Potential Effect (APE), the District Archaeologist should be notified immediately, as Section 106 compliance for this project will be incomplete until additional cultural resources review is completed.
- Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area and the District Archeologist be notified immediately. Work may resume after approved by the District Archeologist. Should any cultural resources become damaged in unanticipated ways by activities proposed in this project, the steps described in the Sierran Programmatic Agreement (PA) for inadvertent effects will be followed.

#### **Sensitive Plants and Noxious Weeds**

- If sensitive plant occurrences are discovered during project implementation either along the proposed new route or within abandoned areas that are being restored, those occurrences would be flagged for avoidance. Newly discovered locations would be reported to the Forest Botanist and District Biologist.
- All off-road equipment would be cleaned to ensure it is free of soil, seeds, vegetative matter, or other debris that could contain noxious weed seeds prior to entering the project area.
- Any straw or mulch used for erosion control or in restoration of abandoned section of route would be certified weed-free or, if certified straw is not available, rice straw would be used. A certificate from the county of origin stating the material was inspected is required.

- Any seed used for restoration or erosion control would be from a locally collected source (ENF Seed, Mulch and Fertilizer Prescription, 2000).
- Infestations of noxious weeds that are discovered during project implementation would be documented and locations mapped. New sites would be reported to the Forest Botanist.

### **Hydrology**

- All applicable Best Management Practices will be used.

### **Monitoring**

- Monitoring for noxious weeds along the new route would occur the year after completing construction and would continue for two to three years as needed (i.e. weeds are located).
- Monitoring for noxious weeds along the section of route to be abandoned would occur each year following a year in which restoration activities include the use of equipment or the importing of materials. Monitoring would continue for two to three years as needed.
- The new reroute and restoration area would be patrolled by Forest Service staff and/or volunteers to educate the public, ensure users are utilizing the new route, and monitor the success of restoration activities.

### **Alternative 2 – No Action**

No actions would be taken to minimize impacts to water quality in the Jones Fork of Silver Creek resulting from wet crossings on the Barrett Lake 4WD Trail. The bridge crossing would not be constructed and the reroute and restoration of the existing trail would not occur.

### **Tiering and Incorporation by Reference**

In order to eliminate repetitive discussion and documentation, this environmental assessment tiers to the Eldorado National Forest Land and Resource Management Plan (LRMP of 1989) as amended by the Sierra Nevada Forest Plan Amendment, (January 2004).

The following documents prepared for this analysis are incorporated by reference:

- Heritage Resource Report Jones Fork/Barrett 4WD Bridge Project, R2005-05-03-50028 for the Pacific Ranger District, Eldorado National Forest.
- Biological Assessment and Evaluation for Barrett Bridge and Reroute Project (September 2009)
- Biological Evaluation for Sensitive Plants and Noxious Weed Risk Assessment for the Proposed Barrett Jeep Trail Bridge Crossing and Reroute Project (September 2008)
- Management Indicator Species Analysis for Barrett Bridge and Reroute Project. (September 2009)
- Functional Assistance Trip – Technical, Proposed Barrett Lake OHV Bridge (October 2007)

### **ENVIRONMENTAL CONSEQUENCES**

This section describes the environmental impacts of the proposal in relation to whether there may be significant environmental effects as described at 40 CFR 1508.27. Further analysis and conclusions about the potential effects are available in resource specialist reports and other supporting documentation located in the project record. The following are discussions of resources that have relevance to a determination of significance.

### **1. Beneficial and adverse impacts.**

Beneficial effects were not used to offset adverse effects. In the absence of beneficial effects, no adverse effects would be significant even when considered by themselves.

Construction of the bridge, the reroute to the bridge and the restoration of the existing trail crossing will result in a reduction of erosion and sedimentation. The new location of the route will be mostly on bedrock granite and therefore provides a more stable surface. There will be short-term direct impacts related to disturbance; however there is a long-term net benefit and reduction of sediment from the trail. The short-term impacts were determined to not be environmentally significant.

This proposal does pose some beneficial and adverse effects on sensitive wildlife species. The trail reroute construction and restoration of the existing crossing has the potential to disturb the Sierra Nevada yellow-legged frog if they are present in the vicinity of the proposed action. The project is expected to improve habitat for the yellow-legged frog over the long-term by removing the wet crossing and reducing sediment delivery to the stream. Activities may also result in disturbance to previous undetected individuals of California spotted owl, Northern goshawk, Pacific fisher, American marten, or Sierra Nevada red fox. However, the disturbance is expected to be minimal impact on the species as a whole, because project-related noise is not expected to be more than normal public use of the trail and the disturbance would be short term. In addition, the trail reroute will move the trail out of suitable habitat for spotted owl, northern goshawk, and Pacific fisher. Lacustrine/Riverine habitat for Management Indicator Species would also benefit from the proposed project over the long-term by reducing sediment delivery to the stream and restoring native vegetation.

The Biological Evaluation for Sensitive Plants and Noxious Weed Assessment determined that there was some potential habitat for Kellogg's lewisia and Hutchison's lewisia on the granite where the reroute is proposed. A field survey did not locate either species but individuals present may not have been discovered due to timing of the surveys. There is a possibility that undiscovered plants could be impacted as a result of the project. The proposed project is expected to be beneficial for riparian vegetation, particularly with the restoration of the existing route. Because no plants were located during the survey, effects from this proposal on sensitive species, communities or habitats are not projected to be significant.

There were no occurrences of noxious weeds found in or near the project area. Vehicle traffic has the potential to be vectors for weed seeds but the granitic substrate is generally not receptive. Equipment would be cleaned prior to use on the proposed project and any materials utilized would be from a weed-free source to minimize the risk of introducing noxious weeds. Implementation of the proposed project and the noxious weed management requirements would impart a low risk of new introductions of noxious weeds and spreading the existing weeds on the Barrett Bridge and Reroute Project.

### **2. The degree to which the proposed action affects public health or safety.**

The new bridge would be designed and constructed to Region 5 Forest Service Standards to meet all safety standards for the anticipated use. The construction of the bridge may improve public safety by allowing early season users to cross the Jones Fork of Silver Creek without having to enter the streamcourse. The installation of the bridge and the reroute is not expected to change the level or type of use by the public, therefore, would not change safety risk. The route would be closed during construction of the bridge to minimize safety risk to the public.

### **3. Unique characteristics of the geographic area.**

The proposed action is located within the Pyramid Inventoried Roadless Area (IRA). The following features are common characteristics in IRA's:

- *High quality or undisturbed soil, water, and air;*
  - *Sources of public drinking water;*
  - *Diversity of plant and animal communities;*
  - *Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land;*
  - *Primitive, Semi-Primitive Non- Motorized, and Semi-Primitive Motorized recreation opportunities;*
  - *Reference landscapes;*
  - *Natural appearing landscapes with high scenic quality;*
  - *Traditional cultural properties and sacred sites;*
  - *Other locally identified unique characteristics.*
- (36 CFR 294)

The Barrett Lake 4WD Trail was an established use at the time the IRA was delineated and the proposed project is not expected to change the above listed characteristics of the area. The construction of the bridge and the reroute of the trail to primarily granitic surfaces is expected to reduce potential impacts of the route on water quality and sensitive species habitat. The bridge will be designed to blend in with the surrounding landscape as much as possible. Restoration of the existing trail and wet crossing will lead to the re-establishment of native vegetation. The proposed project area is not in the proximity to any parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas, therefore none would be impacted.

### **4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.**

The proposed action is not considered to be highly controversial, as evidenced in the supportive nature of the scoping comments received.

### **5. Degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.**

The effects on the human environment from the proposed alternative are not uncertain and do not involve unique or unknown risks. The proposed action is similar in type and scope to many projects on the Eldorado National Forest. Effects from this type of project are well known to the interdisciplinary team members.

### **6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.**

The Barrett Bridge Construction and Trail Reroute Project represents a site-specific project that does not set precedence for future actions or present a decision in principle about future considerations. The project does not change the character of the Pyramid Inventoried Roadless Area and would not preclude any future actions related to the IRA. Any proposed future project must be evaluated on its own merits and effects.

### **7. Whether this action is related to other actions with individually insignificant but cumulatively significant impacts**

Biological Evaluations prepared for this project considered potential cumulative impacts of the proposal on habitat for wildlife and plants. These documents support the finding that this proposal would not cause significant cumulative effects on biological or physical resources, even when considered in relation to other actions. The Wildlife Biologist determined there are no cumulative effects on the California spotted owl, northern goshawk, Pacific fisher, American marten, Sierra Nevada red fox, and Sierra Nevada yellow-legged frog from this project (BA/BE for Barrett Bridge and Reroute Project).

This project would be expected to reduce the potential for adverse cumulative watershed effects in spite of the new disturbance proposed, as replacing the wet crossing with a bridge, rerouting the trail, and restoring the old crossing are designed to reduce erosion and sedimentation.

Based on the analysis conducted, implementation of the project will not have cumulative effects on Proposed, Threatened and Endangered or Region 5 sensitive plant species potentially occurring on the project area (Biological Evaluation for Sensitive Plants for the Proposed Barrett Jeep Trail Bridge Crossing and ReRoute Project).

**8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.**

All of the project area has been surveyed and a comprehensive Archaeological Reconnaissance Reports (ARR No. R2005-05-03-50028) was completed. None of the known sites are within or near the area of potential impact and no archaeological sites are at risk from the proposed project. Based on the analysis documented in the ARR, the proposed action would not cause loss or destruction of significant scientific, cultural, or historical resources.

**9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.**

Biological Evaluations (BEs) were prepared for plant and wildlife species. The plant BE concluded that no threatened, endangered, or proposed plant species would be affected by this project. Layne's butterweed, *Senecio layneae*, a threatened plant would have no effect by this project, because its habitat is not present in the project area. For Forest Service Sensitive species, the project may affect individuals but would not likely contribute to a trend towards federal listing for Kellogg's lewisia, *Lewisia kelloggii* spp. *kelloggii*, or Hutchison's lewisia, *Lewisia kelloggii* spp. *hutchisonii*, (Biological Evaluation for Sensitive Plants for the Proposed Barrett Jeep Trail Bridge Crossing and ReRoute Project). The wildlife BE concluded that threatened, endangered, or proposed wildlife species would be not affected by the proposed action. Implementation of this project may affect individual Forest Service sensitive species of California spotted owl, northern goshawk, Pacific fisher, American marten, Sierra Nevada red fox, or Sierra Nevada yellow-legged frog, but is not likely to result in a trend toward Federal listing under the Endangered Species Act or loss of species viability (BA/BE for Barrett Bridge and Reroute Project).

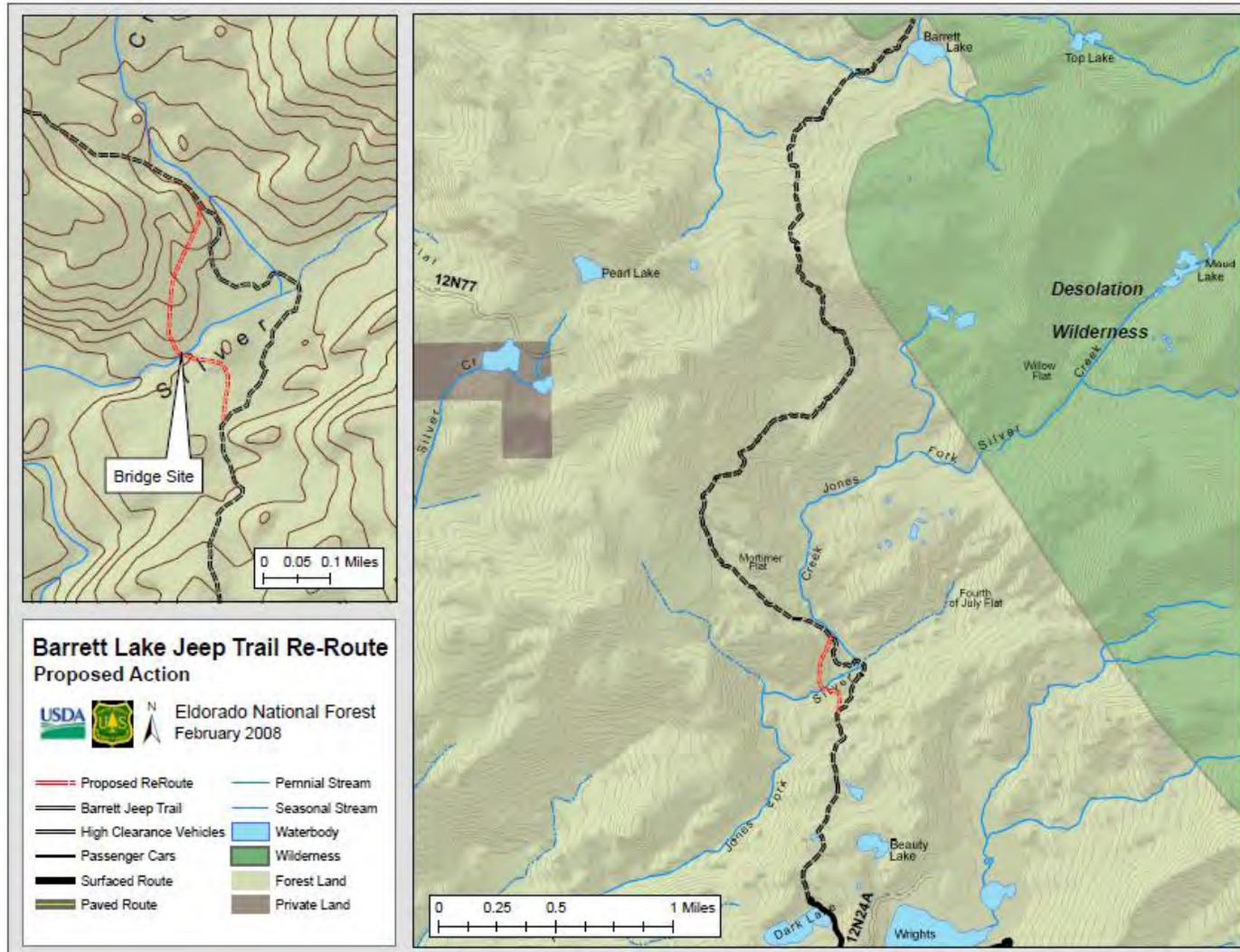
**10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.**

The proposed action was developed in accordance with and, therefore, does not threaten to violate any Federal, State or local laws or requirements for the protection of the environmental (i.e. Endangered Species Act, National Historic Preservation Act, Clean Water Act, Clean Air Act,

and the National Forest Management Act). Discussion in the EA of effects and the related references in the project file document that this project will not adversely affect soils, water quality, or threatened or endangered species. The proposed action is also consistent with the Eldorado National Forest Land and Resources Management Plan (1989) as amended by the Sierra Nevada Forest Plan Amendment (2004).

