



Initial Study / Proposed Mitigated Negative Declaration King Fire Restoration Project



Sierra Nevada Conservancy
11521 Blocker Drive #205
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April 2019

**Initial Study/Proposed Mitigated Negative Declaration
for the**

King Fire Restoration Project

Prepared for:

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
BMP	Best Management Practices
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CAL FIRE	California Department of Forestry and Fire Protect
CalEMA	California Emergency Management Agency
CAP	criteria air pollutants
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CVRWQCB	Central Valley Regional Water Quality Control Board
CWE	Cumulative Watershed Effects
EDAQMD	El Dorado County Air Quality Management District
EFZ	Earthquake Fault Zones
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ENF	Eldorado National Forest
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FVS	Forest Vegetation Simulator
GHG	greenhouse gases
H ₂ S	hydrogen sulfide
HCP	Habitat Conservation Plan
IPCC	Intergovernmental Panel on Climate Change
I-80	Interstate 80
IS	Initial Study
IS/MND	Initial Study/Proposed Mitigated Negative Declaration
LOP	limited operating period
LRMP	<i>Land and Resource Management Plan</i>
LUST	leaking underground storage tank
MCAB	Mountain Counties Air Basin
MgCl ₂	magnesium chloride
MT CO ₂ e	metric tons of carbon dioxide equivalent
NAAQS	National Ambient Air Quality Standards

NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NO ₂	nitrogen dioxide
NO _x	oxides of nitrogen
NRHP	National Registrar of Historic Places
OES	Office of Emergency Services
PCAPCD	Placer County Air Pollution Control District
PCCP	Placer County Conservation Plan
PEIR	Program Environmental Impact Report
PM ₁₀ and PM _{2.5}	respirable and fine particulate matter
proposed project	King Fire Restoration Project
RNA	Research Natural Area
ROG	reactive organic gases
RPM	Resource Protection Measure
SFMZ	Strategic Fire Management Zones
SFONA	Sacramento Federal Ozone Nonattainment Area
SIA	Special Interest Area
SIP	State Implementation Plan
SNC	Sierra Nevada Conservancy
SO ₂	sulfur dioxide
SPLAT	Strategically Placed Landscape Area Treatments
SR 49	State Route 49
U.S. 50	U.S. Highway 50
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
VQO	Visual Quality Objectives
WSA	watershed sensitive area

1 INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

This Initial Study/Proposed Mitigated Negative Declaration (IS/MND) has been prepared by the Sierra Nevada Conservancy (SNC) to evaluate potential environmental effects resulting from the King Fire Restoration Project (proposed project). The proposed project is located on the Eldorado National Forest (ENF) within El Dorado County and Placer County within the burn scar of the King Fire. The project would consist of multiple salvage logging, fuels reduction, and reforestation activities to reduce the risk to the public of falling trees, improve the ability to manage and control future fires, and restore areas within the King Fire perimeter. Chapter 2, Project Description, presents the detailed project information.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). An Initial Study is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. In accordance with State CEQA Guidelines Section 15070, a “public agency shall prepare...a proposed negative declaration or mitigated negative declaration...when: (a) The Initial Study shows that there is no substantial evidence...that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level.” In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the project would not have a significant effect on the environment and, therefore, does not require the preparation of an Environmental Impact Report (EIR). By contrast, an EIR is required when the project may have a significant environmental impact that cannot clearly be reduced to a less-than-significant effect by adoption of mitigation or by revisions in the project design.

As described in the environmental checklist (Chapter 3), the project would not result in any significant environmental impacts after the application of the mitigation adopted herein. Therefore, an IS/MND is the appropriate document for compliance with the requirements of CEQA. This IS/MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071.

Under CEQA, the lead agency is the public agency with primary responsibility over approval of the project. The King Fire Restoration Project would be partially funded under California Department of Forestry and Fire Protection (CAL FIRE) Grant Agreement #8GG18601, a California Climate Investments - Forest Health Grant Program grant from CAL FIRE to SNC. SNC is issuing a sub-grant to Eldorado National Forest to implement the project; as such, SNC is the lead agency. The purpose of this document is to present to decision-makers and the public information about the environmental consequences of implementing the project. This disclosure document is being made available to the public for review and comment. This IS/MND will be available for a 31-day public review period from April 12, 2019 to May 13, 2019.

Supporting documentation referenced in this document is available for review at the SNC office:

Sierra Nevada Conservancy
11521 Blocker Drive, Suite 205
Auburn, CA 95603
Phone: (530) 823-4682

Comments or questions should be addressed to:

Andrea N. Williams, PMP
 Sierra Nevada Conservancy
 Reimbursement Program Coordinator
 11521 Blocker Drive #205
 Auburn, CA 95603
 Phone: (530) 823-4682
 E-mail: Andrea.Williams@sierranevada.ca.gov

If you wish to send written comments (including via e-mail), they must be postmarked by May 13, 2019.

After comments are received from the public and reviewing agencies, SNC may (1) adopt the MND and approve the project; (2) undertake additional environmental studies; or (3) abandon the project. If the SNC adopts the MND and authorizes a grant award, then the U.S. Forest Service (USFS) may proceed with the project only after executing the required grant agreement and obtaining all necessary permits and other approvals.

1.2 SUMMARY OF FINDINGS

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the project. Based on the issues evaluated in that chapter, it was determined that the project would have either no impact, a less-than-significant impact, or a less-than-significant impact with mitigation imposed related to all of the issue areas identified in the Environmental Checklist, included as Appendix G of the State CEQA Guidelines. These include the following issue areas:

- ▶ Aesthetics;
- ▶ Agriculture and Forestry Resources;
- ▶ Air Quality;
- ▶ Biological Resources (Potentially significant impacts were identified; however, mitigation measures would reduce these impacts to less-than-significant levels.);
- ▶ Cultural Resources;
- ▶ Energy;
- ▶ Geology and Soils;
- ▶ Greenhouse Gas Emissions;
- ▶ Hazards and Hazardous Materials;
- ▶ Hydrology and Water Quality;
- ▶ Land Use and planning;
- ▶ Mineral Resources;
- ▶ Noise;
- ▶ Population and Housing;
- ▶ Public Services;
- ▶ Recreation;
- ▶ Transportation/Traffic;
- ▶ Tribal Cultural Resources;
- ▶ Utilities and Service Systems; and
- ▶ Mandatory Findings of Significance, including Cumulative Impacts.

1.3 ENVIRONMENTAL PERMITS

The project would require the USFS to prepare a smoke management plan, obtain burning permits, and coordinate with the El Dorado County Air Quality Management District (EDAQMD) and Placer County Air Pollution Control District (PCAPCD) regarding compliance with California Air Resources Board air quality standards.

1.4 DOCUMENT ORGANIZATION

This IS/MND is organized as follows:

Chapter 1: Introduction. This chapter provides an introduction to the environmental review process. It describes the purpose and organization of this document as well as presents a summary of findings.

Chapter 2: Project Description and Background. This chapter describes the purpose of and need for the project, identifies project objectives, and provides a detailed description of the project.

Chapter 3: Environmental Checklist. This chapter presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if project actions would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. If any impacts were determined to be potentially significant, an EIR would be required. For this project, however, none of the impacts were determined to be significant after implementation of mitigation measures.

Chapter 4: References. This chapter lists the references used in preparation of this Initial Study/ Mitigated Negative Declaration.

Chapter 5: List of Preparers. This chapter identifies report preparers.

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2 PROJECT DESCRIPTION AND BACKGROUND

2.1 BACKGROUND

The Sierra Nevada Conservancy (SNC), in partnership with the U.S. Forest Service (USFS), Eldorado National Forest (ENF), proposes to undertake the King Fire Restoration Project (proposed project). The proposed project would be partially funded under California Department of Forestry and Fire Protection (CAL FIRE) Grant Agreement #8GG17601, a 2018 California Climate Investments - Forest Health Grant Program grant from CAL FIRE to SNC. The project is part of the Tahoe-Central Sierra Resilient Forest Initiative, a collaborative effort led by the Sierra Nevada and Tahoe Conservancies, in partnership with the USFS and a number of other partners. The King Fire Project is located in the ENF on portions of the Placerville, Pacific, and Georgetown Ranger Districts. The USFS manages the ENF in accordance with the *Eldorado National Forest Land and Resource Management Plan* (LRMP) (USFS 1988) also known as the Forest Plan, as amended. The LRMP sets forth both forest-wide and area-specific management direction for the ENF. Forest-wide management direction consists of forest goals and desired future conditions, objectives, and forest-wide standards and guidelines. All of the proposed activities would be performed in accordance with the Forest Plan and under the supervision of a Registered Professional Forester or Certified Silviculturist.

The project has undergone a National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS), with public scoping, input, and collaboration among agencies (USFS 2015a). The USFS issued a Record of Decision in September 2015 (USFS 2015b). The EIS discloses the direct, indirect, and cumulative effects that would result from the proposed alternatives.