**Agencies and Others Consulted**

California Resources Agency  
California State Parks, Off-Highway Motorized Vehicle Division  
California Department of Forestry and Fire Protection  
Hi-Landers 4WD Club  
Frank Funk  
Monte Hendricks





**DECISION NOTICE AND  
FINDING OF NO SIGNIFICANT IMPACT  
BARRETT BRIDGE AND RE-ROUTE PROJECT  
U.S. FOREST SERVICE  
ELDORADO NATIONAL FOREST  
PACIFIC RANGER DISTRICT  
EL DORADO COUNTY, CA**

**DECISION**

Based upon my review of the Barrett Bridge and Re-route Project Environmental Assessment (EA), I have decided to implement Alternative 1, which would reroute the Barrett Lake 4WD Trail (Forest Trail 16E21) to reduce resource impacts of the current trail. The current Barrett Lake 4WD Trail crosses the Jones Fork of the Silver Creek in a wet crossing, where vehicles drive through the water to cross the creek. If the proposed reroute is approved, the following activities would occur:

- Approximately 0.5 miles of new trail would be constructed for the re-route. Since the new trail crosses primarily exposed bedrock granite and decomposed granite soil, most of the proposed trail is void of vegetation. However, some brush removal and brush pruning will occur.
- A new wooden and steel bridge approximately 50 feet long would be constructed to cross the creek at the new location. The foundation of the new bridge will be granitic bedrock that is currently exposed at the proposed bridge site. Bridge design would meet R5 Forest Service standards.
- Approximately 0.5 miles of existing trail would be abandoned and restored by using mechanized equipment and hand work to rip and re-contour the trail, and placing native materials on the abandoned trail surface. Native materials will be from weed-free sources.

**DECISION RATIONALE**

The current alignment of the Barrett Lake 4WD Trail crosses the Jones Fork of Silver Creek and a small tributary with a wet crossing. This can impact water quality and aquatic species habitat through sedimentation and damage to riparian vegetation. Construction of the bridge, the reroute to the bridge and the restoration of the old trail crossing will result in a reduction of erosion and sedimentation. The new location of the route will be mostly on bedrock granite and therefore provides a more stable surface.

There will be short-term direct impacts related to disturbance; however there is a long-term net benefit and reduction of sediment from the trail. The project is expected to improve habitat for the yellow-legged frog over the long-term by removing the wet crossing and reducing sediment



delivery to the stream. Lacustrine/Riverine habitat for Management Indicator Species would also benefit from the proposed project over the long-term by reducing sediment delivery to the stream and restoring native vegetation. Because no Threatened, endangered, or Forest Service sensitive plants were located during the survey, effects from this proposal on sensitive species, communities or habitats are not projected to be significant.

The proposed action is located within the Pyramid Inventoried Roadless Area (IRA). The Barrett Lake 4WD Trail was an established use at the time the IRA was delineated and the proposed project is not expected to change the IRA characteristics or would not preclude any future actions related to the IRA.

All of the project area has been surveyed and a comprehensive Archaeological Reconnaissance Reports (ARR No. R2005-05-03-5002) was completed. None of the known sites are within or near the area of potential impact and no archaeological sites are at risk from the proposed project. Based on the analysis documented in the ARR, the proposed action would not cause loss or destruction of significant scientific, cultural, or historical resources.

The Barrett Bridge and Re-route Project EA documents the environmental analysis and conclusions upon which this decision is based.

## **PUBLIC INVOLVEMENT**

This action was originally listed as a proposal on the Eldorado National Forest Schedule of Proposed Actions and updated periodically during the analysis. People were invited to review and comment on the proposal through a scoping letter, dated February 21, 2008, provided to adjacent property owners, state and local agencies, local interested groups, and interested individuals. The letter contained the detailed proposed action, map, and methods for participation. The Barrett Bridge and Re-Route Project EA was mailed to interested individuals and a notice of availability and request for comment was posted in the newspaper of record on February 2, 2011. The EA lists agencies and people consulted on pages 10. Two individuals submitted comments that were supportive of the project.

## **FINDING OF NO SIGNIFICANT IMPACTS**

The significance of environmental impacts must be considered in terms of context and intensity. This means that the significance of an action must be analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. In the case of a site-specific action, significance usually depends upon the effects in the locale rather than in the world as a whole. Intensity refers to the severity or degree of impact. (40 CFR 1508.27)

## **CONTEXT**

The Barrett Lake 4WD Trail is a popular off-highway vehicle route located on the Eldorado



National Forest that has been utilized by recreationists since at least the 1960s. It is also located within the Pyramid Inventoried Roadless Area (IRA). The current Barrett Lake 4WD Trail traverses the Jones Fork of Silver Creek and a small tributary in a wet crossing, where vehicles drive through the water to cross the creek. The Forest Service proposes to reroute the Barrett Lake 4WD Trail (Forest Trail 16E21) by constructing approximately 0.5 mile of new trail and a bridge crossing, then abandon and restore the old trail. The location of the project is approximately one mile north of Wrights Lake on the Pacific Ranger District, Eldorado National Forest (T11N, R16E, Sections 20 and 29; refer to the attached map).

### INTENSITY

The intensity of effects was considered in terms of the following:

1. **Impacts may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that, on balance, the effect will be beneficial.** Consideration of the intensity of environmental effects is not biased by beneficial effects of the action. The proposed action will reduce sedimentation of Jones Fork by replacing the wet crossing with a bridge. Project activities may result in disturbance of individual sensitive wildlife species but would be short-term and no greater than public use of the trail. The project will improve habitat for Sierra Nevada yellow-legged frog through removal of the wet crossing and re-establishment of native vegetation. (See EA page 7)
2. **The degree to which the proposed action affects public health or safety.** There will be no significant effects on public health and safety because the new bridge would be designed and constructed to Region 5 Forest Service Standards to meet all safety standards for the anticipated use. The proposed action is not expected to change the level or type of use by the public and the route would be closed during construction of the bridge to minimize safety risk to the public. (See EA page 7)
3. **Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.** There will be no significant effects on unique characteristics of the area, because although the project is located within the Pyramid Inventoried Roadless Area (IRA), the Barrett Lake 4WD Trail was an established use at the time the IRA was delineated and the proposed project is not expected to change the characteristics common to IRAs (36 CFR 294). The proposed project area is not in the proximity to any parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas, therefore none would be impacted. (See EA page 8)
4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** The effects on the quality of the human environment are not likely to be highly controversial. There is no known credible scientific controversy over the impacts of the proposed action. The proposed action is not considered to be highly controversial, as evidenced in the supportive nature of the scoping comments received. (See EA page 8)
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** The Agency has considerable



experience with actions like the one proposed. The analysis shows the effects are not uncertain, and do not involve unique or unknown risk. Effects from this type of project are well known to the interdisciplinary team members. (See EA page 8)

6. **The degree to which the action may establish a precedent for future actions with significant effects, or represents a decision in principle about a future consideration.** The action is not likely to establish a precedent for future actions with significant effects, because the project does not change the character of the Pyramid Inventoried Roadless Area and would not preclude any future actions related to the IRA. (See EA page 8)
7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** The cumulative impacts are not significant. Biological Evaluations prepared for this project considered potential cumulative impacts of the proposal on habitat for wildlife and plants. These documents support the finding that this proposal would not cause significant cumulative effects on biological or physical resources, even when considered in relation to other actions. (See EA page 8-9)
8. **The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed, or eligible for listing, in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.** The action will have no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause loss or destruction of significant scientific, cultural, or historical resources, because the project area has been surveyed and a comprehensive Archaeological Reconnaissance Reports (ARR No. R2005-05-03-5002) was completed. No known sites are within or near the area of potential impact and no archaeological sites are at risk from the proposed project. (See EA page 9)
9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.** The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973, because Biological Evaluations (BEs) were prepared for plant and wildlife species. The plant BE concluded that no threatened, endangered, or proposed plant species would be affected by this project. The wildlife BE concluded that threatened, endangered, or proposed wildlife species would be not affected by the proposed action. Implementation of this project may affect individual Forest Service sensitive species of California spotted owl, northern goshawk, Pacific fisher, American marten, Sierra Nevada red fox, or Sierra Nevada yellow-legged frog, but is not likely to result in a trend toward Federal listing under the Endangered Species Act or loss of species viability (See EA page 9)
10. **Whether the action threatens to violate Federal, State, or local law or requirements imposed for the protection of the environment.** The action will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the EA (see EA page 10). The action is consistent with the Eldorado Land and Resource Management Plan. Discussion in the EA of effects and the related references in the project file document that this project will not



adversely affect soils, water quality, or threatened or endangered species. (See EA page 10)

After considering the effects of the actions analyzed, in terms of context and intensity, I have determined that these actions will not have a significant effect on the quality of the human environment. Therefore, an environmental impact statement will not be prepared.

### **FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS**

This decision is consistent with the Eldorado National Forest Land Management Plan.

The proposed action was developed in accordance with and, therefore, does not threaten to violate any Federal, State or local laws or requirements for the protection of the environmental (i.e. Endangered Species Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, and the National Forest Management Act). Discussion in the EA of effects and the related references in the project file document that this project will not adversely affect soils, water quality, or threatened or endangered species.

### **ADMINISTRATIVE REVIEW (APPEAL) OPPORTUNITIES**

The 30-day comment period for this project ended on March 4, 2011. Since no substantive comments expressing concerns were received, or only supportive comments were received during the comment period, this decision is not subject to appeal (36 CFR 215.12). Implementation may begin immediately.

### **IMPLEMENTATION DATE**

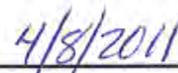
The proposed project is expected to be implemented in the late Summer or Fall of 2012.

### **CONTACT**

For additional information concerning this decision, contact: Diane Rubiaco, District Ranger, [drubiaco@fs.fed.us](mailto:drubiaco@fs.fed.us), 530-647-5410.

  
DIANE RUBIACO

District Ranger

  
Date



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**Eldorado National Forest**

**Barrett Lake 4WD Trail Bridge Development**

**Initial Study/ Mitigated Negative Declaration**

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**Appendix B**

**Water Quality Management for Forest System Lands in California, Relevant  
Best Management Practices (USDA 2000)**



United States  
Department of  
Agriculture

**Forest Service**

Pacific Southwest  
Region

September 2000



# Water Quality Management for Forest System Lands in California

## Best Management Practices

**WATER QUALITY MANAGEMENT  
FOR NATIONAL FOREST SYSTEM LANDS IN CALIFORNIA  
BEST MANAGEMENT PRACTICES  
September 2000**

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This guidance documents the practices and procedures, which are the structure of the water quality management program for the Pacific Southwest Region. It describes each Best Management Practices (BMP) used for water quality management on National Forest System (NFS) lands within the State of California. It represents a portion of the State of California's Nonpoint Source Management Plan.

The practices, procedures and program are in conformance with, and comply with the provisions and requirements of Sections 208 and 319 of the Federal Clean Water Act (PL 92-500) and the United States Environmental Protection Agency (EPA) (g) guidance for the Coastal Zone Act Reauthorization Amendment. They are also within the guidelines of the Water Quality Control Board (Basin Plans) developed by the nine RWQCB in the State.

Pursuant to Section 208 of the Clean Water Act, all agencies responsible for carrying out any portion of a State Water Quality Management Plan must be designated as a Water Quality Management Agency (WQMA). Through the execution of a formal Management Agency Agreement (MAA) with the Forest Service in 1981, the SWRCB designated the Forest Service (USFS) as the WQMA for NFS lands in California (See Section 14).

The Pacific Southwest Region shall maintain its status as the designated WQMA for NFS lands in California. It is through the proper installation, operation and maintenance of these State certified and EPA approved practices and procedures that the Forest Service will meet its obligations for compliance with water quality standards and fulfill its obligation as a designated WQMA.

### **10.1 Authority**

As a Federal agency, the Forest Service is bound by Federal Laws, Executive Orders, and Department of Agriculture directives, which are the basis for governing Forest Service programs and operations. Federal Laws and Executive Orders of direct and specific application include the following:

1. Organic Administration Act of June 4, 1987. This Act emphasized that the National Forests were created to improve and protect the forests; to secure favorable conditions of water flows; and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States.
2. Multiple Use Sustained-Yield Act of June 12, 1960, and the Wilderness Act of September 3, 1964. These Acts stated that the National Forests are established and will be administered for outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness purposes. The multi-resource management responsibility of the Forest Service is amplified through these laws.
3. National Environmental Policy Act of January 1, 1969. The Act promotes efforts, which will prevent or eliminate damage to the environment and develop an understanding of the inter-relationships of all components of the natural environment and the management of the various natural resources.

4. Environmental Quality Improvement Act of April 13, 1970. This Act describes a National policy for the environment, which provides for the enhancement of environmental quality
5. Clean Water Act of 1972, as amended. This Act establishes goals, policies and procedures for the maintenance and improvement of the Nation's waters. It addresses both point and nonpoint sources of pollution and establishes or requires programs for the control of both sources of pollution. Section 208 required area-wide waste treatment management plans and water quality management plans for nonpoint sources of pollution. The Act established specific roles for Federal, state and local authorities in the regulation, enforcement, planning, control and management of water pollution. More directly, Section 319 addresses nonpoint source pollution and also requires development of water quality management plans.
6. The Forest and Rangeland Renewable Resources Planning Act of August 17, 1974. This Act provides for systematic, long-range planning in managing renewable resources. The plans are based on a National assessment conducted every ten years. The plans are updated every five years and submitted to Congress.
7. National Forest Management Act of October 22, 1976. This Act amended RPA, emphasizing interdisciplinary involvement in the preparation of land and resource management plans. The Act emphasized the concept of multiple use management and added requirements for resource protection.
8. Executive Order 12088 of October 13, 1978. This order requires Federal agency compliance with environmental laws to be consistent with requirements that apply to a private person. Compliance will be in line with authorities and responsibilities of other Federal agencies, State, interstate, and local authorities as specified and granted in each of the various environmental laws.

## **10.2 Objectives**

The objectives of this handbook are:

1. To consolidate direction applicable to BMP application on NFS lands in California for the protection of water-related beneficial uses from nonpoint source contaminants.
2. To establish a uniform process of BMP implementation that will meet the intent of the Federal and State water quality Laws, Executive Orders, and the United States Department of Agriculture (USDA) directives.
3. To incorporate water quality protection and improvement considerations that will result in clean water into the site-specific project planning process.

### 10.3 Policy

The Forest Service will be responsive, in an ongoing manner, to the environmental intent, goals and objectives provided by the Clean Water Act, as amended.

Regional policy will comply with the objectives, policy and procedures of agency directives, handbooks and manuals to include, but not be limited to, those required in Forest Service Manual (FSM) 2532. It is also Regional policy to conduct water quality management actions in a manner that is consistent and compatible with the intent and provisions of the 1981 MAA between the USFS and the SWRCB, (See Section 14).

The following actions will be used to carry out water quality management:

#### 1. Correct Water Quality Problems on the National Forests

NFS lands exhibit conditions that are, or have the potential to be, a source of nonpoint pollution. These conditions exist as a result of past management actions by the Forest Service, or other landowners, and as the result of natural occurrences such as fires and floods.

These existing and potential nonpoint sources will be evaluated to determine the need for and type of treatments necessary. Those lands found to be in need of watershed improvement work will be scheduled for treatment as part of the ongoing work planning and budgeting process. Watershed improvement funds will be used to restore deteriorated watershed land when no other funding sources e.g. roads, grazing, Knutsen-Vandenberh (KV) is available to correct the problem.

Accomplishment is dependent on funding and personnel availability, and work priority relative to other management goals and objectives.

Where a resource management action, due to design, administration, implementation, or other oversight, results in an impact to water quality, the impacting USFS resource function is responsible for providing the financing to mitigate the impact.

Appropriate specialists will assess each specific impact and prescribe actions to correct the problem. These actions are integrated into the forest work planning and budgeting process for accomplishment.

#### 2. Perpetually Implement Best Management Practices

The perpetual implementation of BMPs involves three facets: training, keeping BMPs current, and BMP monitoring and evaluation.

- a. Training. Forest Supervisors will conduct water quality planning and BMP application training at the forest and district level as often as needed to orient new employees, to keep all employees updated and informed as to what is working and what needs work, and to maintain the most recent state-of-the-art knowledge and capability in water quality protection.
- b. Keeping BMPs Current. The text and references for each BMP will be updated as needed to reflect the most recent state-of-the-art methods and techniques of BMP

implementation and changes in Forest Service policy and direction. Revisions and amendments to Forest Service direction at the Regional and Forest levels will be reviewed to identify changes in the direction upon which a BMP is based.

- c. BMP Monitoring and Evaluation. The control of nonpoint source pollution using BMPs is an iterative process of site-specific treatment and control needs identification, implementation, monitoring and evaluation, and feedback (See Figure 1).

Continued tracking of BMP implementation and effectiveness are key in initiating corrections and adjustments of BMP design and specification criteria and/or water quality standards. As warranted Research and/or administrative studies will be initiated to validate criteria and/or assumptions used in applying BMPs. Three types of monitoring are applicable to BMPs: implementation, effectiveness, and validation monitoring (See Figure 2).

Implementation and effectiveness monitoring will be accomplished using the Best Management Practice Effectiveness Evaluation Process (BMPEP), developed for the Region (See Section 15). Individual BMPs will be evaluated on-site where they are installed, the composite set of BMPs for a given project will be evaluated applying an in-channel assessment. Validation monitoring will be initiated where implemented practices are found to be non-effective, and revised criteria, or specifications are required to improve effectiveness. Field data will be collected, stored in computer systems and analyzed at the Regional and Forest level.

Soil and Water Conservation

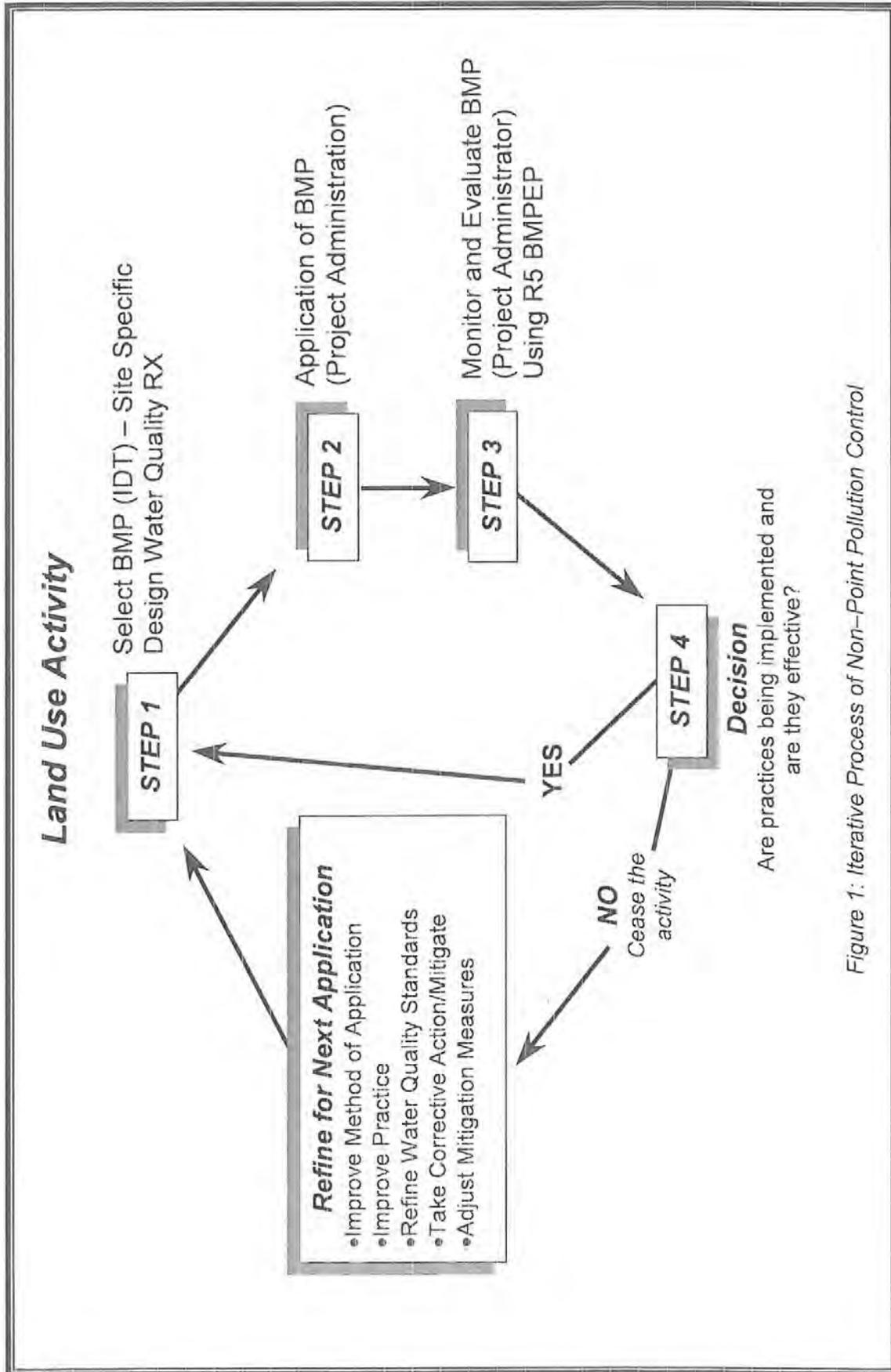


Figure 1: Iterative Process of Non-Point Pollution Control

Soil and Water Conservation

## BMP Water Quality Prescription

### Site Specific Water Quality Controls

#### Implementation

- Was BMP prescription implemented as prescribed?
- Were BMPs from EA included in project plan?
- Did project plan follow prescription?
- Does implementation need refinement, or adjustment?

#### Effectiveness

- Did BMP prescription achieve its objective?
- Were beneficial water uses protected?
- Is BMP technically sound?
- Is water quality standard correct?
- Does BMP need improvement?

#### Validation

- Are assumptions valid?
- Are coefficients and thresholds valid?
- Are models accurate?
- Are studies needed to improve analysis?
- Were BMPs correctly selected?
- Were beneficial water uses identified?

Figure 2: Essentials of BMP Monitoring

- Are they over-protecting the uses?
- Do the parameters for which standards are evaluated establish the correct indices to indicate protection of uses?
- Have the correct beneficial uses for the water body been identified?

Where the problem is determined to be an inappropriate standard or beneficial use designation, USFS personnel may contact the appropriate RWQCB, and through dialogue identify appropriate corrective or responsive actions.

Where it is determined that the reason for the problem is a deficiency in the BMP itself, USFS personnel will initiate action to improve the management practice by correcting the deficiency. Where this is the case, cease the activity until appropriate corrective action has been taken onsite.

Validation Monitoring will be used where needed to determine whether the assumptions, coefficients and specifications used to apply BMPs are valid.

USFS staff will initiate administrative and/or research studies as warranted to verify coefficients and assumptions used in the design and selection of the BMP. This monitoring, usually coordinated with research, is data-intensive, using techniques such as permanent plots. Data is commonly used to establish norms for water quality properties, beneficial uses, and economic efficiency in order to:

- a) Detect and define changes over time and space.
- b) Establish range of variation or coefficients for predictive and analytical models.
- c) Define cause and effect relationships.

### **3. Carry Out Identified Processes for Improving, or Developing Best Management Practices**

As a result of management practice monitoring and evaluation, practices will be identified as needing improvement, or development. The final major action is to refine those practices that need improvement and those that need development into BMPs.

The Regional Forester will assign responsibility for the development and improvement action, and will direct staffing needs to carry out the action. The Forest Service intends to test the results of development and improvement studies, and associated conclusions reached, before final adoption of the products as BMPs. Once adopted, implementation of the BMP shall follow the agency policy and direction cited as references for each BMP (See Section 13).

## 10.4 Responsibility

See FSM 2504 and 2530.4 for the water quality management responsibilities for the Regional Forester, Forest Supervisors and District Rangers.

### 1. Regional Forester

The Regional Forester will:

- a. Conduct Forest Service activities in accordance with the MAA with the SWRCB signed March 17, 1981 (See Section 14).

### 2. Regional Staff Director

The Regional Staff Director will:

- b. Review the reference section of the BMP handbooks needed to verify that the directives cited as references for BMPs are still valid source documents. In most cases this will involve the review of multiple BMP reference sets.
- c. Continue to refine and update existing BMPs to keep pace with state-of-the-art knowledge and to develop new practices where voids exist or as needs arise.

### 3. Forest Supervisor

The Forest Supervisors shall:

- a. Apply BMPs for water quality protection and improvement in day-to-day management activities.
- b. Evaluate attainment of water quality management goals through formal and informal reviews of project planning, and through monitoring using BMPEP protocols.
- c. Conduct BMP training annually on an as needed basis, before each field season for new employees, new line officers, and new resource personnel. Training of a new resource person shall include practical instruction in the application of BMPs for planning and administration of various management activities.

## 10.5 Definitions

### 10.51 List of Acronyms

These acronyms are frequently used in the text, with a definition at the point of first use. This list is provided as a ready reference for the reader.

AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society for Testing and Materials
BMP(s)	Best Management Practice(s)
BMPEP	Best Management Practice Evaluation Program
CDFG	California Department of Fish and Game
CI	Construction Inspector
COR	Contracting Officer's Representative
CFR	Code of Federal Regulations
EHR	Erosion Hazard Rating
EPA	United States Environmental Protection Agency
ER	Engineering Representative
FERC	Federal Energy Regulatory Commission
FSH	Forest Service Handbook
FSM	Forest Service Manual
FSR	Forest Service Representative
IDT	Interdisciplinary Team
KV	Knutsen-Vandenberg
LRMP	Forest Land and Resource Management Plan
MAA	Management Agency Agreement
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest System

NOI	Notice of Intent to Operate
NPDES	National Pollutant Discharge Elimination Permit System
OSHA	Occupational Safety and Health Administration
PL	Public Law
R - 5	Region 5 (Pacific Southwest Region) of the U.S. Forest Service
RPA	Forest and Rangeland Renewable Resources Planning Act, August 17, 1974
RWQCB	Regional Water Quality Control Board
SA	Sale Administrator
SAI Plan	Sale Area Improvement Plan
SAM	Sale Area Map
SMZ	Streamside Management Zone
SPCC	Spill Prevention, Containment and Counter Measures
STORET	A storage and retrieval computer system administered by EPA.
SWRCB	State Water Resources Control Board
TSA Handbook	Timber Sale Administration Handbook
TSC	Timber Sale Contract
TSP	Timber Sale Planning Process
USC	United States Code
USDA	United States Department of Agriculture
USFS	United States Forest Service
VIS	Visitor Information Service
WQIO	Environmental Quality Improvement Act of April 3, 1970.
WQMA	Water Quality Management Agency

## 10.52 Glossary of Terms

Amendment: Revised sections of the FSM and the Forest Service Handbook (FSH) system to keep the text updated.

Apron: A reinforcement mechanism that protects soil from erosional and gravitational displacement

Armoring: Protective coverings, or structures used to dissipate the erosive energy of water. Aprons and rip-rap are types of armoring.

Beneficial Use: A use of the waters of the state to be protected against quality degradation, including but not necessarily limited to domestic, municipal, agricultural, industrial supply, power generation, recreation, esthetic enjoyment, navigation, conservation and enhancement of fish, wildlife, and aquatic resources.

Best Management Practice: A practice, or a combination of practices, that is determined by the State (or designated area-wide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing, or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

Best Management Practice Evaluation Program: The field evaluation process developed and used by Region 5, to systematically evaluate the implementation and effectiveness of BMP.

Cross Drain: A ditch constructed to intercept surface water runoff and divert it before the runoff concentrates to erosive volumes and velocities.

Crowning: Forming a convex road surface, which allows runoff to drain from the running surface to either side of the road prism.

Designated Stream: A stream or portion of a stream identified as warranting special consideration in management decisions and project activities. See also Stream, or Streamcourse.

Designated Swimming Waters: Those waters in which swimming, wading, dabbling, diving, and other forms of primary water-contact recreation are specifically encouraged by signs, or public notice.

Earth Scientist: Air resource specialists, geologists, hydrologists, and soil scientists working for the Forest Service in the field of natural sciences. These personnel, with knowledge and skills in the fields of soil-precipitation-runoff relationships, are primarily concerned with on-site productivity and protection of water quality.

Erosion Hazard Rating (EHR): A relative rating of the potential for soil erosion on a given site. Commonly used to estimate the erosion response expected from a given land management activity. Ratings are the result of a composite analysis of the following factors: soil, topography, climate, soil cover.

Extremely Unstable Lands: Land areas exhibiting one, or more of the following characteristics:

1. Active landslides.
2. EHR is greater than a score of "29" on the R-5 rating scale.
3. Inner gorges.
4. Portions of shear zones and dormant landslides having slope gradients that are typically steeper than 60 to 65%.
5. Unconsolidated deposits with slope gradients at, or steeper than the stable angle of repose.
6. Lands with slope gradients at, or steeper than the mechanical strength of the underlying soil and rock materials.

Floodplain: The areas adjoining inland streams and standing bodies of water and coastal waters, including debris cones and flood-prone areas of offshore islands, including at a minimum, that area subject to a 1% chance of flooding in any given year.