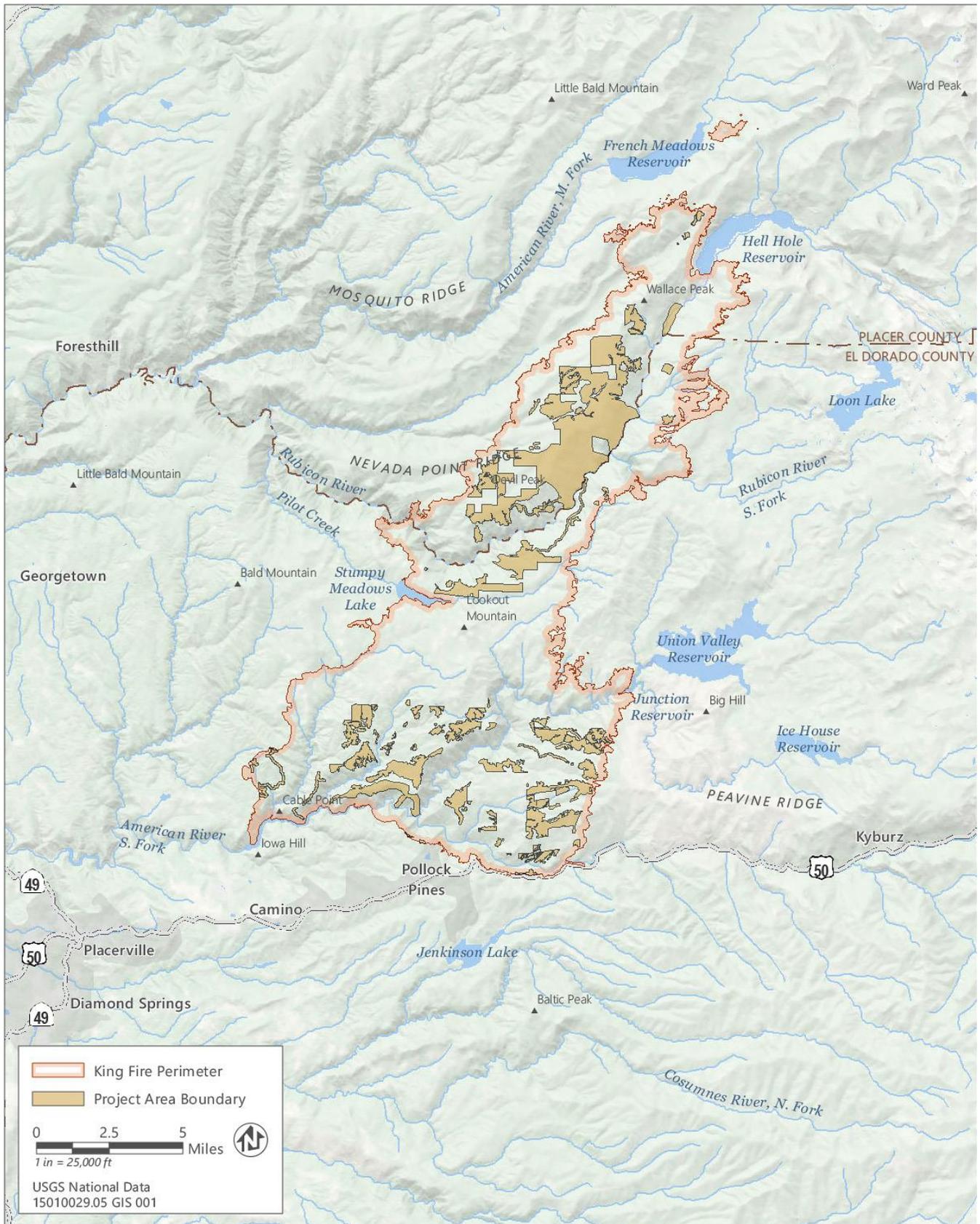
2.2 PROJECT LOCATION AND SETTING

The project area is located in the central Sierra Nevada mountain range north of Pollock Pines, California and east of Foresthill, California (Figure 2-1). The proposed project encompasses portions of the area affected by the King Fire. The King Fire burned 97,717 acres of National Forest lands in the fall of 2014. The project would result in activities on 16,682 acres in portions of the Placerville, Pacific, and Georgetown Ranger Districts (Figure 2-2; Figure 2-3). Elevation within the project area ranges from approximately 2,000 to 7,000 feet. Prior to the King Fire, the vegetation within the project area included sierra mixed conifer, ponderosa pine, montane hardwood, montane hardwood-conifer, and montane chaparral. The northern portion of the project area north of Wentworth Springs Road burned at high-severity removing most of the previous vegetation, while the fire in the southern portion of the project area burned with mixed intensity and the current vegetation is a mix of conifer stands and chaparral (USFS 2015a).

2.3 PROJECT OBJECTIVES

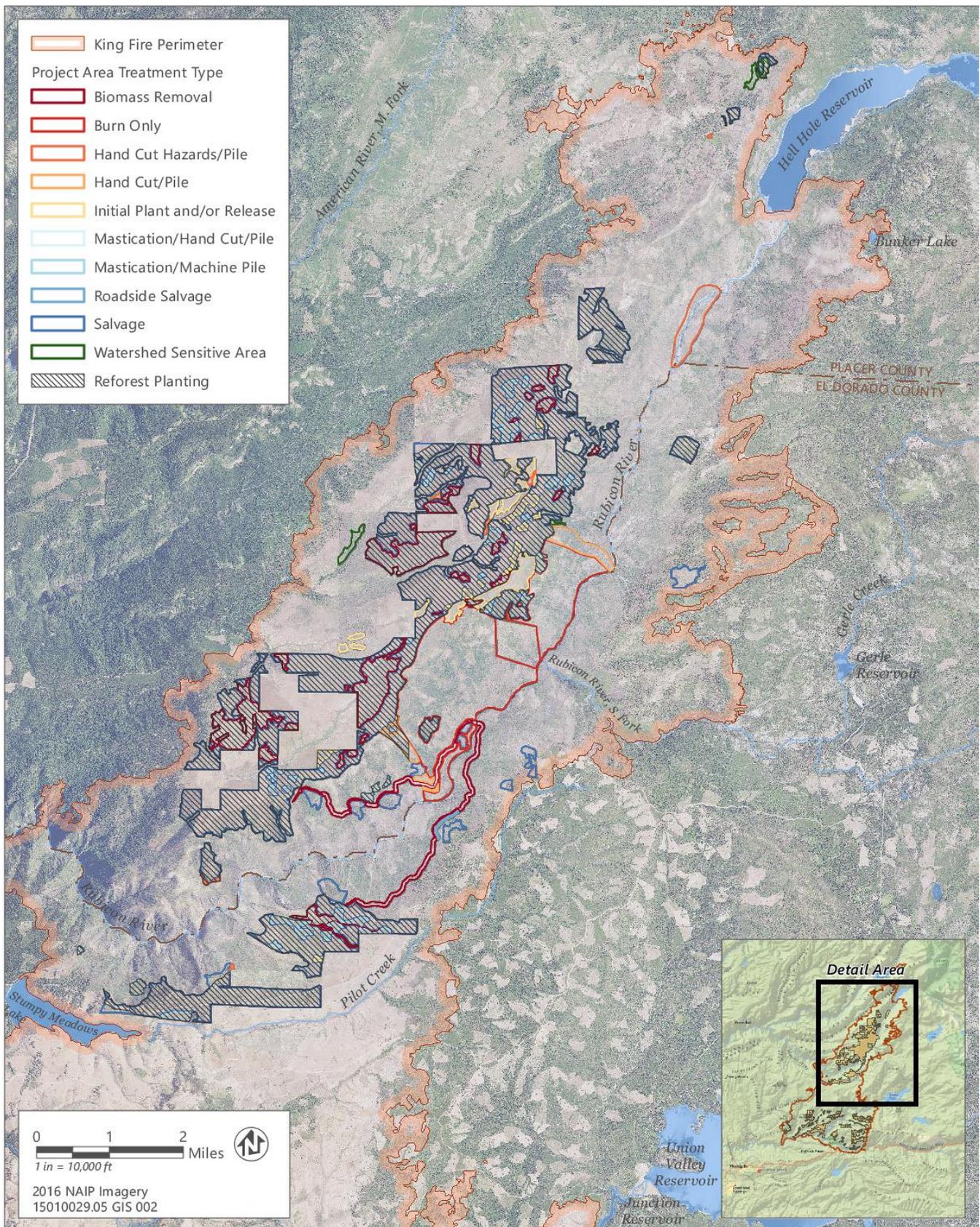
The proposed project is intended to address post fire conditions created by the King Fire and meet the following objectives:

- ▶ reduce the risk from falling dead, dying, and damaged trees that pose a significant safety concern to forest visitors and workers and that create a hazard to private property, infrastructure, and cultural resources;
- ▶ remove dead trees in strategic fire management areas to improve the ability to manage and control future fires;
- ▶ actively manage severely burned areas to facilitate restoration and resilience;
- ▶ balance active management with the retention of important attributes of post-fire habitat at the landscape scale and within treatment areas to support the diversity and abundance of species;
- ▶ expeditiously recover timber killed by the fire commensurate with available markets for the purpose of generating funds to offset the cost of restoration activities and to contribute to societal needs for wood products; and
- ▶ promote scientific research to increase knowledge regarding the effects of large fires on the environment, the reduction of future fires, and restoration of resilient forests after fires.