Ground Cover: Material on the soil surface that impedes raindrop impact and overland flow of water. Material may include duff and organic matter such as needles, sticks, limbs, etc., and exposed roots, stumps, surface gravels and living vegetation

Hazardous Substances: Any of a wide variety of materials, solid liquid, or gas, which require specific cautionary handling and procedures to permit their safe use. (Health and Safety Code 6709.11, Chapter 9)

Horizontal Drains: Horizontal pipes installed in road cut slopes and fills to drain subsurface water and guard against landslides. Includes perforated metal, or plastic pipes in horizontal drill holes in water-bearing formation.

Inner Gorge: A geomorphic feature that consists of the area of channel side slope situated immediately adjacent to the stream channel, and below the first break in slope above the stream channel. Debris sliding and avalanching are the dominant mass wasting processes associated with the inner gorge.

Land and Resource Management Plan (LRMP): A forest-wide document that provides direction for managing NFS lands within the forest boundaries, with the goal to fully integrate a mix of management actions that provide for multiple use and protection of forest resources, satisfy guiding legislation, and address local regional and national issues for the plan period. Also frequently referred to as LMP.

National Pollutant Discharge Elimination Permit System: The system for issuing, conditioning, and denying permits for the discharge of pollutants from point sources, by State water quality regulatory authorities, or the EPA. The program is administered by the RWQCBs of California.

Nonpoint Source: Diffuse sources of water pollution that originate at indefinable sources, such as from silvicultural and recreational activities. Practically, nonpoint sources do not discharge at a specific, single location such a conveyance pipe.

Outsloping: Shaping a road prism without an inside drainage ditch to direct runoff to the outside shoulder, as opposed to insloping which directs runoff to an inside ditch. Emphasis is on maintaining flow at an angle across the road to avoid buildup of an erosive flow of water.

Permittee: Individual, or entity that uses NFS resources by permit from the Forest Service.

Pesticide: A general term applied to a variety of chemical pest controls, including insecticides for insects, herbicides for plants, fungicides for fungi, and rodenticides for rodents.

Pipe Underdrains: A perforated pipe, or fabric at the bottom of a narrow trench backfilled with filter material. This kind of installation is used where there is a need to lower the water table adjacent to the roadbed, or other structure.

Pitting: Making shallow pits, or basins of adequate capacity and distribution to retain water from snowmelt and rainfall to enhance infiltration, augment soil moisture, and retard runoff.

Point Source: Water pollution originating from a discrete identifiable source, or conveyance.

Sale Area Improvement Plan (SAI Plan): A plan of work for post sale enhancement and improvement of the sale project area. The plan addresses development, protection, and maintenance actions for the future production of renewable resources.

Sale Area Map (SAM): A map of suitable scale and detail to be legible which is part of a timber sale contract. The map identifies sale area boundaries and contract requirements specific to the sale.

Sale Plan: The document used to identify the approved locations for timber harvest and transportation improvements in a given sale, including a description of project results to be accomplished. The sale plan also includes required mitigation measures that were identified in the environmental documentation process.

Specified Road: A forest development transportation-system road identified (specified) in a timber sale contract.

Stabilization Trenches: These are wide trenches with sloping sides having a blanket of filter material approximately three feet thick on the bottom and sides. Perforated drainpipes are installed on the bottom of the trench to transmit the collected water. Stabilization trenches are placed in swales or ravines and under side hill fills, to stabilize fill foundation areas that are saturated.

Standard Specifications: Standards and design requirements, from the current version of "Engineering Management (EM) 7720-100", Forest Service Standard specifications for construction of roads and bridges, which direct Forest Service construction activities.

Stream Classification: The ordering of streams in a manner that reflects (1) flow characteristics, (2) present and foreseeable downstream values of the water, and (3) physical characteristics of the stream environment—as evaluation criteria. Class I is the highest value stream, Class IV is the lowest value stream.

Streamside Management Zone (SMZ): An administratively designated zone adjacent to ephemeral, intermittent and perennial channels and around standing bodies of water, wetlands, springs, seeps and other wet or marshland areas. SMZ is also meant to include other naming conventions for streamside buffering areas such as; stream protection zone, riparian reserves, riparian habitat conservation areas and so forth. SMZ are designed and delineated for the application of special management controls aimed at the maintenance and/or improvement of

water quality. SMZ delineation may include floodplains and riparian areas when present. SMZ delineation can have synergistic benefits to other resources such as maintenance and improvement of riparian area dependent resources, visual and aesthetic quality, wildlife habitat and recreation opportunities.

Suitable Forest Land: Land that is subject to being managed for timber production on a sustained scheduled basis. Some of the determinants of land suitability for harvesting are reforestation potential, timber growth rate, economics, and land stability. Also included are forest lands where the land and resource management plan recognized an emphasis for achieving other key resource objectives, such as recreation, visual, wildlife, water and so forth in addition to timber management.

Timber Sale Contract (TSC) Provisions: Often referred to by the section of the TSC in which they occur.

- *B Provisions* - Standard provisions for Forest Service timber sale contracts, located in section "b" of the contract.
- *C Provisions* - Special provisions needed to tailor the timber sale contract to meet specific management objectives in R-5, located in section "c" of the contract.

Unsuitable Forest Land: Forest land that is not currently suitable for timber production. Some reasons for classifying land as unsuitable include: potential soil productivity loss and potential, irreversible damage to soil which cannot be prevented using current technology, mineral withdrawals, low volume growth rates, and inadequate assurance that the land can be restocked within 5 years after harvest.

Wetlands: Those areas that are inundated by surface, or groundwater with a frequency sufficient to support a prevalence of vegetation, or aquatic life that requires saturated, or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, springs, seeps, wet meadows, river overflows, mud flats and natural ponds.

## **11 Introduction**

Water quality and associated beneficial uses are most effectively and efficiently protected from degradation due to nonpoint sources of pollution by the application of BMPs. This guidance documents the regions' water quality management program for controlling and preventing nonpoint source water pollution. It documents an iterative process of site-specific practice identification, implementation, monitoring and feedback.

It also describes the BMPs themselves, the process for development of site-specific methods and techniques for applying BMPs, and lists the references for each BMP. The directives, policies, laws, and other source documents listed in these references are regular reference materials for persons involved in project evaluation, design, implementation and quality control. The text documents the working relationship with the SWRCB, the Forest Service water quality management performance standards and regulatory agency expectations as required by the 1981 MAA.

### **11.1 NEPA and Interdisciplinary Approach.**

The NEPA process is crucial for the development of site-specific methods and techniques for applying BMPs to fit individual project needs. Direction for environmental evaluations and preparation of environmental documents to comply with NEPA are contained in established NFS policy and procedures found in FSM 1900, FSM 1950 and FSH 1909.15. These references also contain direction to incorporate the interdisciplinary process into planning and decision making.

The BMPs documented herein have been considered in the development of Forest Land and Resource Management Plans and incorporated by reference. During the Forest Plan Implementation phase, this text will be used by the Interdisciplinary Team (IDT) to develop applications of the BMPs to protect and improve water quality. Inter-relationships between Forest Planning and Forest Plan Implementation are described in FSM 1922 and FSH 1909.12.

Under NEPA, interdisciplinary involvement is required to evaluate projects that may influence water quality and to develop the appropriate BMP applications for maintenance and improvement of water quality. The line officer responsible for a project selects and convenes an IDT to evaluate a proposed activity, and assigns them the task of formulating and evaluating alternatives. A major part of the IDT evaluation is an analysis of environmental consequences. Alternatives that cannot fully protect water quality and associated beneficial uses with full application of BMP will not be considered viable alternatives.

An IDT is comprised of individuals representing two, or more areas of professional knowledge and skills. They are not a fixed set of professionals. Each team is a unique combination of skills that the line officer selects according to the identified issues, concerns, and opportunities associated with each project proposal. The IDT does not make decisions, but provides the line officer with alternatives, evaluations and recommended mitigation and protection measures needed to make a reasoned decision and protect the environment. The final decision authority lies with the line officer.

#### **1. IDT development of BMPs**

The BMPs are water quality protection measures that must be considered in formulating a resource management plan, program, or project. Their purpose is to directly or indirectly protect water quality and mitigate adverse watershed impacts while meeting other resource goals and objectives. They are action-initiating mechanisms that lead to the development of detailed protection measures to be applied during project development and onsite implementation.

The IDT will identify the methods and techniques for applying BMPs for specific sites during the project planning process following onsite evaluation of the project area. In this manner the methods and techniques can be custom fitted to the specific environment, as well as the proposed project activities.

As a result of interaction between team members the appropriate mix of implementation methods and techniques are selected. The final combination of practices are selected which will control nonpoint pollution, and also meet other resource needs. Site-specific applications utilize innovations and refinements that have developed through monitoring and feedback.

Commonly, the methods and techniques for water quality protection that apply to a project site are a composite package of multiple BMPs with site-specific applications developed by the IDT. The appropriate BMPs and the methods and techniques of implementing the BMP are included in the environmental documentation, permit, contract, or other controlling document used to conduct and administer the project. The BMPs will be incorporated into these documents in various ways such as, design specifications, contract clauses, or management requirements and mitigation measures. This assures that they are part of the project work to be accomplished.

## 2. Implementation of BMPs

There are various methods and techniques available to implement a BMP, and not all are applicable to every site.

For example, BMP 2-7 "Control of Road Drainage" dictates that roads will be correctly drained to disperse water runoff to minimize the erosive effects of concentrated water flow. Some methods and techniques for draining a road are: out slope the road prism, install water bars, or inslope the road to a ditch line and install culverts. It is during the onsite evaluation of a specific road project that the appropriate method or combination of methods—to correctly drain the road—are identified. The methods are thereby custom fitted to the physical and biological environment of the project area.

The BMPs are presented under eight different resource categories in this handbook. The sequence in which these resource categories are presented has no intended significance.

Further, because a particular BMP is located within a given category of BMPs does not imply that it has no applicability in another resource area.

For example, consider a situation of tree removal within a developed campground for safety (hazard tree removal), or campground expansion, or insect infestation eradication purposes. Even though BMP 1-11, "Suspended Log Yarding In Timber Harvest", and BMP 1-12, "Log Landing Location", reside in the Timber Management category of BMPs, they are also applicable to tree removal in the developed campground area, even where the tree removal does not fall into the formal definition of a timber sale. It is appropriate that yarded logs in the recreation area be suspended when necessary to preclude excessive soil disturbance, or to maintain the integrity of the SMZ. It is also appropriate that any log landings be located to avoid creating hazardous watershed conditions and water quality.

The same is true for the "Road And Building Site Construction" BMP whether the road is for timber harvesting, mining, recreation access, or some other purpose; the road and building site BMPs are applicable.

This multi-resource, cross-resource utility is true for all BMPs in this guidance whenever applicable. The site of BMP documentation will be different (e.g. the recreation development plan may apply in place of the timber sale plan), and the person responsible for BMP implementation and monitoring will be different (e.g. recreation staff officer in place of the timber sale administrator), but the intent and application of the BMPs to protect and improve water quality is constant, and not necessarily vested with a given resource functional area.

## 11.2 Application of BMPs

After the BMP are identified, and the site-specific protective measures documented, they will be implemented along with any other mitigation measures, requirements and controls that are designated for the project and site-specific area.

1. Project application of BMP: The application of the BMPs is achieved by the Forest Service Official responsible for project implementation. Each of these personnel uses the BMP source documents as technical guidelines e.g. TSC, Timber Sale Administration (TSA) Handbook, FSM, FSH and Code of Federal Regulations (CFR).
2. Feedback to Line Officers: The effectiveness of the selected BMP is evaluated by the Forest Service officials responsible for the project and if required, qualified earth scientists. The evaluation includes a comparison of the actual results realized, to that, which was predicted in the environmental document. The reporting of monitoring and evaluation results by Forest Service personnel provides feedback to line officers for consideration in adapting future similar projects.
3. Technical assistance and training in the effective application of BMPs: One role of the earth scientist in BMP application is to provide technical assistance and training for resource project leaders, to:
  - a. Ensure the effective application of the BMPs on the ground.
  - b. Update and refine BMP as a result of knowledge gained from monitoring and evaluating previous applications.
  - c. Conduct training for personnel as needed to maintain the most recent state-of-the-art knowledge and capability in water quality protection.

Training personnel in the attributes of water quality management and the effective application of BMPs is a critical link in the water quality management process. With more intensive land management and a wider variety of beneficial uses dependent on the quality of water, an ever expanding skill base in the fields of land and watershed management becomes mandatory.

A training and information program is essential to ensure consistent application and continued effectiveness of the practices. All Forest Service personnel will be trained on a periodic, recurring basis to ensure new and transferred employees receive the training, and as a refresher course for others.

### Training

Training programs will focus on both water quality protection through BMP application and program monitoring through BMPEP.

Training for water quality protection through BMP application will focus on all USFS employees including:

- Administration employees not commonly associated with resource management field activities.
- Line and primary staff officers

- Field personnel that are responsible for the planning and conduct of projects

Training for program monitoring through BMPEP will focus on those Forest personnel responsible for project planning, implementation, quality control and reporting.

Training will be continually updated and conducted using state-of-the-art tools and techniques to ensure effectiveness.

### **11.3 Environmental Variability and Best Management Practices**

The management practices described herein are neither detailed prescriptions nor solutions to specific nonpoint pollution sources. Although some pollutants will be thought of as characteristic of a management activity, the actual effect of any activity on water quality will vary. The magnitude, scope, and duration of pollution are not activity-specific. The extent to which contaminants from an activity have the potential to degrade water quality is a function of:

1. The physical, biologic, meteorologic and hydrologic environment within which the activity takes place (e.g. topography, physiography, precipitation, channel density, soil type, vegetative cover).
2. The type of activity imposed on a given environment (recreation, mineral exploration, timber management), and the proximity to surface waters within the given environment.
3. The method of application and time frame over which the activity is applied (grazing system used, types of silvicultural practices used, constant use as opposed to seasonal use, recurrent application, or one-time application).
4. The kind of beneficial uses of the water in proximity to the management activity and their relative sensitivity to the type of contaminants associated with the activity.

These four factors vary throughout the State of California, from National Forest to National Forest, and from site to site on individual Forests. It follows then, that the extent and kind of contaminants are variable, as are the abatement and mitigation measures. No solution, prescription, method, or technique is best for all circumstances. The management practices presented in the following include such phrases as: "according to design," "as prescribed," "suitable for," "within acceptable limits," and so on. The actual methods and techniques applied to a project to implement a given BMP are the result of site-specific evaluation and development by professional personnel through interdisciplinary involvement in the decision-making process.

## **12 MANAGEMENT PRACTICES DOCUMENTATION**

This section identifies the BMPs employed to protect water quality.