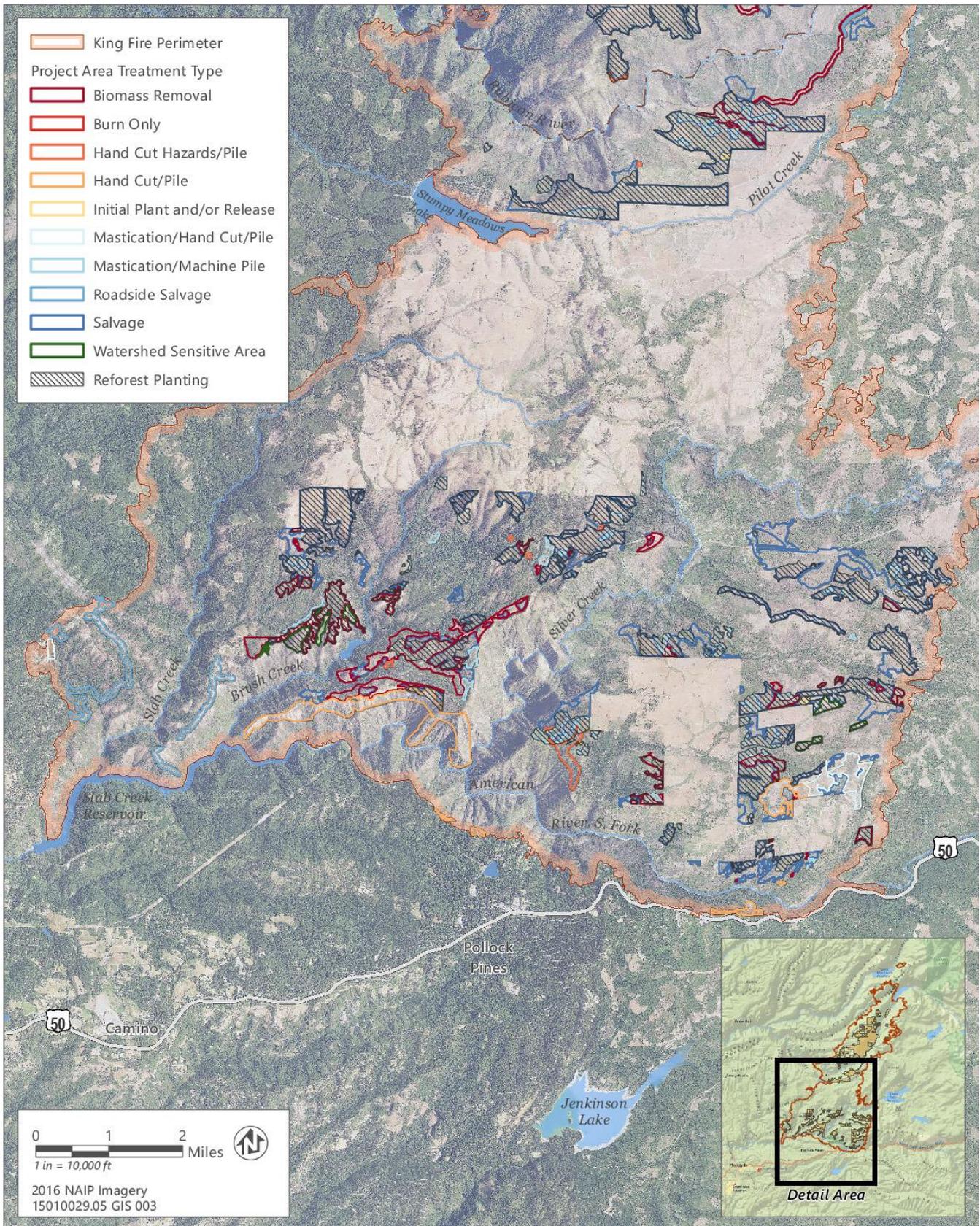
Source: Data downloaded from CalFire in 2018

Figure 2-1 Project Vicinity



Source: Data downloaded from CalFire in 2018

Figure 2-2 Northern Project Area



Source: Data downloaded from CalFire in 2018

Figure 2-3 Southern Project Area

2.4 DESCRIPTION OF THE PROJECT

SNC would allocate approximately \$3,820,250 from the CAL FIRE grant to fund the King Fire Restoration Project, which would partially fund the actions shown in Table 2-1 and described in this subsection. Project activities would be carried out by U.S. Forest Service crews and contractors under the direction of U.S. Forest service staff.

The proposed project would remove dead trees in strategic areas, to improve watershed condition and restore conifer forests in areas that are ecologically sustainable and that can have a high probability of surviving subsequent wildfire. The proposed project includes fuel reduction, salvage logging, removal of hazard trees, tree planting and release treatments, watershed improvements, and prescribed fire. Salvage logging is proposed using mechanical or ground-based logging and skyline logging. Snags would be retained over 10 percent of the treatment units. Fuel treatment is proposed using hand cutting and scattering or with material left in place, hand piling for subsequent burning, mastication or chipping with a track-mounted masticator or chipper, and/or cutting trees and piling for subsequent burning using tractors or rubber-tired machinery with brush rakes or grapples. Piles would be burned by hand techniques, and prescribed fire would be applied by hand- and aerial-ignition techniques in an area on the south slope Rubicon Canyon.

In addition, planting of seedlings would occur in conifer forest types where a forested community is the desired condition. A cluster planting design would be employed to allow for a more resilient structure. Planted trees would include a diverse genetic stock of Sierra Nevada mixed conifer forest tree species, informed by seed zone, seed subregion, and climatic information. Manual and herbicide release from competing vegetation would occur where competing vegetation is expected to reduce seedling survival and growth below an acceptable level.

The acreage of the proposed treatments is summarized in Table 2-1 and the locations of treatments are shown in Figure 2-2 and 2-3. The project area includes a total of 16,682 acres, however some treatments would overlap such that reforestation treatment would occur on locations that are also subject to other treatments.

Table 2-1 Summary of Proposed Activities

Treatment	Area in Acres ¹
Hazard tree removal, Salvage logging, and Fuels Treatments	
Mechanical or Ground-Based Salvage Logging ^{2,3}	4,390
Mechanical Logging of Biomass ³	2,373
Hand Cut Hazard Trees ³	313
Hand Cut and Pile Dead Trees, Masticate/Chip Dead Shrubs ³	186
Hand Cut and Pile Dead Trees ³	831
Masticate/Chip or Machine Pile Dead Trees and Shrubs ³	914
Prescribed Fire Treatments	
Prescribed Burn Only	2,075
Reforestation and Sensitive Area Treatments	
Watershed Sensitive Area Treatments	227
Initial Planting and Release of Conifer Seedlings	425
Secondary Planting and Release of Conifer Seedlings ⁴	10,184

¹. Area shown for each treatment type is rounded to the nearest whole acre.

². Salvage logging analyzed in the EIS within El Dorado County is complete, so the total acres includes only include Placer County. This includes removal of hazard trees along roads in Placer County.

³. Pile burning is a component of each of these treatments.

⁴. Area of secondary planting and release of conifer seedlings was calculated based on the total planting acreage from the ROD (USFS 2015b) minus the acreage of initial planting and release. This treatment covers areas that maybe subject to other treatments.

2.4.1 Hazard Tree Removal, Salvage Logging, and Fuel Treatments

The project would utilize several salvage, hazard tree, and fuel treatment methods. The proposed location of each treatment method is depicted in Figures 2-2 and 2-3, and the acreages for each treatment method are shown in Table 2-1.

Hazard trees would be removed by hand and mechanical means on National Forest System roads open to the public and on roads needed for access to treatment areas, along private residential property, adjacent to structures and range improvements, and in specific cultural resource sites identified by the ENF archeologist. Hazard trees to be removed are dead and dying trees that have potential to reach a road, facility, or cultural site and live trees that are sufficiently damaged or defective to pose a risk of falling within the next five years (USFS 2015a).

Various hand and mechanical methods would be used for salvage logging and fuels treatment. On slopes generally less than 35 percent and subject to the exclusion zones described in Section 2.4.5 and Appendix A, methods of tree removal would include mechanized logging that uses feller-bunchers and rubber-tired or track-mounted log skidders; cut-to-length systems using an in-woods tree processor and log forwarder; conventional logging systems that use chainsaws to fall timber and rubber- or track-mounted log skidders; and logging with a heel boom or excavator-mounted log loader (commonly referred to as "shovel or heel boom" logging).

On slopes generally exceeding 35 percent, aerial logging with a skyline system would be used. In areas identified as suitable by the soil scientist and/or hydrologist, shovel logging or ground-based logging may be used as well. Skyline machinery would operate from roads. Shovel or heel boom loaders would operate within areas designated by the U.S. Forest Service.

Log landings and decking areas would likely employ one or more of the following: log loaders, chainsaws, tree processors, chippers, log trucks, fuel trucks, and chip vans. Fuel would be stored away from any risk of stream contamination in areas designated by the U.S. Forest Service.

In areas identified for treatment, the maximum desired surface fuel loading is 6-10 tons per acre of material that is less than three inches in diameter. All existing logs would be retained onsite and additional large logs left to total approximately five per acre. Additional logs that are greater than or equal to 15 inches in diameter and are over 10 feet long would also be left on site, with a preference for leaving the largest size class representative of the area.

To meet the desired fuel levels, tops, limbs, unmerchantable boles of harvested trees, and small dead trees that are not removed using the logging methods described, would be treated by one or more of the following methods: cutting and scattering to within 18 inches of the ground, cutting and would be left in place, hand piling for subsequent burning, masticating or chipping with a track-mounted masticator or chipper; and/or cutting trees and piling for subsequent burning using tractors or rubber-tired machinery with brush rakes or grapples.

2.4.2 Prescribed Fire Treatments

PRESCRIBED FIRE

Prescribed fire, also known as broadcast burning, would occur with hand- and aerial-ignition techniques in an area on the south slope of the Rubicon Canyon for a total of 2,075 acres (Table 2-1). It is estimated that this treatment would be applied within ten years to break up the continuity of shrubs and fuel on this slope. The desired condition is a mosaic pattern with 40 to 60 percent of the acres treated. Fireline would be constructed to reduce the likelihood that burning would spread outside of this treatment unit.

In addition to broadcast burning, pile burning would occur as a subsequent treatment to dispose of tops, limbs, unmerchantable boles of harvested trees, and small dead trees piled during other treatments. Pile burning could be implemented as a follow up treatment on all or portions of areas subject to mechanical or ground-based salvage logging (4,390 acres), mechanical logging of biomass (2,373 acres), hand cut hazard trees (313 acres), hand cut and pile dead trees (1,017 acres), and masticate/chip or machine pile dead trees and shrubs (914 acres).

SMOKE MANAGEMENT PLANS

The project area lies within the EDAQMD, and the PCAPCD. A smoke management plan would be submitted to and approved by involved agencies prior to any burning activity that would occur as part of the King Fire Restoration Project. During the implementation of the pile or understory burning, any required air quality coordination would take place between the Forest Service and the EDAQMD and/or the PCAPCD. This air quality coordination would follow the Smoke Management Guidelines for Agricultural and Prescribed Burning contained in Title 17 of the California Code of Regulations.

2.4.3 Sensitive Area Treatments and Reforestation

WATERSHED SENSITIVE AREAS

The project would include treatment of watershed sensitive areas which require active management to increase soil cover and organic matter on sensitive soils, where accelerated runoff and erosion could pose unacceptable risk, to rehabilitate soil disturbances (old skid trails, landings, windrows), and to improve channel condition and stabilize gullies. These activities include mastication, cutting and leaving trees, placing mulch, seeding, subsoiling, water barring, removing in-slope berms, out-sloping, back blading, rehabilitating windrows, slash placement, stabilization of head cuts and gullies with wood or rock and reshaping headwalls, and/or planting riparian vegetation.

PLANTING AND RELEASE OF CONIFER SEEDLINGS

The project would include planting and release of conifer seedlings on areas previously subject to other treatments described above (10,184 acres), as well as an initial treatment on areas that have not been previously treated (425 acres). Planting of seedlings would occur where a forested community is the desired condition, but where natural regeneration of a desired species composition and density are not expected to occur within the next several decades. Planting strategies are discussed in detail in the project EIS (USFS 2015a). At the time of planting, the planted seedlings would either be manually released from competing vegetation or by ground application of herbicides. Manual release methods would be used to reduce competing vegetation in areas where herbicide application is restricted, or manual release methods are expected to effectively and efficiently control competing vegetation. Manual release treatments would involve hand cutting (grubbing) competing vegetation in a five to eight-foot radius around planted and desired natural seedlings. Where herbicides are proposed, backpack sprayers with a directed low-pressure spray would be used. Herbicide treatments would occur to kill most competing vegetation within a five-foot radius of seedlings. Outside of this radius, all shrubs except for herbaceous species and oaks would be treated to reduce live shrub cover to less than 30 percent. Treatment would occur at initial planting or within three-years, and when needed follow up treatments could occur within five-years of planting. The herbicide proposed for use is glyphosate (e.g., Rodeo® or equivalent), combined with an adjuvant and/or surfactant (e.g., Hasten® or equivalent; Syl-Tac™ or equivalent). Adjuvants, sometimes referred to as surfactants, are added to aid and/or modify the action of herbicide so that it is more effective. Marker dyes (e.g., Colorfast® purple, Hi-Light Blue®, or equivalent) are also used in the mixture to indicate which vegetation has been treated. The maximum application rate for the proposed project is 7 lb. acid equivalent/acre.

2.4.4 Water Drafting

Water drafting activities would support dust abatement along forest roads within the project area. All uses of water and activities required to set up water drafting sites would comply with best management practices for protecting water quality and maintaining adequate stream flow rates, as listed in Section 2.4.5 and Appendix A.

2.4.5 Resource Protection Measures

The proposed project includes resource protection measures (RPMs), which are specific design criteria, standard management requirements, and other best management practices (BMPs) that protect natural and cultural resources within the project area. These design criteria, standard management practices, and BMPs are referred to as RPMs throughout this document. The RPMs have been incorporated into the project to protect the following resources:

- ▶ Riparian Conservation Areas and Aquatic Resources
- ▶ Aesthetics and Visual Resources,
- ▶ Air Quality,
- ▶ Forestry Resources,
- ▶ Biological Resources,
- ▶ Cultural Resources,
- ▶ Soils,
- ▶ Hydrology and Water Quality, and
- ▶ Recreation.

The RPMs, which are listed in detail in Appendix A, consist of environmentally protective actions, such as limits on activities near resource conservation areas, limitations on the locations from which trees can be removed, and avoidance of environmental resources. The project would implement water quality RPMs during all preparation and implementation activities and would be required to comply with all requirements related to surface water discharge as approved by the Central Valley Regional Water Quality Control Board (CVRWQCB) through Order R5-2017-0061.

2.4.6 Project Schedule

Project implementation would occur over approximately ten years from 2019 through 2029. The schedule for each phase of treatment is estimated as follows:

- ▶ 2019 – 2024: hazard tree removal, salvage logging, sensitive area treatments and fuels treatments;
- ▶ 2019 – 2026: revegetation;
- ▶ 2020 – 2026: pile burning; and
- ▶ 2020 – 2029: prescribed fire only treatments.

2.4.7 Management and Monitoring

The project would serve to support important research regarding the effects of large fires on the environment, the reduction of future fires, and restoration of resilient forests after fires. Research projects would be implemented to study the effect of varying salvage and replanting intensities on the fuel complex and native/non-native species abundance over time; the effect of snag density and distribution on the retention of forest ecosystem functions; and the carryover effect of organic matter removal and compaction treatments on tree growth following wildfire.

3 ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION

1. Project Title: King Fire Restoration Project
2. Lead Agency Name and Address: Sierra Nevada Conservancy
11521 Blocker Drive #205
Auburn, CA 95603
3. Contact Person and Phone Number: Andrea N. Williams, PMP
(530) 823-4682
4. Project Location: Located in the Eldorado National Forest north of Fresh Pond, CA and extending to Hell Hole Reservoir in Placer County in portions of the Placerville, Pacific, and Georgetown Ranger Districts.
5. Project Sponsor's Name and Address: U.S. Forest Service, Eldorado National Forest
7600 Wentworth Springs Road
Georgetown, CA 95634
6. General Plan Designation: Natural Resource/Parks and Open Space
7. Zoning: N/A
8. Description of Project:

The project proposes to implement landscape-scale vegetation management and fuels reduction through a variety of actions including thinning and prescribed burning on approximately 16,682 acres within the Placerville, Pacific, and Georgetown Ranger Districts within the Eldorado National Forest. Refer Chapter 2, Project Description.

9. Surrounding Land Uses and Setting: (Briefly describe the project's surroundings) The project site is located within the Eldorado National Forest and is surrounded by forest lands which are designated Agriculture/Timberland (80-acre minimum).
10. Other public agencies whose approval is required: (e.g., permits, financing approval, or participation agreement) U.S. Department of Agriculture Forest Service; Eldorado National Forest; and Placer County Air Pollution Control District
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

The USFS completed consultation with affiliated tribes through the NEPA process. USFS communicated with appropriate tribal representatives, with informal discussion and formal letters that provide tribal leaders with a description of the project, maps of impacted areas, and solicitations for comments or concerns. The SNC has notified appropriate Tribal representatives of the opportunity for consultation. No Native American tribes traditionally and culturally affiliated with the project area have requested consultation. See Section 3.13. *Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public*

Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

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" as indicated by the checklist on the following pages. Where checked below, the topic with a potentially significant impact will be addressed in an environmental impact report.

- | | | |
|---|--|--|
| <input checked="" type="checkbox"/> Aesthetics | <input checked="" type="checkbox"/> Agriculture and Forest Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input checked="" type="checkbox"/> Energy |
| <input checked="" type="checkbox"/> Geology / Soils | <input checked="" type="checkbox"/> Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hazards / Hazardous Materials |
| <input checked="" type="checkbox"/> Hydrology / Water Quality | <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources |
| <input checked="" type="checkbox"/> Noise | <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services |
| <input checked="" type="checkbox"/> Recreation | <input checked="" type="checkbox"/> Transportation | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input type="checkbox"/> Utilities / Service Systems | <input checked="" type="checkbox"/> Wildfire | <input checked="" type="checkbox"/> Mandatory Findings of Significance |
| | <input type="checkbox"/> None | <input type="checkbox"/> None with Mitigation Incorporated |

DETERMINATION (To be completed by the Lead Agency)

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 proposed project **COULD** have a significant effect on the environment, there **WILL NOT** be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. 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** is required.
- I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Bob Kingman

Assistant Executive Officer

Printed Name

Title

Sierra Nevada Conservancy

Agency

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.
4. “Negative Declaration: Less Than Significant With Mitigation Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from “Earlier Analyses,” as described in (5) below, may be cross-referenced).
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 or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
 - a) Earlier Analysis Used. Identify and state where they are available for review.
 - b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c) Mitigation Measures. For effects that are “Less than Significant with Mitigation Measures Incorporated,” describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
 - a) the significance criteria or threshold, if any, used to evaluate each question; and
 - b) the mitigation measure identified, if any, to reduce the impact to less than significance.

ENVIRONMENTAL TOPICS NOT DISCUSSED

The project would have no impact on select resource areas; these topics are not discussed further in this Initial Study (IS). A brief explanation about why the project would not affect these resources is provided below:

Land Use and Planning

The project area is located within the Eldorado National Forest (ENF) and is managed by the U.S. Forest Service (USFS). The Project is guided by the Eldorado Forest Land and Resource management Plan (USFS 1988), as amended by the Sierra Nevada Forest Plan Record of Decision, referred to as the Forest Plan (USDA 2004). The Forest Plan provides for ecosystem restoration following large, catastrophic disturbance events. Restoration activities may be conducted in all land allocations and include objectives for managing disturbed areas for long-term fuel profiles, for restoring habitat, and for recovering the economic value of some dead and dying trees. The project is not located within an existing community, nor would it result in the construction of physical infrastructure which would divide a community. The project area is not covered under an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan. The project area does contain the Peavine Research Natural Area (RNA) which is public land protected by the Forest Service to maintain biological diversity and provide baseline ecological information to help guide management decisions. It was established to preserve one of the few remnant Ponderosa pine and California black oak forests. The RNA burned in the King fire. Only a small portion of the RNA is proposed for treatment under this project and its RNA land use designation will not change. Therefore, no impact to land use and planning would occur and the topic is not discussed further in this IS.

Mineral Resources

There are no known mineral resources within the project site and vegetation management and fuels reduction activities would not affect the future availability of previously unidentified resources. Therefore, no impact to mineral resources would occur and the topic is not discussed further in this IS.