1. Source Documents of BMP. The BMPs described in this section were compiled from Forest Service manuals, handbooks, contract and permit provisions, and policy statements. These practices act as checks and balances that protect the quality of the water resource by requiring coordination, inventory, monitoring, analysis and evaluation of proposed management actions. They are consistent with legislative direction and complement an informed and reasoned planning and decision-making process. Their

purpose is to directly or indirectly maintain, or improve water quality and abate, or mitigate impacts, while meeting other resource goals and objectives.

2. Categories of BMP by Resources. The BMPs are identified in the following categories:
- 1 Timber Management
  - 2 Road and Building Site Construction
  - 3 Mining
  - 4 Recreation
  - 5 Vegetation Manipulation
  - 6 Fire Suppression and Fuels Management
  - 7 Watershed Management
  - 8 Range Management

BMPs cover three types of activities, administrative, preventive, and corrective. These practices are neither detailed prescriptions, nor solutions for specific problems. They are action-initiating mechanisms, processes, practices, which call for the development of site-specific, detailed prescriptions and solutions. They identify management considerations that must be taken into account prior to and during the formulation of alternatives for land management actions. They serve as checkpoints to consider in formulating a resource plan, a program, or a project.

3. Interagency accountability for implementation. BMPs are the practices both the State and Federal water quality regulatory agencies expect the Forest Service to implement to meet our obligation for compliance with applicable water quality standards, and to maintain and improve water quality. They are the performance standards for the agency.  
The BMPs are dynamic and always subject to improvement and development. Monitoring and evaluation of existing practices may disclose areas where refinement is warranted. Research, academia, and administrative studies are continually evolving new methods and techniques applicable to water quality protection. Provision has been made to allow for the continued updating and refinement of the existing practices as well as development of new practices. Attachment "A" of the 1981 MAA is updated annually to document and schedule BMP refinement and development needs (See Section 14).

4. Format of BMPs. Each practice is organized according to the following format:

Heading	Context
Practice	Includes the sequential number of the BMP and a brief title.
Objective	Describes the desired results or attainment of the practice as it relates to water quality protection.
Explanation	Further amplifies the brief title and expresses how to apply the practice. Describes criteria, or standards used when applicable.
Implementation	Describes where to apply the practice, who is responsible for application, direction and supervision, and when to employ the practice.

depth, and available moisture holding capacity to determine harvesting and regeneration methods.

**24. Non-recurring "C" Provisions That Can Be Used For water Quality Protection (PRACTICE: 1-24)**

- a. Objective: To use the option of inserting Special "C" provisions into the TSC to protect water quality where standard "B," or "C" provisions do not apply or are inadequate to protect watershed values.
- b. Explanation: Special "C" provisions are sometimes needed to meet management objectives for a particular sale area. They will be proposed by District Rangers, or Forest Supervisors. They must, however, be approved by the Regional Forester. Such authorization will apply only to the sale for which approval was given.

An example of a Special "C" provision which is commonly used for water quality protection is the provision concerning the directional felling of timber. This provision is used for SMZs where it is important to avoid felling trees into streams, or into important areas of riparian vegetation, or residual timber.

Another example is the use of a "swing yarding" special provision in situations where such a method would help protect water quality. Swing yarding refers to the use of more than one yarding system to accomplish a difficult yarding problem. In one situation, it might be possible to avoid building a stream crossing by using a tractor to yard logs to a point where they could be lifted across the stream to a landing by a skyline yarder.

This practice can be used for a variety of special situations, which may occur on any timber sale. There are no standards, or set provisions that can be referenced, since each Special "C" provision is unique and specific to one sale.

- c. Implementation: The need for Special "C" provisions will be identified and recommended during the TSPP by the IDT. The Sale Preparation Forester will prepare Special "C" provision needed and submit it through line officers to the Regional Forester for approval. The Regional Forester will prepare the appropriate contract wording of the provision and return it approved. The Special "C" provision will be applied by the SA in the same manner as the standard contract provisions.

**25. Modification of the Timber Sale Contract (PRACTICE: 1-25)**

- a. Objective: To modify the TSC if new circumstances, or conditions indicate that the timber sale will damage soil, water, or watershed values.
- b. Explanation: Once timber sales are sold, they are harvested as planned via the TSC. At times, however, it will be necessary to modify a TSC because of new concerns about the potential affects of land disturbance on the water resource. If new evidence raises serious concerns to the Forest Service Representative, an IDT will be assigned to assess the evidence and implications.

The team will report to the appropriate Line Officer on whether the timber sale as currently planned will (1) damage soil, water, or watershed conditions or (2)

inadequately protect stream courses, streambanks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water quality, and/or blockages of watercourses. The IDT will also make recommendations of mitigation and corrective actions. The environmental document prepared for the timber sale will then be amended to reflect the findings of the IDT.

- c. Implementation: Where the project is determined to unacceptably affect watershed values, the appropriate Line Officer will take corrective actions, which may include contract modification. The Timber sale modification can be accomplished by agreement with the timber sale purchaser, or unilaterally by the Forest Service (with suitable compensation to the purchaser) using the amended environmental document prepared by and IDT.

## **12.2 Synopsis for Road and Building Site Construction**

NFS road planning, construction, reconstruction, maintenance and/or removal is a complex process. The process involves roads analysis, Access and Travel Management Planning as well as NEPA procedures. Though complex, it assures roads are located, designed and maintained to meet Forest management objectives. General objectives are set by legislation, policy, directives, and Forest and District plans.

Project-specific resource objectives and alternatives will be formulated by an IDT selected and convened by the line officer responsible for the road or building activity. Team members represent as needed: timber, engineering, geology, archaeology, land right-of-way or easements, hydrology, soil science, botany, landscape architecture, recreation, fisheries, wildlife, range, fire, fuels and minerals.

Most of the NFS roads in California were built under the timber harvest program as a requirement of the TSC. Other roads were constructed under Public Works Contracts for range, recreation, fire, or silvicultural purposes, or under special use purpose they serve.

Transportation planning is normally conducted on a Forest-wide basis with the objective of locating roads both to service the individual timber sale areas and to meet a Forest's other long-range transportation needs. Road reconnaissance personnel flag proposed road corridors on-the-ground using road management objectives, the Forest Transportation Plan, topographic maps, aerial photographs, and any preliminary soils, logging, engineering, or geology data.

These corridors are reviewed by an IDT. Modifications in design and/or alignment, or new alternative corridors are proposed based on multiple resource management objectives, and recommendations are made for road design criteria. Existing roads that are to be improved or removed go through the same interdisciplinary review. Inadequate roads that are retained as part of the transportation system are upgraded to current LRMP standards and guidelines to reduce adverse environmental effects and improve user safety.

Interdisciplinary team roads analysis information and recommendations, along with an economic analysis of alternatives, are used to generate a transportation study report. The report is used to help assess the environmental effects and costs of roads for each alternative in the resource project environmental documentation.

Once an alternative has been chosen through the NEPA process, work begins on the road survey. The transportation study report is used to establish design criteria from which a

transportation engineer selects road design standards. The road design standards selected depend on the type and amount of traffic, topography, geology, soils, requirements of the environmental document and the Access Travel Management Plan. Most new roads today, however, are only short segments constructed for local access needs.

Engineers design the road according to the selected design standards, which may include, but are not limited to, road widths, road drainage, maximum road grades, radii, and road surfacing. Members of the IDT are usually involved in the road design phase, to assist in meeting the selected resource objectives. Road planning and implementation includes road design, construction staking and construction inspection. Road design includes selection of construction specifications, which help protect environmental concerns addressed in the environmental document and preparation of the construction contract. Road design and construction use Forest Service Standard Specifications for Roads and Bridges, Special Project Specifications, Timber Sale B and C provisions, General Provisions and applicable American association of State Highway and Transportation Officials (AASHTO) and American Society for Testing and Materials (ASTM) specifications.

While road construction is in progress, the Engineering Representative (ER), Contracting Officers Representatives (COR), SA, FSR and Construction Inspector (CI), are frequently on the project site. These inspectors, along with a purchaser's or contractor's field representative, assure that the project is carried out according to the specifications in the contract. Various IDT members will be called upon to review proposed design modifications during construction.

As part of the project plan, a road management objectives are developed which detail the level of maintenance for each road. There are five levels of maintenance for permanent roads varying from Level 1 (custodial care of the road and assuring functional road drainage) to Level 5 (the maintenance of two-laned, paved roads). Maintenance generally consists of, but is not limited to, cleaning, ditches and culverts, road surface grading, pothole patching and surface replacement.

Closed system roads (Level 1) are barricaded to preclude use for a year or longer. Water bars are installed where necessary. All open permanent roads will be inspected periodically and maintained as needed. Temporary roads are built for short-term use, principally under a TSC or for emergency wildfire access. When the temporary road is no longer needed, temporary drainage structures are removed, and the roads are decommissioned as required by the provisions of the applicable contract.

Environmental documents based on the work of IDT are also prepared for proposed building sites. Facilities normally encountered on National Forests are administrative sites, such as fire stations, work centers, ranger stations, campgrounds or VIS centers. Other proposals come from the private sector to build such facilities as: ski areas, marinas, concession building, waste disposal areas or access to private land inholdings.

Facility locations will be evaluated in much the same way as timber sale areas. An IDT is formed to develop resource objectives, formulate alternatives, and analyze the various sites for environmental effects. The IDT prepares environmental analysis, recommends alternatives, design criteria, and mitigation measures to meet Forest resource objectives at each site.

## **12.21 Index for Road and Building Site Construction Practices**

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### 12.22 Road and Building Site Construction Best Management Practices

The following are the BMPs for the control of non-point source pollution associated with road and building site construction activities. Each BMP was formulated based on the administrative directives that guide and direct the Forest Services' construction and maintenance of roads, buildings, and administrative facilities on NFS land.

The line officer on each administrative subunit is responsible for fully implementing the directives that require water quality protection and improvement during road and facilities construction and maintenance. The directives referenced in Section 13, provide details on methods to incorporate water quality controls into each phase of the road and facility construction and maintenance program. The BMPs synthesize the direction into a "process" to be followed.

Trained and qualified earth scientists, and other professional employees, are available to provide the engineering work force with technical assistance to identify beneficial uses and the most recent state-of-the-art water quality control methods and techniques; and to evaluate results. Publications and training sessions provide road construction and maintenance engineers with knowledge of the latest proven water quality protection methods.

**1. General Guidelines for the Location and Design of Roads (PRACTICE: 2-1)**

- a. Objective: To locate and design roads with minimal resource damage.
- b. Explanation: The following are some general considerations, which must be incorporated into the planning process of road location and design. These measures are preventive, apply to all transportation activities, and indirectly protect water quality.
  - 1) A basic requirement for transportation facility development and operation is the formulation and evaluation of alternatives that will best meet the resource management objectives with the least adverse effect on environmental values.
  - 2) The location, design, and construction of roads include the use of IDTs. These teams include professional personnel with skills in road, resources and water quality management. The team evaluates the effects of road system development or modification proposals on the environment, and formulates alternative.
  - 3) All resource-coordinating instructions for the protection and prevention of damage to NFS lands, resources, and ecological systems, including wetlands and floodplains will apply to the planning, development, and operation of transportation facilities. The following instructions apply to permanent roads:
    - a) Locate roads to complete the area transportation system, to fit the terrain, and to minimize damage to improvements and resources. Avoid sensitive areas such as wetlands, inner gorges and unstable ground to the extent practical.
    - b) Base road design standards on design criteria such as traffic requirements of a timber sale, or the overall transportation plan, road management objectives or resource objectives, and minimize the effects on Forest resources including water quality.
    - c) Design stream crossing structures to provide the most cost efficient drainage facility consistent with resource protection, facility needs, and legal obligations. The design involves a hydrologic analysis to determine runoff volumes, flood conditions, velocities, scour, and open channel shapes. An economic comparison of various flood frequencies versus structure sizes and types is also done to meet resource and legal requirements and cost/benefit comparisons. All crossings will be designed to provide for unobstructed flows and fish passage, and to minimize diversion potential and alteration of stream channels.

- c. Implementation: The IDT is selected by the line officer to assist in locating the road to best fit resource objectives, and to develop detailed mitigation measures. For force account projects, Forest engineers will be responsible for developing and meeting design specifications.

For some timber sales awarded to small businesses, the purchaser may request that the Forest Service construct the roads. Under present guidelines, such work is normally done by contracting with a road construction contractor.

The COR, ER or FSR ensures compliance with project plan requirements and the operating plan.

## 2. Erosion Control Plan (PRACTICE: 2-2)

- a. Objective: To limit and mitigate erosion and sedimentation through effective planning prior to initiation of construction activities and through effective contract administration during construction.
- b. Explanation: Land disturbing activities can result in short term erosion. By effectively planning for erosion control, sedimentation can be controlled or prevented. Within a specified period after award of a contract (presently 60 days prior to the first operating season in Timber Sale Contracts, per C6.3) the purchaser will submit a general plan which, among other things, sets forth erosion control measures. Operations cannot begin until the Forest Service has given written approval of the plan. The plan recognizes the mitigation required in the contract. A similar plan is required of miners and special use permittees.
- c. Implementation: Design engineers develop detailed mitigation using an IDT. The detailed mitigations are reflected in the contract specifications and provisions. The intent of mitigation is to prevent construction-generated erosion, as well as that generated from the completed road, from entering watercourses. Contracted projects are implemented by the contractor or operator. Compliance with contract specifications and operating plans is ensured by the COR, ER, or FSR through inspection.

This practice is commonly applied to all road construction through contract clauses and specifications and will apply to road construction for timber sales, mining, recreation, special uses and other roadwork on NFS lands.

## 3. Timing of Construction Activities (PRACTICE: 2-3)

- a. Objective: To minimize erosion by conducting operations during minimal runoff periods.
- b. Explanation: The amount of erosion and sedimentation from road construction are affected by the magnitude of water runoff. An essential element of effective erosion control is to schedule operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations during the dry season or when rain and runoff are unlikely. Purchasers will be required to schedule and conduct operations to minimize erosion and sedimentation. Equipment will not be allowed to operate when ground conditions are such that

excessive rutting and soil compaction could result. Such conditions will be identified by the COR or ER with the assistance of an earth scientist or other specialists as needed.

Erosion control work will be kept as current as practicable on active road construction projects. Construction of drainage facilities and performance of other contract work to control erosion and sedimentation will be required in conjunction with earthwork projects. The operator should limit the amount of area being graded at a site at any one time, and should minimize the time that an area is laid bare. Erosion control work must be kept current when road construction occurs outside of the normal operating season.

- c. Implementation: Detailed mitigations developed by design engineers and an IDT will be included in the environmental analysis and in subsequent project plans and contracts.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and as specified in the project plan. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and the operating plan will be achieved by the COR or ER through inspection.