Population and Housing

The project involves vegetation management and fuels reduction activities. The project does not include the construction of new homes, businesses, or infrastructure nor would it displace existing homes or people. Nor would the project result in a substantial or long-term increase in employment in the region. Therefore, the project would have no impact on population and housing and the topic is not discussed further in this IS.

Public Services

The project would not include new residences or otherwise create a situation in which fire or police protection service ratios, response times, or other performance objectives could not be met. Because permanent population in the area would not be affected, there would not be an increased demand for schools or parks. The project does not result in new or physically altered governmental facilities, or the need for new or physically altered governmental facilities. Thus, there would be no impact and the topic is not discussed further in this IS.

Utilities and Service Systems

The project would result in short-term, restoration and fuels reduction activities in remote areas and would not alter existing utility infrastructure, induce demand for service, or result in new populations requiring additional utilities services. Therefore, no impact to utilities and service systems would occur and the topic is not discussed further in this IS.

3.1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
Except as provided in Public Resources Code section 21099 (where aesthetic impacts shall not be considered significant for qualifying residential, mixed-use residential, and employment centers), would the project:				
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) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<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 checked="" type="checkbox"/>	<input type="checkbox"/>

3.1.1 Environmental Setting

The project is located on the western slope of the Sierra Nevada in the Eldorado National Forest within the footprint of the King Fire. The project area ranges from approximately 2,000 to 7,00 feet in elevation in mostly pine-dominated Sierra mixed conifer forests, true fir forests, chaparral, and conifer plantations. The combination of past management activities and fire exclusion had created relatively homogeneous areas typified by small tress existing at high densities (USDA 2015a). Prior to the King Fire, the vast majority of conifer dominated stands in the project area were comprised of high amounts of shade-tolerant species such as white fir and incense cedar. The King Fire caused high levels of tree and vegetation mortality. The fire resulted in a mosaic with larger patches of high severity intermixed with low and moderate severity in the fire area in the southern portion of the fire. People use the forest for hunting, camping, trail use, gathering of plant materials, off-highway vehicle use, and woodcutting. Highway 50 is in and adjacent to the project area and is a designated State Scenic Highway (Caltrans 2019) (Photo 1).



Photo 1: View from Highway 50 facing northeast toward the King Fire burn area.

3.1.2 Discussion

a) Have a substantial adverse effect on a scenic vista?

Less than significant. A scenic vista is generally considered to be a location from which the public can experience unique and exemplary high-quality views typically from elevated vantage points that offer panoramic views of breadth and depth. Highway 50 is in and adjacent to the project area. Public views of the King Fire scar (project area) are possible from portions Highway 50 and from public hiking trails within the Eldorado National Forest but these views would be intermittent because of changes in topography and elevation.

The forest fuels reduction would improve the health of the forest and reduce the potential for future catastrophic fires. Smoke generated by the controlled burns could temporarily reduce visibility of the project site from public view points. However, the duration of controlled burns would be limited to favorable conditions based upon burn permits, which is typically up to 6 weeks per year. In addition, smoke emissions would be minimized by requirements established by the California Air Resources Board (CARB) for burn permits. The visible effects of the forest thinning and controlled burns may be apparent to forest visitors after completion of the project; however, these disturbances would be difficult to distinguish from adjacent areas burned by the King Fire and would be reduced after a few years through natural regeneration. The fuels reduction activities would retain the existing undeveloped and forested visual character of the site and would not adversely affect scenic vistas. Additionally, the intent of these fuels reduction activities is to reduce the potential for future catastrophic fires that could further adversely affect scenic vistas. The conifer planting component of the project is intended to stimulate forest regrowth which would improve scenic vistas. For these reasons, the impact to scenic vistas would be 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. Highway 50 is a designated scenic highway located in and adjacent to the project site. An area proposed for treatment is adjacent to Highway 50. This area mostly includes hand cutting and piling standing dead trees that were burned in the King Fire and their removal would improve scenic resources by removing dense stands of burned trees from foreground views and opening up more distant views of ridges and hillsides. The project would not result in removal of rock outcroppings. There are no historic buildings in the project area.

Though areas proposed to be treated are located next to severe burn scars, treatment would be required to comply with *Retention Visual Quality Objectives* (VQOs) as identified in the Forest Plan. Retention VQOs allow for management activities that are not visually evident to the casual observer. The scenery objective is to reduce or omit the visual disturbance of fuelbreak construction and maximize visual diversity when viewed from the roadway. The desired condition is to perpetuate scenery attributes along these important recreation travel routes. VQOs would apply to all treatments within these roadside corridors, including ground-based thinning. Thus, the impact to scenic resources would be less than significant.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Less than significant. The project area is currently characterized by the large burn scar from the King Fire. Short-term changes to visual character or quality may result after vegetation management activities and where prescribed burn treatments would be visible from forest trails and other public access points but it is likely they would be indistinguishable from adjacent areas burned in the King Fire. Fuels treatments would have long-term beneficial effects on scenic resources by replanting conifers and reducing the risk of another catastrophic wildfire.

Ultimately, the vegetation management activities would result in long-term positive impacts related to visual character, and any negative impacts would be difficult to distinguish from adjacent burned areas and would be relatively short-term in nature. The impact to visual character would be less than significant.

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

Less than significant. The project does not propose installation of new lighting fixtures or structures that could cause glare. A portion of the project site would be treated with prescribed burning to dispose of forest fuels, resulting in temporary sources of light during night burning operations. However, because this would be short-term and largely screened from public views by the surrounding forest, the impact related to light or glare would be less than significant.

3.2 AGRICULTURE AND FOREST RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>II. Agriculture and Forest Resources.</p> <p>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, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.</p> <p>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.</p> <p>Would the project:</p>				
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 zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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"/>

3.2.1 Environmental Setting

The land within the project area is within undeveloped forested areas Eldorado National Forest that is not in agricultural or timber production. In addition, the project area is not designated as Farmland of Statewide or Local Importance, Unique Farmland, or Prime Farmland by the Farmland Mapping and Monitoring Program (FMMP). The project area is located outside of the area surveyed for the FMMP (Department of Conservation 2016b). Additionally, there are no lands under Williamson Act contract within the project area (El Dorado County 2018, Department of Conservation 2016a).

3.2.2 Discussion

- 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?**

No impact. There is no Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the project site (Department of Conservation 2016b). There would be no impact related to farmland.

- b) **Conflict with existing zoning for agricultural use or a Williamson Act contract?**

No impact. There are no lands subject to Williamson Act contracts (Department of Conservation 2016a) within the project area. The project would result in vegetation management and prescribed burning activities on forested lands that are a part of the Eldorado National Forest and subject to the Eldorado Forest Land and Resource management Plan (USFS 1988), as amended by the Sierra Nevada Forest Plan Record of Decision, referred to as the Forest Plan (USDA 2004). The Forest Plan provides for ecosystem restoration following large, catastrophic disturbance events. Restoration activities may be conducted in all land allocations and include objectives for managing disturbed areas for long-term fuel profiles, for restoring habitat, and for recovering the economic value of some dead and dying trees. Therefore, the project would be consistent with Forest Plan and would not conflict with existing zoning. There would be no impact related to agricultural zoning or Williamson Act contract lands.

- 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 zoned Timberland Production (as defined by Government Code section 51104(g))?**

Less than significant. The project would result in vegetation management and fuels reduction activities within the Eldorado National Forest that are consistent with the established purpose and objectives of the Forest Plan. Project activities would not alter land uses in the project area or convert forested land into non-forest land cover. Vegetation management activities, including prescribed fire, would help maintain open stands of larger, dominant, fire resilient trees, and maintain a diverse and heterogenous forest community. A decrease in surface and ladder fuels, reduction of canopy bulk density, and raised canopy base heights would inhibit conditions for crown fire initiation and minimize the possibility for additional catastrophic fires with long term adverse effects to occur in the King Fire Restoration Project area (USFS 2015a). There would be no conflict with areas zoned as forest land or timberland. The impact to forest land would be less than significant.

- d) **Result in the loss of forest land or conversion of forest land to non-forest use?**

Less than significant. See discussion c), above.

- 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. See discussion a) and b), above.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>III. Air Quality.</p> <p>Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations.</p> <p>Are significance criteria established by the applicable air district available to rely on for significance determinations? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Would the project:</p>				
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) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.3.1 Environmental Setting

As required by the federal Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) has identified National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants (CAPs): ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable and fine particulate matter (PM₁₀ and PM_{2.5}, which are particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively), and lead. The State of California has also established California Ambient Air Quality Standards (CAAQS) for these six pollutants as well as sulfates, hydrogen sulfide (H₂S), vinyl chloride, and visibility reducing particles.

The project is located in Placer and El Dorado Counties, which are in the jurisdiction of the El Dorado County Air Quality Management District (ECAQMD) and Placer County Air Pollution Control District (PCAPCD), and within the Mountain Counties Air Basin (MCAB). Placer and EL Dorado Counties are designated as nonattainment for ozone with respect to the CAAQS and NAAQS and for PM₁₀ with respect to the CAAQS (CARB 2019). Portions of Placer and EL Dorado Counties are also located within the Sacramento Federal Ozone Nonattainment Area (SFONA) -- an area where the air quality does not currently meet the federal 8-hour ozone standard. The *Sacramento Regional 8-hour Ozone Attainment and Reasonable Further Progress Plan* (SMAQMD 2017) addresses how the SFONA would attain the 1997 8-hour federal ozone standard.

PCAPCD has established daily air pollutant emissions thresholds that apply to non-fire air pollutants that could be generated by the project (Table 3.3-1). ECAQMD has mass emissions thresholds for reactive organic gases (ROG) and oxides of nitrogen (NOX) of 82 pounds per day (ECAQMD 2002). Although ECAQMD does not have an adopted quantitative threshold for PM₁₀, Chapter 4 of the EDCAQMD Guide to Air Quality Assessment (ECAQMD 2002) provides guidance on determining significance of PM₁₀ from exhaust emissions. This guidance indicates that if ROG

and NO_x emissions are not significant then it can be assumed that other components of exhaust emissions, in this case PM₁₀ or PM_{2.5}, are also not significant. For purposes of this analysis, the more stringent PCAPCD thresholds are adopted as thresholds of significance.

Table 3.3-1 Pollutant Emissions Thresholds

Pollutant	Construction Emissions Threshold (lbs/day)
ROG	82
NO _x	82
PM ₁₀	82
PM _{2.5}	82

ROG = reactive organic gases; NO_x = nitrogen oxides; PM₁₀ = respirable particulate matter; lb/day = pounds per day

Source: PCAPCD 2017

3.3.2 Discussion

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

and

b) **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?**

Less than significant. The project would result in temporary emissions of ozone precursors (i.e., ROG and NO_x) and PM₁₀, generated by two distinct sources: fire-related activities and non-fire-related activities. Fire-related emissions sources consist of prescribed burns and pile burning and are managed by PCAPCD and ECAQMD through their burn authorization program and smoke management plans. Non-fire-related emissions sources include the use of mechanical equipment, truck trips, and worker commute trips during salvage and fuels treatments, prescribed fire treatments, and reforestation and sensitive area treatments. Non-fire-related emissions are subject to PCAPCD and ECAQMD's daily air pollutant emissions thresholds, shown in Table 3.3-1.

Fire-Related Emissions

Emissions from prescribed fire are fundamentally different from general construction-related emissions and are treated through separate programs by local air districts. Construction emissions are subject to the mass emissions thresholds set forth for construction projects while prescribed fire emissions are managed by the local air districts through burn permits and smoke management plans. In addition, the 1990 amendment of the Clean Air Act published the General Conformity Rule. It states that in federal non-attainment areas, before actions can be taken on federal lands that have the potential to emit pollutants to the atmosphere, a determination must be made that the action conforms to the State Implementation Plan (SIP). Pursuant to 40 CFR 93.153 (i), prescribed fire conducted in accordance with a smoke management program conforms to the SIP.

Prescribed burns and pile burning would emit pollutants such as ROG, NO_x, and PM₁₀. However, all burning would be completed under the approved smoke management plans and permits to burn, which are required by PCAPCD and ECAQMD and administered through the Prescribed Fire Information Reporting System database. These plans and permits would describe acres by burn type, predominant vegetation, duration of burn, emissions estimates, identification of smoke sensitive areas, alternatives and contingencies, and the responsible parties. Emissions would be minimized through considerations such as weather conditions, wind direction, and burn pile size. The local air district is the ultimate arbiter in whether the activity can occur as proposed, in a limited capacity, or must be postponed based on the predicted transport and placement of pollutants from the activity relative to sensitive receptors that may be impacted by the activity. Prescribed fire treatments need not only an authorization from the

local air district, but also must ensure that the conditions set forth in the approved smoke management plan are met prior to ignition of a prescribed fire. That is, even with authorization from the local district to conduct the prescribed burn, if the conditions and requirements of the smoke management plan are not met on site, ignition is prohibited (17 CCR Section 80160). Compliance with air district requirements ensures applicable air district thresholds are not exceeded and exposure to people is reduced. Because the project would be required to meet all PCAPCD and ECAQMD air quality requirements, which include measures to reduce air pollutant emissions to the degree feasible, this impact would be less than significant.

Non-Fire-Related Emissions

Non-fire-related emissions were evaluated using PCAPCD and ECAQMD's air pollutant emissions thresholds, shown in Table 3.3-1, above. The *Draft Recirculated Program Environmental Impact Report* recently prepared by the California Board of Forestry and Fire Protection for a statewide vegetation treatment program provides typical air quality pollutant emission estimates for hand thinning, mechanical thinning, and prescribed fire (Board of Forestry 2017). These estimates include emissions from mechanized equipment as well as typical worker commute trips. While these do not reflect exact emissions from the project, these air quality pollutant emissions estimates can be scaled-down to provide a reasonable estimate of emissions from treatment activities associated with the project.

Table 3.3-2 summarizes the maximum daily emissions of ROG, NO_x, and PM₁₀ from the project's non-fire-related sources, assuming all activities occur concurrently. Refer to Appendix B for a description of all calculations and assumptions used to support the modeling. For purposes of this analysis, hand treatments include hand cut of hazard trees, hand cut and pile dead trees, and initial and secondary release of conifer seedlings. All other treatments (except prescribed burn only) were considered mechanical treatments, even if the treatment includes a mix of hand and mechanical activities.

Table 3.3-2 Daily Non-Fire Related Air Pollutant Emissions

Activity	ROG (lb/day)	NO _x (lb/day)	PM ₁₀ (lb/day)
Hand Treatments	0.1	1.6	0.2
Mechanical Treatments	2.6	21.3	4.2
Prescribed Burns and Pile Burning (Equipment and Worker Commute Only)	0.4	2.5	1
Total	3.2	25.5	5.4
Thresholds	82	82	82

ROG = reactive organic gases; NO_x = nitrogen oxides; PM₁₀ = respirable particulate matter; lb/day = pounds per day
 Source: Board of Forestry 2017, Appendix B

As shown in Table 3.3-2, if all activities occurred concurrently, maximum daily non-fire-related emissions would reach 3.17 lb/day of ROG, 25.45 lb/day of NO_x, and 5.39 lb/day of PM₁₀. These emissions levels would not exceed ECAQMD's or PCAPCD's significance thresholds for ROG, NO_x or PM₁₀. Because the project would be implemented over ten years with a variety of treatment techniques, it is not possible to calculate the exact daily emissions from treatment activities. Variations in worker commute distances, emissions associated with hauling of merchantable timber, and the exact ratio of hand and mechanical treatments in units that contain a mix of treatment approaches could result in daily emissions that are greater or less than shown in Table 3.3-2. However, even if daily emissions were twice the amount shown in Table 3.3-2, the emissions would remain well below the applicable thresholds. Thus, even under a very conservative and unlikely scenario, daily emissions would not exceed applicable thresholds.

Past, present, and future development and land management projects contribute to adverse air quality on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of CAAQS or NAAQS. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Several air districts recommend using their mass emissions thresholds for evaluating whether construction-generated emissions of ROG, NO_x, and PM₁₀ would be cumulatively considerable; that same approach has been adopted here.

As described above, Placer and El Dorado Counties are designated as nonattainment for PM10. However, the project would be required to meet all PCAPCD and ECAQMD air quality requirements, which includes measures to reduce PM10 emissions to the degree feasible. All prescribed burning would be completed under approved smoke management plans and permits to burn, which are required by PCAPCD and ECAQMD. Therefore, the project's fire-related emissions would not violate air quality standards or conflict with or obstruct implementation of air quality attainment plans. In addition, as shown in Table 3.3-2, the project's non-fire related emissions of ROG, NOX, and PM10 would not exceed PCAPCD's emissions thresholds. Therefore, the project would not contribute a cumulatively considerable increase of those criteria pollutants and the impact would be less than significant.

Thus, the project would not conflict with or obstruct implementation of the applicable air quality plan or result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment. Impacts would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than significant. Sensitive receptors near the project sites include: recreational users and nearby private land owners. However, as described above under a) and c), emissions would not exceed significance thresholds and would not obstruct implementation of the applicable air quality plan. Furthermore, emissions-generating project activities would be temporary and dispersed throughout the project area, limiting the potential for substantial emissions to be in any one location for an extended period. As described above, prescribed burning would be implemented in accordance with a smoke management plan approved by PCAPCD or ECAQMD, as applicable. The smoke management plan requires burning with wind directions that transport smoke away from communities and limiting the acres burned daily. Burns would be conducted during approved burn days, when atmospheric conditions favor smoke dispersion. Therefore, this impact would be less than significant.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than significant. Minor odors from the use of diesel equipment and from smoke during prescribed burning activities would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. Therefore, project-related odors would be considered temporary and minor. The project would not result in long-term sources of objectionable odors affecting a substantial number of people. For these reasons, this impact would be less than significant.

3.4 BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources.				
Would the 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 Wildlife or the 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, or regulations or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (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 checked="" type="checkbox"/>	<input 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 Environmental Setting

The project area is located on 16,682 acres of national forest lands within the approximately 97,000 acres burned by the King Fire. Prior to the King Fire, the vegetation within the project area included Sierran mixed conifer, ponderosa pine, montane hardwood, montane hardwood-conifer, and montane chaparral. Much of the northern portion of the project area north of Wentworth Springs Road burned at a high severity, removing most of the previous vegetation, while the fire in the southern portion of the project area burned with mixed severity. The current vegetation in this southern portion of the project area is a mix of conifer stands and chaparral (USFS 2015a). The project area includes

the Rubicon River, multiple creeks, and other small drainages that provide riparian habitat and corridors for movement of aquatic and terrestrial species.

Landscape connectivity in the project area was evaluated and mapped using California Department of Fish and Wildlife's (CDFW's) Terrestrial Connectivity dataset (CDFW 2018) (Figure 3.4-1). This dataset summarizes information on terrestrial connectivity by hexagon, including the presence of mapped habitat corridors or linkages; the juxtaposition to large, contiguous, natural areas; and a relative intactness (ecological condition) score ranging from 1 (representing low intactness) to 5 (representing high intactness). Mapped corridors or linkages incorporated into the Terrestrial Connectivity dataset for the project area include data from the *California Essential Habitat Connectivity Areas and Natural Landscape Blocks* (Spencer et al. 2010), and *Wildlife Connectivity Across the Northern Sierra Nevada Foothills* (Krause et al. 2015). As shown in Figure 3.4-1, the southern portion of the project area and the Rubicon River Canyon are highly intact and form connections between the Sierra Foothills and wildlife habitat in the higher elevations of the Sierra Nevada.