#### 4. Stabilization of Road Slope Surfaces and Spoil Disposal Areas (PRACTICE: 2-4)

- a. Objective: To minimize erosion from exposed cut slopes, fill slopes, and spoil disposal areas.
- b. Explanation: This is a preventive practice using bioengineering and other techniques to prevent or minimize erosion. Depending on site factors such as slope angle, soil type, climate, and proximity to waterways, many fill slopes, some cut slopes, and some spoil disposal areas will require vegetative and/or mechanical measures to provide surface soil stability. The level of stabilization effort needed is determined on a case-by-case basis by trained and qualified employees.

Revegetation includes the seeding of plant species grass, legumes, or browse species--or the planting of brush, or trees. Revegetation may also include fertilizer, soil amendments, and mulching or even watering to ensure success. A combination of plant types with both woody root systems and fibrous root systems usually produce better results than a single plant type such as grass. Native species are preferred and used wherever feasible. Where local native seed is not available, not economically feasible or native plants would be ineffective in controlling erosion sterilized grass or cereal grain seed is applied.

Mechanical measures may include, but are not limited to: wattles, erosion nets, terraces, side drains, blankets, mats, riprapping, mulch, tackifiers, pavement, soil seals, and windrowing construction slash at the toe of fill slopes.

- c. Implementation: Vegetative measures are generally a supplementary device, used to improve the effectiveness of mechanical measures, but can be effective and complete by themselves. They may not take effect for several seasons, depending on the timing of project completion in relation to the growing season.

Mechanical and vegetative surface stabilization measures will be periodically inspected to determine effectiveness. In some cases, additional work will be needed to ensure that the vegetative and/or mechanical surface stabilization measures continue to function as intended.

Initial project location, mitigation measures and management requirements are developed during the environmental analysis process. These are translated into project plans, contract provisions and specifications.

Project road inspectors, and their supervisors monitor work accomplishment and effectiveness, to ensure that design standards, project plan management requirements, and mitigation measures are met.

#### 5. Road Slope Stabilization Construction Practices (PRACTICE: 2-5)

- a. Objective: To reduce sedimentation by minimizing erosion from road slopes and slope failure along roads.
- b. Explanation: This is an administrative and construction practice. It is prohibitively expensive to immediately and completely prevent erosion from road cut and fill slopes. However, plan all road construction considering adequate stabilization needs. The first planning requirement is an adequate soils and geologic investigation, to provide data necessary for proper cut and fill design such as:
  - 1) The correct cut and fill slope steepness according to the stable angle of repose for the type of material.
  - 2) Methods to handle surface and subsurface runoff.
  - 3) Necessary compaction standards and surfacing needs.

A prerequisite for stabilization is to provide basic mechanical stability of the soils, using data from soils and geologic investigations to develop requirements for proper slope angles, compaction, and adequate drainage.

- c. Implementation: Include erosion prevention considerations in planning for all road construction contracts. Application is commonly in conjunction with practice 2-4. Complete most, if not all, of the stabilization measures prior to the first winter rains. At especially critical locations, with a high erosion and/or sedimentation potential, extensive and reliable remedies will be necessary. Determine a project location and detailed mitigation measures during the environmental analysis and included them in the project plan.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet design standards and project criteria. Contracted projects are implemented by the contractor or operator. Compliance with project plan requirements and the operating plan is ensured by the COR, or ER through inspection.

#### 6. Dispersion of Subsurface Drainage From Cut and Fill slopes (PRACTICE: 2-6)

- a. Objective: To minimize the possibilities of cut or fill slope failure and the subsequent production of sediment.
- b. Explanation: This is a preventive practice. Roadways may change the sub-surface drainage characteristics of a slope. Since the angle and height of cut and fill slopes can increase the risk of instability, it is often necessary to provide subsurface drainage to avoid moisture saturation and subsequent slope failure. Where ground water dispersion is necessary because of slopes, soil, aspect, precipitation amounts, inherent instability, or other related characteristics, dispersion methods would include:

- 1) Underdrains or subdrains (e.g. pipes, geotextiles)
- 2) Horizontal drains or chimney drains

Dispersal of collected water will be accomplished in an area capable of withstanding increased flows. On erosive soils, energy dissipaters or other slope stabilization treatments or conveyance devices need to be placed below pipes carrying large volumes of water. Road surface may be designed to dissipate the intercepted water in a uniform manner along the road.

- c. Implementation: Project location and detailed mitigation will be determined by design engineers and the IDT, documented and incorporated into subsequent project plans and contracts.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications as specified in the environmental analysis. Contracted projects are implemented by the contractor or timber sale operator. Compliance with project plan requirements and operating plans is ensured by the COR, FSR, or ER.

## 7. Control of Road Drainage (PRACTICE: 2-7)

- a. Objective: Is to minimize the erosive effects of water concentrated by road drainage features; to disperse runoff from disturbances within the road clearing limits; to lessen the sediment yield from roaded areas; to minimize erosion of the road prism by runoff from road surfaces and from uphill areas.
- b. Explanation: This is a preventive practice. A number of treatments can be used, alone, or in combination, to control unacceptable effects of road drainage. Methods used to reduce erosion include but are not limited to such controls as construction of properly spaced cross drains, water bars or rolling dips; installing energy dissipaters, apron, downspouts, gabions, flumes, overside drains and debris racks; armoring of ditches, drain inlets and outlets and removing or adding berms to control runoff. Accomplish dispersal of runoff on the road surface by such means as rolling the grade, outsloping or crowning. Installing water spreading ditches or contour trenching can disperse road water after the water leaves the road surface.

Dispersal of runoff reduces downstream peak flows and associated scouring of the channels and sediment transport.

Reduce sediment loads from road surfaces by adding aggregate or paving surfaces or by installing such controls as: sediment filters, settling ponds, and contour trenches. Soil stabilization can reduce sedimentation by lessening erosion on borrow and waste areas, on cut and fill slopes, and on road shoulders.

- c. Implementation: Project location, design criteria and detailed mitigation are determined and documented during the environmental analysis process. These are then incorporated into the project plan.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications, and project criteria. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, ER, or FSR.

This practice is required in contracts when the need is identified in the project planning process.

#### 8. Constraints Related to Pioneer Road Construction (PRACTICE: 2-8)

- a. Objective: To minimize sediment production and mass wasting from pioneer road construction.
- b. Explanation: Pioneer roads are built to allow equipment access for construction of planned roadways. Pioneering is usually done within the roadway construction corridor of the planned road. To meet the objective of minimizing sediment the following constraints will be followed:
  - 1) Confine construction of pioneer roads to the planned roadway construction limits unless otherwise specified or approved by the ER or COR.
  - 2) Locate and construct pioneering roads to prevent undercutting of the designated final cut slope, avoid deposition of materials outside the designated roadway limits, and accommodate drainage with temporary culverts or log crossings.
  - 3) Complete erosion control work prior to the rainy season and in accordance with contract, or project plan requirements.
  - 4) Dewater sites on live streams crossed by pioneer roads with diversion devices (see Practice 2-15).
- c. Implementation: Determine and document project location and describe mitigations set forth during the environmental analysis process. Incorporate them into subsequent project plans and/or contracts.

Project crew leaders and supervisors will be responsible for implementing force account projects according to construction specifications and as specified in the project plan.

Contracted projects are implemented by the contractor, or timber sale operator. Compliance with plans, specifications, and operating plans is ensured by the COR, FSR, or ER.

**9. Timely Erosion Control Measures on Incomplete Roads and Stream Crossing Projects (PRACTICE: 2-9)**

- a. Objective: To minimize erosion and sedimentation from disturbed ground on incomplete projects.
- b. Explanation: The best drainage design can be ineffective if erosion control has not been completed by the end of the normal operating season. Affected areas can include roads, road fills, tractor trails, skid trails, landings, stream crossings, bridge excavations, and firelines.

Preventive measures include:

- 1) Removal of temporary culverts, culvert plugs, diversion dams, or elevated stream crossings.
  - 2) Installation of temporary culverts, side drains, flumes, cross drains, diversion ditches, energy dissipaters, dips, sediment basins, berms, debris racks, or other facilities needed to control erosion.
  - 3) Removal of debris, obstructions and spoil material from channels and floodplains.
  - 4) Planting vegetation, mulching, and/or covering exposed surfaces with jute mats or other protective material.
- c. Implementation: Apply protective measures to all areas of disturbed, erosion-prone, unprotected ground that is not to be further disturbed in the present year. When conditions permit operations outside of the normal operating season, update the operating plan as necessary and keep erosion control measures sufficiently current with ground disturbance to allow rapid closure when weather conditions deteriorate. Do not leave project areas for the winter with remedial measures incomplete.

Develop project mitigation measures and layout requirements during the environmental analysis process. Incorporate them into subsequent project plans and/or contracts.

Project crew leaders and supervisors are responsible for ensuring that force account projects meet construction specifications and project criteria.

Contracted projects are implemented by the contractor or operator. Compliance with project plan criteria, contract specifications and operating plans is ensured by the COR, ER, or FSR.

**10. Construction of Stable Embankments (Fills) (PRACTICE: 2-10)**

- a. Objective: To construct embankments with materials and methods, which minimize the possibility of failure and subsequent water quality degradation.
- b. Explanation. The failure of road embankments and the subsequent deposition of material into waterways may result from the incorporation of slash, or other organic matter into fills, from a lack of compaction during the construction of the embankment, or use of inappropriate placement methods.

To minimize fill failures, design and construct the roadway as a stable and durable earthwork structure with adequate strength to support the treadway, shoulders, subgrade and the roads traffic loads. Proper slope ratio design will promote stable embankments. Adjacent to SMZs construct and place embankments of inorganic material by methods 2 to 6 below. Construct or place other embankments of inorganic material by one, or more of the following methods:

- 1) Sidecasting and end dumping
- 2) Layer placement
- 3) Layer placement (roller compaction)
- 4) Controlled compaction
- 5) Special project controlled compaction
- 6) In some situations it will be necessary to minimize fill volumes and/or strengthen fills using retaining walls, confinement systems, plantings or a combination of techniques.

On projects, where required densities are specified, some type of moisture compaction control will be necessary. Where outer faces of embankments are not stabilized, due to equipment access difficulty, unfinished slopes subject to erosion and slipping will be stabilized following Practice 2-4.

- c. Implementation: Project requirements and mitigation measures are developed and documented during the environmental analysis and road design process, by the IDT. The appropriate method of embankment placement is chosen during this process.

Project crew leaders and supervisors will be responsible for implementing force account projects, to construction specifications and project criteria. Contracted projects are implemented by the contractor, or operator. Compliance with project plan specifications, and the operating plan is ensured by the COR, CI and ER through inspection.

#### 11. Control of Sidecast Material During Construction and Maintenance (PRACTICE: 2-11)

- a. Objective: To minimize sediment production originating from sidecast material during road construction or maintenance.

- b. Explanation: Unconsolidated materials including rocks and boulders that are cast over the side of the road shoulder can roll directly into streams, damage downslope vegetation and create bare areas that are difficult to stabilize with vegetation. Where spoil does not directly reach a stream, it is still highly susceptible to erosion, dry ravel and mass instability, and subsequently can directly deliver sediment to a nearby stream. Site-specific limits and controls for side casting or end hauling are developed and documented during environmental analysis. Loose, unconsolidated sidecast material must not be permitted to enter SMZs, (see Practice 2-17).

Sidecasting is an unacceptable construction alternative in areas where it can adversely impact water quality. Prior to the start of construction, or maintenance activities, waste areas must be located where excess material can be deposited and stabilized. During road maintenance operations, potential sidecast and other waste material will be utilized on the road surface or removed to designated disposal sites.

The roadway will be constructed within reasonable limits of the lines, grades, and dimensions given in the engineering drawings and designated on the ground. Provisions for waste material disposal are included in every road construction and maintenance contract.

- c. Implementation: Project location, selected disposal areas, and mitigation will be developed and documented during the environmental analysis.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria. Road maintenance plans are developed for each forest and include slide and slump repairs and disposal site locations for excess material.

Contracted projects are implemented by the contractor or timber sale operator. Compliance with project criteria, contract specifications, and operating plans will be enforced by the COR, ER, or FSR. Standard maintenance specifications have been prepared which include disposal area operation, disposal methods, and surface treatment.

Timber sale contracts include clause C5.4 to address temporary road maintenance specifications, which includes slide and slump repair, surface blading, and side casting during road maintenance.

## 12. Servicing and Refueling of Equipment (PRACTICE: 2-12)

- a. Objective: To prevent pollutants such as fuels, lubricants, bitumens and other harmful materials from being discharged into or near rivers, streams and impoundments, or into natural or man-made channels.
- b. Explanation: During servicing and refueling of logging and road construction equipment, any spilled pollutants can be transported by runoff to surface waters. If the volume of fuel exceeds 660 gallons in a single container, or if total storage at a site exceeds 1,320 gallons, project Spill Prevention, Containment and Counter Measures (SPCC) plans are required. Contaminated upland soils can be a long-term threat to surface and ground water quality. This threat must be managed by disposing of waste material properly, selecting service and refueling areas well

away from wet areas and surface water; by using berms around such sites and by utilizing impermeable liners or other techniques to contain spills according to the Forest SPCC plan.

- c. Implementation: The COR, ER, CI, or TSA are authorized to designate the location, size and allowable uses of service and refueling areas. Operators are required to remove service residues, waste oil and other materials from National Forest land. They must also be prepared to take responsive actions in case of a hazardous substance spill, according to the Forest SPCC plan.

## 12. Control of Construction and Maintenance Activities Adjacent to SMZs (PRACTICE: 2-13)

- a. Objective: To protect water quality by controlling construction and maintenance actions within and adjacent to any streamside management zone so that the following SMZ functions are not impaired:
  - 1) Acting as an effective filter for sediment generated by erosion from bare surfaces, road fills, dust drift, and oil traces;
  - 2) Maintaining shade, riparian habitat (aquatic and terrestrial), and channel stabilizing effects;
  - 3) Keeping the floodplain surface in a resistant, undisturbed condition to slow water velocities and limit erosion by flood flows.
- b. Explanation: Construction and maintenance fills, sidecast, and end-hauled materials are kept out of SMZs except at designated sites to minimize effects on the aquatic environment. Factors such as stream class, channel stability, sideslope steepness, ground cover, and sideslope stability are taken into account in developing zone widths. In some situations, SMZ widths are established by records of decision and by EIS standards and guidelines (e.g. PACFISH EA, Northwest Forest Plan ROD). It is also necessary to stabilize fill slopes to prevent sediment accumulations in the streamside zone.

SMZs are determined and documented during the environmental analysis process by the IDT, which includes hydrologists, fishery biologists, and other specialists as required.