3.4.2 Discussion

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 Wildlife or the U.S. Fish and Wildlife Service?

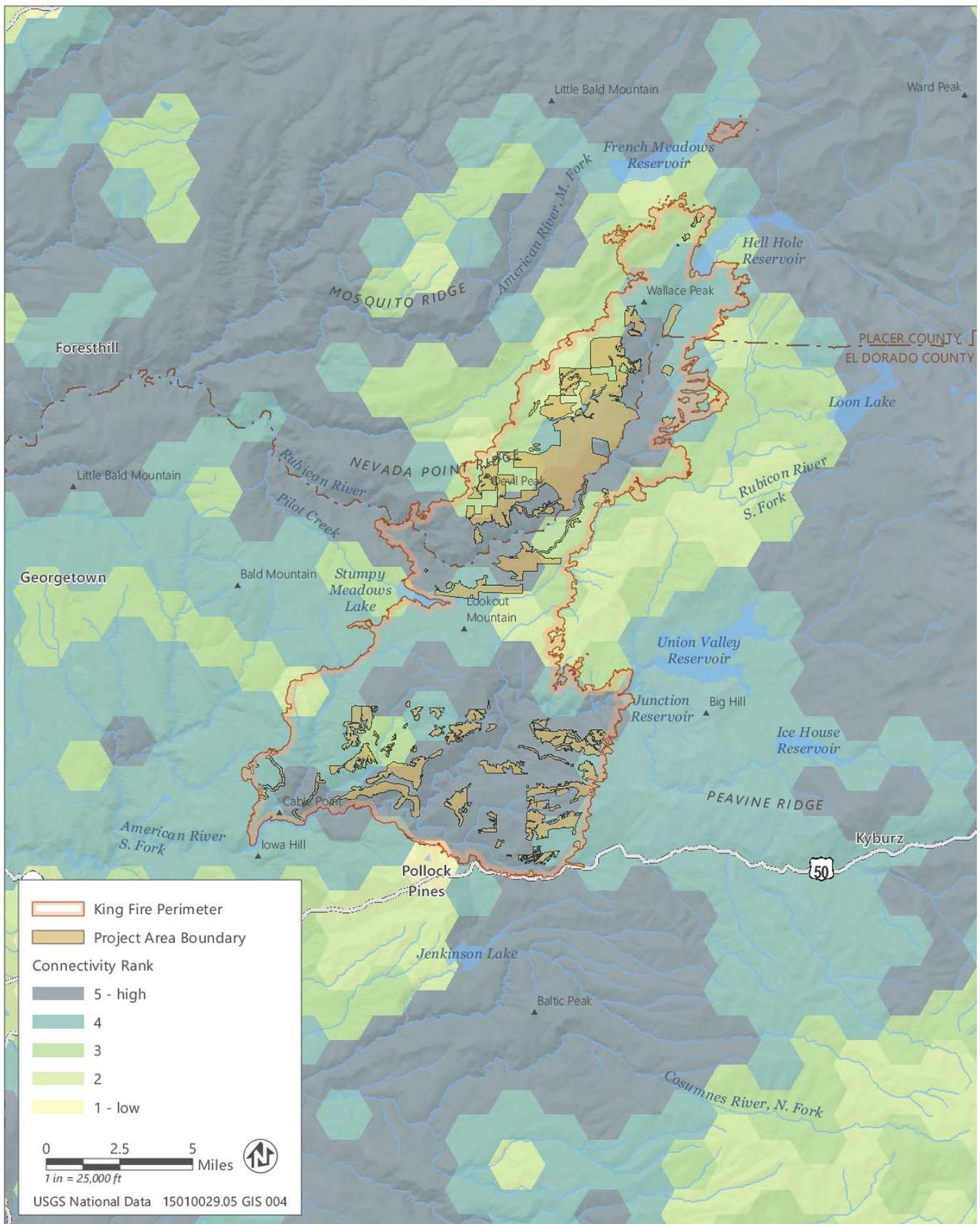
Less than significant with mitigation incorporated. Searches of the California Natural Diversity Database (CNDDDB) (California Department of Fish and Wildlife [CDFW] 2019) and the California Native Plant Society (CNPS) Inventory of Rare, Threatened, and Endangered plants (CNPS 2019) were performed to determine if special-status species could occur in the project area. The CNDDDB and CNPS queries looked for documented occurrences of special-status wildlife and plant species within the Duncan Peak, Granite Chief, Michigan Bluff, Tunnel Hill, Loon Lake, Wentworth Springs, Robbs Peak, Devil Peak, Greek Store, Bunker Hill, Old Iron Mountain, Riverton, Sly Park, Placerville, Camino, Pollock Pines, Garden Valley, and Slate Mtn. U.S. Geological Survey 7.5' quadrangles. The Environmental Impact Statement (EIS) for the project (USFS 2015a) and project technical reports (USFS 2015c; USFS 2015d; USFS 2015e; USFS 2015f; USFS 2015g) were also reviewed to identify special-status species with the potential to occur in the project area.

Based on the data review, 24 botanical (CNPS 2019) and 18 animal (CDFW 2019) special-status species are known to occur within the CNPS and CNDDDB search area and are subject to this CEQA review.

Special-Status Species Previously Analyzed for the King Fire Restoration Project

The EIS for the King Fire Restoration Project (USFS 2015a) adopted RPMs to reduce potential adverse effects from the project on special-status species (Section 2.5.5, "Resource Protection Measures" and Appendix A). It then analyzed residual impacts to special-status species.

The EIS and supporting documents discussed 20 of the 24 botanical species identified in the CNDDDB and CNPS queries and three that were not included in those searches (CDFW 2019, CNPS 2019). Eight USFS sensitive and eight USFS watchlist plant species are known to occur within the King Fire perimeter. Botanical surveys were conducted within salvage, fuel reduction, hazard tree removal, watershed sensitive area (WSA), and reforestation units; however, the units that would be treated with prescribed fire only were not surveyed beyond the area of initially proposed fire line. As analyzed and discussed in the EIS and supporting documents, implementation of project activities such as salvage logging, hazard tree removal, fire line construction, and release of seedlings could result in the crushing or removal of special-status plants. Indirect impacts to special-status plants could occur from sediment run-off from project activities and increased competition from invasive plants should new introductions occur.



Source: Data downloaded from CDFW in 2019

Figure 3.4-1 Habitat Connectivity

Special-status wildlife species addressed in the EIS and supporting documents that are subject to this CEQA review are: foothill yellow-legged frog (*Rana boylei*), California red-legged frog (*Rana draytonii*), Sierra Nevada yellow-legged frog (*Rana sierrae*), western pond turtle (*Emys marmorata*), bald eagle (*Haliaeetus leucocephalus*), California spotted owl (*Strix occidentalis occidentalis*), great gray owl (*Strix nebulosa*), northern goshawk (*Accipiter gentilis*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), fringed myotis (*Myotis thysanodes*), pacific marten (*Martes caurina*), willow flycatcher (*Empidonax traillii*), and California wolverine (*Gulo gulo*). As analyzed and discussed in the EIS, project implementation could result in adverse effects on special-status animals including disruption of breeding due to noise and human activity, loss of individuals, and reduction in habitat quality.

Section 2.5.5, "Resource Protection Measures," and Appendix A of this initial study describes the RPMs for the King Fire Restoration Project that apply to treatment units included in the proposed project (Figure 2.2 and Figure 2.3). These RPMs would minimize or avoid adverse effects of project implementation on federally endangered, federally threatened, and USFS sensitive plant and wildlife species identified in the King Fire Restoration Project EIS as having a potential to occur within treatment units and subject to this CEQA review. The applicable RPMs include the following requirements:

- ▶ flag occurrences of sensitive and watch list plants, lava caps, and high-risk invasive plant infestations, and include boundaries on unit maps, and implement avoidance measures tailored to specific species within species occurrences;
- ▶ avoid prescribed fire ignition within flagged areas around sensitive, watch list, or invasive plants, and do not allow prescribed fire to back into masticated sensitive and watch list plant occurrences;
- ▶ clean equipment and vehicles to prevent new invasive plant introductions;
- ▶ maintain a limited operating period (LOP) prohibiting vegetation treatments and road reconstruction/landing construction within approximately one-quarter mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting.;
- ▶ prohibit off-road mechanical equipment operations within 1 mile of areas identified as California red-legged frog breeding habitat during the wet season (defined as starting with the first frontal rain event that deposits a minimum of 0.25 inch of rain after October 15 and ending April 15);
- ▶ retain pre-fire spotted owl or goshawk nest trees as wildlife snags.

To avoid and minimize take of Sierra Nevada yellow-legged frog the project would implement additional conservation measures contained in the Amendment of the Programmatic Biological Opinion on Nine Forest Programs on Nine National Forests in the Sierra Nevada of California for the Endangered Sierra Nevada Yellow-legged Frog, Endangered Northern Distinct Population Segment of the Mountain Yellow-legged Frog, and Threatened Yosemite Toad (USFWS 2014). With the implementation of RPMs and the additional conservation measures contained in the Programmatic Biological Opinion, impacts to special-status plant and wildlife species analyzed in the EIS for the King Fire Restoration Project (USFS 2015a) would be less than significant.

Special-Status Species Not Previously Analyzed for the King Fire Restoration Project

Special-Status Plants

The query of the CNDDDB and CNPS inventory identified four plant species (see Appendix C, Table C-1) considered rare in California but not specifically analyzed in the King Fire Restoration Project EIS and technical reports (USFS 2015a; USFS 2015b; USFS 2015g). Considering suitable habitat within the project area, three of these species were preliminarily considered to potentially occur with the project area: mud sedge (*Carex limosa*), starved daisy (*Erigeron miser*), and Donner Pass buckwheat (*Eriogonum umbellatum* var. *torreyanum*). Further consultation with the USFS determined that the ranges of starved daisy and Donner Pass buckwheat do not extend into the project area (Faulk, pers. comm., 2019) and these species are not analyzed further.