- c. Implementation: Project location alternatives are formulated, and mitigation measures developed by the IDT are included into the contract by design engineers. Project crew leaders and supervisors are responsible for ensuring that force account projects meet maintenance and construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with mitigation measures, contract specifications, and operating plans is ensured by the COR, FSR, or ER.

**14. Controlling In-Channel Excavation (PRACTICE: 2-14)**

- a. Objective: To minimize stream channel disturbances and related sediment production.
- b. Explanation: During construction, heavy equipment may need to cross, or work in and near streams or lakes. This is permitted only as necessary in the construction, or removal of culverts and bridges and other facilities (e.g. water sources, boat ramp/launching sites, etc.) and only under specific protection requirements. The Engineering Representative (ER) is authorized to designate the location of crossings or work sites and coordinate with the contractor to manage heavy equipment.

Excavation during the installation of instream structures must follow all of the following minimum water quality protection requirements.

- 1) Unless otherwise approved, no excavation will be made outside of caissons, cribs, cofferdams, or sheet piling.
  - 2) The natural streambed or lake bottom adjacent to the structure will not be disturbed without prior approval of the ER or COR.
  - 3) If any excavation, or dredging is made at the site of the structure before caissons, cribs, or cofferdams are sunk in place, all such excavations will be restored to the original surface and the streambed or lake bottom must be protected with suitable stable material.
  - 4) Material deposited within the stream or lake area from foundation, or other excavation will not be discharged directly into live streams or lakes, but will be put into settling areas as shown on the engineering drawings or as approved by the ER, or COR. (See Practice 2-15)
  - 5) If the channel or lake bottom is disturbed during construction, it must be restored to its original configuration while minimizing any additional disturbance.
  - 6) Disturbances of stream or lake banks are kept to a minimum. Disturbed banks are stabilized.
- c. Implementation. Mitigation measures developed by the IDT are set forth in the environmental documentation and incorporated into the contract by design engineers. Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria.

Contracted projects are implemented by the contractor or operator. Compliance with mitigation measures, contract specifications, and operating plans is enforced by the CI, COR, FSR or ER.

**15. Diversion of Flows Around Construction Sites (PRACTICE: 2-15)**

- a. Objective: To ensure that all stream diversions are carefully planned, to minimize downstream sedimentation, and to restore stream channels to their natural grade, condition, and alignment as soon as possible.
- b. Explanation: Streamflow must be diverted around construction sites such as bridges, culverts and dams. The streamflow will be diverted for all live streams according to the instructions of the ER. The diverted flows are returned to their natural streamcourse as soon as possible after construction or at least prior to the rainy season. All disturbed areas are stabilized prior to the rainy season or as needed.
- c. Implementation: This practice is required by contract clauses. The NEPA and design process will identify where diversions are required, and the design will include mitigation necessary to protect instream values and downstream beneficial uses of the water. Planning must include environmental analysis to identify and prevent unacceptable effects to the beneficial uses of the water. The planning process may require project review and/or issuance of permits or certifications by other Federal, State, or local agencies and, where appropriate, private parties. Case by case determinations must be made during project planning as to out-service review and consultation needs. Coordination with California Department of Fish and Game (CDFG) is initiated in most all cases.

Project location, bypass design, and detailed mitigation will be developed in the design and planning process to meet project criteria. Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and to meet project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with project criteria, contract specifications and operating plans is enforced by the CI, COR, ER, or SA.

**16. Stream Crossings on Temporary Roads (PRACTICE: 2-16)**

- a. Objective: To ensure that temporary roads do not unduly damage stream channels and to ensure that fish passage is unimpeded by stream crossing structures.
- b. Explanation: Stream crossing structures (e.g. culverts, bridges) are required on all temporary roads where it is necessary to cross designated channels. Means of crossing will include but not be limited to, culverts, bridges, coarse rock fills, hardened fords, (using such features as rocked approaches), and low water crossings. Identifying locations to cross streams will be accomplished using an IDT. Such crossings are designed to provide for unobstructed flows and the passage of fish, and to minimize damages to stream channels and water quality.

The number of crossings is kept to the minimum needed for access. Channel crossings will be as perpendicular to stream courses as possible. Streambank excavation will be kept to the minimum needed for use of the crossings, and entry and exit ramps may need to be rocked. Fords and turnpike crossings hardened with

washed rock, concrete planks, slabs or geogrid are sometimes an acceptable alternative, depending on water quality, fishery and hydrological considerations.

Temporary crossing facilities will be removed and the site stabilized prior to the rainy season each year or when the facility is no longer needed, which ever is earliest.

- c. Implementation: This practice is required when documented in the project plan. In timber sales, stream crossing are located, and mitigation is implemented by the SA, using instructions in the TSA Handbook, supplemental Forest guidelines, and considering IDT recommendations. Mitigation at sensitive stream crossings must be assessed, and controls prescribed during the environmental analysis by the IDT.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with the requirements in the project plan, contract and/or operating plan is ensured by the CI, COR, FSR, SA, or ER.

#### 17. Bridge and Culvert Installation (PRACTICE: 2-17)

- a. Objective: To minimize sedimentation and turbidity resulting from excavation for in-channel structures.
- b. Explanation: Excavation is a common requirement for the installation of bridges, culverts, weirs, check dam, riprapping and other structures. Spoil material generated during construction should neither obstruct the stream course (including natural floodplains) nor impair the efficiency of the associated structures. Preventive measures include:
  - 1) Keep excavated materials out of channels.
  - 2) Remove any materials stacked, or stockpiled on floodplains prior to the rainy season.
  - 3) Divert flowing water around work sites to minimize erosion and sedimentation.
  - 4) Suitably locate bypass roads and develop plans for their subsequent obliteration and stabilization.
  - 5) In some cases, fill material may have to be imported for better soil compaction. Original fill may have to be exported to a disposal site.

Streams identified as important for fisheries or other aquatic resources may require that the channel not be disturbed except during flow periods specified in the project plan. Normally, this work would occur during low flow periods. Work would not be allowed during spawning periods, or other periods critical to aquatic resources. Downstream sediment basins or other sediment reduction facilities or techniques will be necessary to mitigate impacts.

- c. Implementation: Project location and detailed mitigation measures will be developed during the design process to meet project criteria, using an interdisciplinary process.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria.

#### 18. Regulation of Streamside Gravel Borrow Areas (PRACTICE: 2-18)

- a. Objective: To limit channel disturbances and sediment production associated with gravel source development.
- b. Explanation: Materials deposited along channels by storm runoff often provide a source of gravel. With adequate planning gravel can be removed with minimal impact on water resources and channel stability. Gravel removal can alter streamflow characteristics and consequently effect channel stability and create a new sediment source. Borrowing will be limited to material deposited above the bankfull line. Borrow area shaping or other special drainage re-configuration actions are taken to maintain channel function.

Excavation will not take place below the water table unless sediment basins are built to contain, or catch the resulting sediment. Sediment basins should not be subject to washouts. If excess sediment accumulates in basins, the basin will be cleaned and the sediment deposited and stabilized at approved sites outside the area where it could re-enter the stream.

Wash water or waste from concrete batching, or aggregate operations will not be allowed to enter streams prior to treatment by filtration, flocculation, settling, and/or other means. (See also Practice 3-3)

- c. Implementation: Project location, stability and the limits for disturbance and sediment production will be developed through the environmental analysis and the IDT and in consultation with State Fish and Game or other pertinent agency. Detailed mitigation measures will be developed by the design engineer to meet project criteria.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria.

Contracted projects are implemented by the contractor or operator. Compliance with project criteria, contract specifications, and operating plans is ensured by the CI, FSR, COR, or ER.

Special us permits issued for gravel bar excavation will include the above requirements, an operating plan and reclamation plan if warranted. District Rangers or their representatives will be responsible for ensuring compliance.

#### 19. Disposal of Right-of-Way and Roadside Debris (PRACTICE: 2-19)

- a. Objective:

- 1) To ensure that organic debris generated during road construction is kept out of streams so that channels and downstream facilities are not obstructed.
  - 2) To ensure debris dams are not formed which obstruct fish passage, or which could result in downstream damage from high water flow surges after dam failure.
- b. Explanation: As a preventive measure, construction debris and other newly generated roadside slash developed along roads in the streamside management zone is disposed of by the following means as applicable: (See also Practice 2-11)
- 1) On Site:
    - a) Piling and burning
    - b) Burying
    - c) Chipping
    - d) Scattering
    - e) Disposal in cutting units
    - f) Windrowing at the base of fill slopes
    - g) Incorporation {only in temporary roads}
  - 2) Removal to agreed upon locations (especially stumps from the road prism).
  - 3) A combination of the above.
  - 4) Large limbs and cull logs are removed to designated sites outside the SMZ or relocated within the zone to meet aquatic resource management objectives.
- c. Implementation: Criteria for the disposal of right-of-way and roadside debris will be established during onsite evaluation by an IDT. Project location and detailed mitigation measures are also developed and set forth in the environmental analysis and incorporated into project plans and/or contracts.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications.

Contracted projects are implemented by the contractor or operator. Compliance with plans, specifications, and operating plans is ensured by the CI, COR, or ER.

## 20. Specifying Riprap Composition (PRACTICE: 2-20)

- a. Objective: To minimize sediment production associated with the installation and utilization of riprap material.
- b. Explanation: Riprap is commonly used to armor streambanks and drainage ways from the erosive forces of flowing water. Riprap must be sized and installed in such a way that it effectively resists erosive water velocities. On occasion, this may require the use of filter blankets, or other methods to prevent undermining. Stone used for riprap will be free of weakly structured rock, soil, organic material and other material not resistant to streamflow that would only serve as sediment sources. Outlets of drainage facilities on erodible soils commonly require riprapping for energy dissipation. The Corps of Engineers and Federal Highway Administration procedures are commonly used for designing riprap structures.
- c. Implementation: Project location and detailed mitigation will be developed through the planning and design process to meet the mitigation measures and requirements of the project plan.

Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria.

Contracted projects are implemented by the contractor or operator. Compliance with project criteria and operating plans is ensured by the COR, or ER.

**21. Water Source Development Consistent with Water Quality Protection  
(PRACTICE: 2-21)**

- a. Objective: To supply water for roads and fire protection while maintaining existing water quality.
- b. Explanation: Water source development is normally needed to supply water for road construction and maintenance, dust control, and fire control. Problems may arise when cofferdams or water holes are built in streams. Use of earth fill for dam construction will be avoided as it creates sediment problems during installation and removal. Cofferdams and water holes will be built out of sandbags filled with clean sand, or gravel, or other methods that will not contribute to nonpoint source pollution. At no time will downstream water flow be reduced to a level that will be detrimental to aquatic resources, fish passage, other established uses. The structure is not allowed to create a situation where dam failure would occur due to excessive impoundment flow.

Water source developments are aimed toward the construction of a limited number of durable, long-term water sources rather than the construction of a succession of hasty, expedient developments that are rapidly abandoned. Permanently designed sources, such as small piped diversions to off-site storage tanks or ponds will result in the lowest, long-term effects. Water rights applications are filed or if riparian or reserved water right, a notification of Diversion and Use is filed with the State.

Damage to resources at such locations caused by purchaser's, or contractor's operations, or fire suppression activities will be repaired by purchaser, contractor, or fire suppression crews in a timely and agreed upon manner to the extent practical to restore and prevent further resource damage.

Overflow from water holding developments will be returned to the stream.

Access approaches will be as near perpendicular to the stream as possible and will be gravel surfaced or otherwise stabilized as appropriate. Streambank excavation will be kept to a minimum needed for entry and exit.

- c. Implementation: Engineering representatives and the TSA working with hydrologists and fishery biologists should evaluate streams in which water developments are proposed. Water holes and other improvements will be restored to a stable condition, prior to the end of the normal operating season. Project location and detailed mitigation will be developed by the design engineer, using the interdisciplinary approach to meet project criteria.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with project criteria, and the operating plan is ensured by the CI, COR, or ER.

## 22. Maintenance of Roads (PRACTICE: 2-22)

- a. Objective: To maintain roads in a manner which provides for water quality protection by minimizing rutting, failures, sidecasting, and blockage of drainage facilities all of which can cause erosion and sedimentation, and deteriorating watershed conditions.
- b. Explanation: Roads normally deteriorate because of use and weather. This deterioration can be corrected by adequate maintenance and/or restriction of use occasionally new groundwater springs and seeps appear after a wildfire or unusually wet periods and saturate road surfaces. All roads are maintained to at least the following level:
  - 1) Provide the basic maintenance required to protect the road investment and to ensure that damage to adjacent land and resources is prevented. This level of maintenance often requires an annual inspection to determine what work, if any is needed to keep ditches, culverts and other drainage facilities functional and the road stable. This level is the normal prescription for roads closed to traffic.
  - 2) As a minimum measure, maintenance must protect drainage facilities and runoff patterns. Higher levels of maintenance will be chosen to respond to greater use or resource administrative needs.
  - 3) Additional maintenance measures include surfacing and resurfacing, outsliping, clearing debris from dips and cross drains, armoring of ditches, spot rocking, culvert replacement and installing new drainage features.

For maintenance of all roads on active timber sales and other projects the responsible FSR and the purchaser or user agree on an Annual Road Maintenance Plan outlining responsibilities and timing of maintenance, before the beginning of the operating season. If the road is subjected to other commercial use, the Forest Service may collect deposits of facilitate road maintenance and to equitably assess maintenance cost of each user.

- c. Implementation: Work is managed by the Forest Engineer who develops a road condition survey and a maintenance plan. Maintenance levels are designated for each road in a timber sale area, as part of the TSPP, with road maintenance levels documented in the sale plan. Maintenance is a timber purchaser or user responsibility, and compliance is administered by the ER and SA.

On system roads outside of active timber sales, project crews, or contract crews perform road maintenance under supervision of a crew leader.

## 23. Road Surface Treatment to Prevent Loss of Materials (PRACTICE: 2-23)

- a. Objective: To minimize the erosion of road surface materials and consequently reduce the likelihood of sediment production from those areas.

- b. Explanation: Unconsolidated road surface material is susceptible to erosion during precipitation events. Likewise, dust derived from road use may settle onto adjacent water bodies and streamcourses. Contractors, purchasers, special users and Forest Service project Leaders undertake measures to minimize loss of road material when the need for such action is identified.

Road surface treatments include watering, dust oiling, penetration oiling, sealing, aggregate surfacing, chip-sealing, or paving, depending on traffic, soils, geology, and road design specifications.

- c. Implementation: Project location and detailed mitigation will be developed by the design engineer, using an interdisciplinary approach, to meet project criteria.

Project crew leaders and supervisors will be responsible for ensuring that force account projects meet construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with project criteria, contract specifications, and operating plans is ensured by the COR, CI, ER, or FSR.

#### 24. Traffic Control During Wet Periods (PRACTICE: 2-24)

- a. Objective:

- 1) To reduce road surface disturbance and rutting of roads.
- 2) To minimize sediment washing from disturbed road surfaces.

- b. Explanation: The unrestricted use of many NFS roads during the rainy season often results in rutting and churning of the road surfaces. Runoff from such disturbed road surfaces often carries a high sediment load. The damage and maintenance cycle for roads that are frequently used during wet periods can create a disturbed road surface that is a continuing sediment source.

Roads that must be used during wet periods should have a stable surface and sufficient drainage provided to allow such use while at the same time maintaining water quality. Rocking, oiling, paving, and armoring are measures that will be necessary to protect the road surface and reduce soil loss. Where wet season field operations are planned, roads may need to be upgraded, use restricted to low ground pressure vehicles or frozen ground conditions, or maintenance intensified to handle the traffic without creating excessive erosion and damage to the road surface.

Roads not needed for wet weather access are closed to use during the wet season.

- c. Implementation: Road closures and traffic control measures will be used outside of active timber sale areas. Timber sale implementation procedures can be enforced by District personnel. Hauling activity can be controlled by the FSR, ER, or TSA within active timber sales. The decision by the TSA for closure is based on local soil moisture conditions and other criteria.

Detailed mitigation is developed by design engineers, using an interdisciplinary approach as necessary. Project crew leaders and supervisors will be responsible for implementing force account projects according to construction specifications. Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, or ER.

**25. Snow Removal Controls to Avoid Resource Damage (PRACTICE: 2-25)**

- a. Objective: To minimize the impact of snowmelt runoff on road surfaces and embankments and to consequently reduce the probability of sediment production resulting from snow removal operations.
- b. Explanation: This is a preventive measure used to protect resources and indirectly to protect water quality. Forest roads are sometimes used throughout the winter for a variety of reasons. For such roads, the following measures are employed to meet the objectives of this practice:
  1. The contractor will be responsible for snow removal in a manner, which will protect roads and adjacent resources.
  2. Rocking or other special surfacing and drainage measures will be necessary, before the operator is allowed to use the roads.
  3. Snow berms will be removed where they result in accumulation or concentration of snowmelt runoff on the road and erosive fill slopes.
  4. Snow berms will be installed where such placement will preclude concentration of snowmelt runoff and serve to rapidly dissipate melt water. If the road surface is damaged during snow removal, the purchaser, or contractor will be required to replace lost surface material with similar quality material and repair structures damaged in removal operations as soon as practicable, or unless otherwise agreed to in writing
- c. Implementation: Project location and detailed mitigation will be developed by the IDT during the environmental analysis and incorporate into the project plan and/or contracts. Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria. (See also Practice 2-24)

Contracted projects are implemented by the contractor, or operator. Compliance with criteria in the project plan specifications, and the operating plan is ensured by the COR, ER and FSR.

**26. Obliteration or Decommissioning of Roads (PRACTICE: 2-26)**

- a. Objective: To reduce sediment generated from temporary roads or unneeded system roads by obliterating or decommissioning them at the completion of their intended use.
- b. Explanation: System roads will be identified during transportation planning for decommissioning/obliteration. These roads will be analyzed under the NEPA

process for removal from the transportation system or downgraded in maintenance level. Temporary roads are constructed for a specific short-term purpose and other roads will be found to no longer be necessary. For example, ski area development roads and logging spurs on a timber sale. In order to prevent continued low level casual use, such roads will be obliterated at the completion of their intended use. Use of any roads beyond its prescribed time should not be permitted, as the road would be subject to continued, uncorrected damage, and could become a chronic sediment source.

Effective decommissioning and obliteration is generally achieved through a combination of these measures:

1. Road is effectively drained (e.g. waterbars, rolling dips, outsloping and treated to return the road prism to near natural hydrologic function).
2. Road is effectively blocked to vehicle access.
3. Crossings are removed and natural drainage restored. (See also Practice 2-16)
4. Treated surfaces are stabilized through tillage, ripping, fertilization and/or revegetation.
5. Slideslopes are reshaped and stabilized.

- c. Implementation: For timber sales, temporary road closure stabilization and removal of temporary structures are accomplished by the timber purchaser. Compliance with plans and TSC will be enforced by the SA.

Obliteration or decommissioning of the road to the level that it is blocked to vehicular traffic, culverts and bridges removed, and the roadway stabilized as required by the TSC. Further revegetation needs are addressed in sale area improvement plans to achieve resource production above that required for stabilization of the road bed surface.

Temporary road location and stabilization measures are determined by the SA by agreement with the purchaser. The SA may request the advice of an earth scientist in determining the most appropriate location for stabilization measures and which measures are required.

Project crew leaders and supervisors will be responsible for ensuring that other temporary roads, developed by force account, meet construction, specifications and project criteria. Temporary roads on NFS lands that are allowed through special use permits, or easements will be subject to the same obliteration or decommissioning requirements as temporary roads on timber sales. District Rangers or their representatives will be responsible for assuring the obliteration or decommissioning of such roads is accomplished.

## 27. Restoration of Borrow Pits and Quarries (PRACTICE: 2-27)

- a. Objective: To minimize sediment production from borrow pits and quarry sites.

- b. Explanation: Borrow pits and quarries are often susceptible to erosion due to steep sideslopes and lack of vegetation. When required for site revegetation and prior to excavation of the site, topsoil will be removed and stockpiled for surface dressing in the post-operation, rehabilitation period. Once excavation has been completed on all or part of the area, the sides will be sloped and graded to ensure proper drainage, and the general pit area smoothed and stabilized. Finer material will be spread over the bottom of the pit prior to spreading stockpiled or imported topsoil.

Seeding, soil amendments and mulching may be required and will be carried on as referenced in Standard Specification Section 625. Installation of sediment basins and/or upslope diversions and berms or other sediment reduction measures will be considered. Temporary access roads to the site will be obliterated or decommissioned according to Practice 2-26 unless other treatment is required by design. System roads to quarries or borrow pits are maintained in accordance with Practice 2-22.

- c. Implementation: Project location and mitigation will be developed through environmental analysis. Project crew leaders and supervisors will be responsible for conducting force account projects according to construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with project criteria, contract specifications, and operating plans is ensured by the CI, COR, FSR, or ER.

## 28. Surface Erosion Control at Facility Sites (PRACTICE: 2-28)

- a. Objective: Reduce the amount of surface erosion taking place on developed sites and the amount of soil entering streams.
- b. Explanation: On lands developed for administrative sites, ski areas, campgrounds, parking areas, or waste disposal sites, substantial acreage may be cleared of vegetation. Erosion control methods must be implemented to keep the soil in place, and to minimize suspended sediment delivery to streams. Some examples of erosion control methods that could be applied at a site for keeping the soil in place would be applying grass seed, erosion blankets, tackifiers, hydromulch, paving, or rocking of roads, water bars, cross drains, or retaining walls.

To control the amount of soil entering streams, the natural drainage pattern of the area should not be changed; sediment basins and sediment filters will be established to filter surface runoff; and diversion ditches, and berms will be built to divert surface runoff around bare areas. Construction activities will be scheduled to avoid periods of the year when heavy runoff is likely to occur.

- c. Implementation: This management practice is used as a preventative and remedial measure for any site development project that will remove the existing vegetation and ground cover and leave exposed soil. This practice is applied during the planning phase for NFS projects, or by special use permit requirements for private development on public land.

Mitigation measures will be developed by the IDT and incorporated in the project by the design engineer. Project crew leaders and supervisors will be responsible for implementing force account projects to construction specifications and project criteria.

Contracted projects are implemented by the contractor, or operator. Compliance with plans, specifications, and operating plans is ensured by the COR, ER, and FSR.

### 12.3 Synopsis for Mining

Mineral exploration and extraction activities on NFS land including oil, gas, and geothermal resources, fall into the following categories:

1. **Locatable Mineral Activities** - Administered under the U.S. Mining Laws, Act of May 10, 1872 as amended. This Law applies to most hard rock and placer mineral deposits on NFS lands reserved from the public domain. The Law generally allows "...that all valuable mineral deposits in lands belonging to the United States...are free and open to exploration and purchase...by citizens of the United States..."
2. **Leasable Mineral Activities** - Minerals such as coal, oil and gas, phosphate, potash, sodium, geothermal steam and other minerals that will be acquired under the Mineral Leasing Act of 1920 as amended. This also applies to all minerals on lands that have been acquired by the Forest Service under authority of the Weeks Act.
3. **Saleable Mineral Activities** - Administered under the Materials Act of July 31, 1947, as amended. Common varieties of sand, stone, gravel, pumice, cinders and clay located on NFS land may be disposed of by sale, or given free to other units of government and non-profit entities when consistent with good public land management and the public interest.

#### 12.31 Index for Mining Practices

1.	Water Resource Protection on Locatable Mineral Operations.	3-1
2.	Administering Terms of BLM Issued Permits or Leases for Mineral Exploration and Extraction on NFS Land.	3-2
3.	Administering Common Variety Mineral Removal Permits.	3-3

#### 12.32 Mining Best Management Practices

The following are the BMPs for the control of nonpoint source pollution associated with mining activities. Each BMP synthesizes the referenced administrative directives into a process to be followed by the Forest Service to permit and administer mining activity on NFS land.

The line officer on each administrative subunit will be responsible for fully implementing the directives that provide water quality protection and improvement during mining activities. The directives referenced in Section 13 provide details on methods to incorporate water quality controls into each phase of mining activities.

signs, on recreation site bulletin boards and at hydrants or faucets, by notices in newspapers and by personal contact. Authorized Forest Officers may issue citations to violators.

9. **Protection of Water Quality Within Developed and Dispersed Recreation Areas (PRACTICE: 4-9)**

- a. Objective: To protect water quality by regulating the discharge and disposal of potential pollutants.
- b. Explanation: This practice prohibits placing in, or near a stream, lake, or other water body, substances, which may degrade, water quality. This includes, but is not limited to, human and animal waste, petroleum products, other hazardous substances and sediment eroded from the site. Areas will be closed in order to restrict use or until the problem is mitigated.

**Eldorado National Forest**

**Barrett Lake 4WD Trail Bridge Development**

**Initial Study/ Mitigated Negative Declaration**

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**Appendix C**

**Air Quality and Greenhouse Gas Emission Estimates**

**Barrett Lake 4WD Trail Bridge Project IS/MND**  
**El Dorado National Forest**  
**Appendix C: Air Quality and Greenhouse Gas Emission Estimates**  
**Prepared by TRA Environmental Sciences, March 2012**

**Table C-1: Helicopter Emission Factors**

Aircraft Name	Engine Name	Shaft Horsepower	No. of Engines	Fuel Use (kg/hour)	Emission Factors (kg/hour)			
					HC	NOX	CO	PM
Eurocopter 1551 B1	Arriel 2C2	944	2	337	1.26	2.75	1.54	0.079

Table Notes:

1. kg/hr = kilograms per hour
2. Assumes twin engine turboshaft helicopter and 65% mean engine load per landing and takeoff cycle

Source: FOCA 2009.

**Table C-2: Helicopter Emissions**

Aircraft Name	Hours of Operation	Total Fuel Use		Total Emissions (pounds)			
		Kilograms	Gallons	HC	NOX	CO	PM
Eurocopter 1551 B1	8	2696	900	22.6	49.3	27.6	1.4

Table Notes:

1. Emissions calculated as : Hours of operation x Emission Factor (See Table C-1) x 2.24 pounds / 1 kilogram
2. Kerosene based jet fuel has a fuel density of approximately 6.7 lbs/gallon

**Table C-3: Helicopter GHG Emission Factors**

Aircraft Name	Hours of Operation	Emission Factors		
		CO2 (kg/gal fuel)	N2O (g/kg fuel)	CH4 (g/kg fuel)
Eurocopter 1551 B1	8	9.57	0.10	0.087

Table Notes:

Source: CO2 factor from EIA 2007; N2O and CH4 factors from U.S. EPA 2011e.

**Table C-4: Helicopter GHG Emissions**

Aircraft Name	Hours of Operation	Total Fuel Use		Total Emissions (metric tons)			
		Kilograms	Gallons	CO2	N2O	CH4	CO2e
Eurocopter 1551 B1	8	2696	900	8.6	0.00	0.00	8.7

Table Notes:

1. CO2 emissions calculated as : Fuel Use (gallons) x Emission Factor (See Table C-3) x 1 metric ton / 1000 kilograms
2. N2O and CH4 emissions calculated as: Fuel Use x Emission Factor (See Table C-3) x 1 kg/ 1000 grams \*1 mt/1000 kg
3. CO2e calculated as: CO2 + (N2O \*310) + (CH4\*21)

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## Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Users\dugan\Desktop\Fires\Barrett-EOHL37\Barrett\_URB.urb924

Project Name: Barrett Lake 4WD Trail Bridge Project

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

## CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
Time Slice 9/3/2012-9/21/2012 Active Days: 15	<b>0.87</b>	<b>5.49</b>	<b>4.70</b>	<b>0.00</b>	<b>15.00</b>	<b>0.48</b>	<b>15.48</b>	<b>3.13</b>	<b>0.44</b>	<b>3.57</b>	<b>624.01</b>
Mass Grading 09/03/2012- 09/21/2012	0.87	5.49	4.70	0.00	15.00	0.48	15.48	3.13	0.44	3.57	624.01
Mass Grading Dust	0.00	0.00	0.00	0.00	15.00	0.00	15.00	3.13	0.00	3.13	0.00
Mass Grading Off Road Diesel	0.84	5.44	3.94	0.00	0.00	0.48	0.48	0.00	0.44	0.44	573.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.95

Phase Assumptions

Phase: Mass Grading 9/3/2012 - 9/21/2012 - Trail Construction and Restoration

Total Acres Disturbed: 3

Maximum Daily Acreage Disturbed: 0.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

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Urbemis 2007 Version 9.2.4

## Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)

File Name: C:\Users\dugan\Desktop\Fires\Barrett-EOHL37\Barrett\_URB.urb924

Project Name: Barrett Lake 4WD Trail Bridge Project

Project Location: Mountain Counties Air Basin

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

## CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10 Total</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5 Total</u>	<u>CO2</u>
2012	0.01	0.04	0.04	0.00	0.11	0.00	0.12	0.02	0.00	0.03	4.68
Mass Grading 09/03/2012-09/21/2012	0.01	0.04	0.04	0.00	0.11	0.00	0.12	0.02	0.00	0.03	4.68
Mass Grading Dust	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.02	0.00	0.02	0.00
Mass Grading Off Road Diesel	0.01	0.04	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.30
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38

Phase Assumptions

Phase: Mass Grading 9/3/2012 - 9/21/2012 - Trail Construction and Restoration

Total Acres Disturbed: 3

Maximum Daily Acreage Disturbed: 0.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day