Implementation of project activities such as salvage logging, hazard tree removal, fire line construction, and release of seedlings could result in the crushing or removal of mud sedge, if the species is present in the project area. Indirect impacts to mud sedge could occur from sediment run-off from project activities and increased competition from

invasive plants should new infestations occur. Implementation of RPMs (Section 2.5.5, "Resource Protection Measures," and Appendix A) that prohibit mechanical activities within 100 feet of bogs and fens, limit herbicide application, and prohibit active ignition of prescribed fire within RCAs would avoid or reduce the likelihood that project activities would crush, burn, or kill mud sedge individuals. Additionally, implementation of the RPMs related to invasive plant management, water quality protection, and soil stabilization and protection would minimize or avoid potential project-related effects of invasive plants and sediment run-off on mud sedge and its habitat. With implementation of the RPMs designed to protect federally listed and USFS sensitive and watchlist plant species during treatment activities (Section 2.5.5, "Resource Protection Measures"), and RPMs that would reduce run-off of sediment to suitable habitat, and because treatments are expected to improve habitat quality over the long term, potential disturbances to mud sedge would be less than significant.

Special-status Wildlife

The CNDDDB query identified four special-status wildlife species not specifically analyzed in the King Fire Restoration Project EIS (USDA 2015a) that could occur within the project area: southern long-toed salamander (*Ambystoma macrodactylum sigillatum*), black swift (*Cypseloides niger*), Sierra Nevada mountain beaver (*Aplodontia rufa californica*) and Sierra Nevada snowshoe hare (*Lepus americanus tahoensis*) (Appendix C, Table C-2).

Southern long-toed salamander

Southern long-toed salamander is a CDFW species of special concern that occurs within forests associated with meadows where snowmelt provides temporary ponds for breeding. Breeding typically occurs in late May or June, and migration may occur within approximately 3,280 feet of breeding habitat. In upland habitats, the species spends most of the year underground or under rocks, logs, and other similar locations (CWHR 1990a). CNDDDB records indicate the presence of southern long-toed salamanders at multiple locations near the project area (CDFW 2019). If water is present for long enough to allow for completion of the aquatic portion of the species' lifecycle, ponds and wet meadows that may occur within the project area are potentially suitable breeding habitat for this species. In addition, suitable upland habitat may be present in treatment units within 3,280 feet of breeding habitat.

Project RPMs including requirements for limiting water drafting, limiting mechanical harvesters to low ground pressure machines, and avoiding active ignition of prescribed fire within RCAs would minimize potential effects of project implementation in suitable breeding and upland habitat within RCAs. However, if southern long-toed salamander occurs within treatment units, felling of trees and use of mechanical equipment could result in the death or injury of individuals above ground, and the potential fill or collapse of burrows resulting in entombment and death. This would be a potentially significant impact.

Mitigation Measure BIO-1: Conduct Surveys and Implement Protections for Southern Long-toed Salamander

For ground-disturbing activities conducted outside the the breeding season (May through June) or dispersal season (May through July) for southern long-toed salamander, no further actions related to southern long-toed salamander mitigation are required.

For ground-disturbing activities implemented during the breeding season (May through June) or dispersal season (May to July) for southern long-toed salamander, before project implementation, a qualified biologist shall determine if suitable aquatic breeding habitats occur within a 3,280-foot buffer around treatment areas. If no suitable aquatic breeding habitat occurs within this buffer, then no further action is required. If suitable breeding habitat is found within the 3,280-foot buffer, then one of the following options shall be implemented:

Option 1. Surveys for southern long-toed salamanders (adults, egg masses and larvae) in suitable breeding habitat shall be conducted during the breeding season (May through June) (Thompson et al. 2016: pages 136-141). If surveys confirm that long-toed salamanders are not present in suitable breeding habitat, no further action is required. If surveys of breeding habitat detect southern long-toed salamanders or egg masses, it will be assumed that salamanders may use the treatment area for breeding, dispersal/movement, or refugia; and, if feasible, a limited operating period (LOP) shall be implemented for all project activities with the potential to crush salamanders (e.g., tree felling, piling, whole tree yarding) within 3,280 feet of occupied breeding habitat during

the dispersal season. Additionally, use of project vehicles shall only occur between sunrise and sunset during this period to avoid crushing dispersing salamanders. If implementing an LOP within 3,280 feet of occupied breeding habitat is not feasible, a qualified biologist will conduct "walk and turn" surveys of areas beneath surface objects (e.g., rocks, leaf litter, moss mats, coarse woody debris). If surveys within treatment units detect southern long-toed salamanders outside of breeding habitat, a qualified biologist shall relocate the salamanders outside of the unit and away from any ground disturbing activities.

Option 2. If surveys for long-toed salamanders in suitable breeding habitat within 3,280 feet of suitable breeding habitat are not conducted, the LOP described for Option 1 shall be applied for all project activities with the potential to crush salamanders (e.g., tree felling, piling, whole tree yarding) within 3,280 feet of suitable breeding habitat during the dispersal season, if feasible. If implementing the LOP is not feasible, a qualified biologist will conduct "walk and turn" surveys of areas beneath surface objects (e.g., rocks, leaf litter, moss mats, coarse woody debris). If surveys within treatment units detect southern long-toed salamanders outside of breeding habitat, a qualified biologist shall relocate the salamanders outside of the unit and away from any ground disturbing activities.

With implementation of the RPMs designed to protect riparian and meadow habitats during treatment activities (Section 2.5.5, "Resource Protection Measures," and Appendix A), implementation of Mitigation Measure BIO-1 to reduce the likelihood of potential injury or mortality of salamanders, and because the project may improve habitat quality for long-toed salamanders over the long term, potential project-related disturbances to southern long-toed salamander would be less than significant with mitigation.

Black swift

The project site is within the breeding range of black swift and the species could potentially nest within the project area. Black swift typically nests on cliffs, usually on sea cliffs or behind waterfalls in deep canyons. While the project area may contain suitable nesting habitat, project activities would not take place within deep canyons or cliff faces. Project activities are unlikely to disturb or remove nesting black swifts, if present on the project site, and impacts to this species would be less than significant.

Sierra Nevada mountain beaver

Sierra Nevada mountain beaver is designated by CDFW as species of special concern. This species creates burrows and forages within riparian habitat and is highly dependent on the presence of perennial water and dense vegetation (CWHR 1990b). CNDDDB records indicate Sierra Nevada mountain beaver occurrences in the vicinity the project south of Pilot Creek, in the Little Silver Creek drainage, and southeast of Hell Hole Reservoir (CDFW 2019). Therefore, Sierra Nevada mountain beaver may also occur within treatment units that are associated with riparian habitat. Salvage logging, hazard tree removal and other project activities could occur within suitable Sierra Nevada mountain beaver habitat and adjacent areas. Project RPMs would minimize potential adverse effects of project implementation on suitable Sierra Nevada mountain beaver habitat within RCAs. RPMs would limit mechanical harvesters to low ground pressure machines and avoid active ignition of prescribed fire within RCAs. However, if Sierra Nevada mountain beaver occurs within treatment areas, the felling of trees and use of mechanized equipment within suitable riparian habitat could result in the collapse or fill of burrows, including active breeding sites. In addition, noise from mechanical treatment methods may disrupt Sierra Nevada mountain beaver breeding activities. The death or injury of Sierra Nevada mountain beaver individuals or disruption of breeding would be a potentially significant impact.

Mitigation Measure BIO-2: Conduct Surveys and Avoid Disturbances to Sierra Nevada mountain beaver

For ground-disturbing activities conducted outside the breeding season for Sierra Nevada mountain beaver (between February 1 and July 31), no further actions related to Sierra Nevada mountain beaver mitigation are required.

For ground-disturbing activities implemented during the breeding season for Sierra Nevada mountain beaver (between February 1 and July 31), before project implementation, a qualified biologist shall determine if suitable riparian habitats occur within a 250-foot buffer around treatment areas. If no suitable riparian habitat occurs within this buffer, then no further action is required. If suitable habitat is found within the 250-foot buffer, then one of the following shall be implemented:

Option 1: A qualified biologist shall conduct focused surveys for the presence/absence of active burrows for Sierra Nevada mountain beaver in suitable riparian habitat within proposed treatment areas and a 250-foot buffer. The pre-treatment survey for active burrows shall be conducted no more than 30 days before activities are initiated each season. CDFW shall be notified of the results of the pre-treatment surveys. If active breeding/burrow sites are identified within 250 feet of project activities, a limited operating period (LOP) for these burrows shall be implemented before commencement of any treatment activities to avoid tree felling or access-related disturbances to breeding activities of Sierra Nevada mountain beaver. An LOP constitutes a period during which project-related activities (e.g., tree felling, piling, whole tree yarding) will not occur, and will be imposed between February 1 and July 31 within 250 feet of any active burrow sites. The period of the LOP, area within which it is implemented (e.g., 250-foot buffer), and activities allowed or prohibited within the LOP may be adjusted through consultation with CDFW. CDFW shall be notified of the establishment of buffers and LOPs required to minimize or avoid impacts to Sierra Nevada mountain beaver.

Option 2. If surveys for Sierra Nevada mountain beaver in suitable riparian habitat within 250 feet of treatment areas are not conducted, the LOP described for Option 1 shall be applied for all project activities with the potential to disturb breeding activities of Sierra Nevada mountain beaver (e.g., tree felling, piling, whole tree yarding) within 250 feet of suitable riparian habitat during the breeding season.

With implementation of Mitigation Measure BIO-2 and project RPMs, riparian habitats and active burrow sites for Sierra Nevada mountain beaver would be protected during treatment activities. Therefore, the project would not substantially affect the distribution, breeding productivity, viability, or the regional population of Sierra Nevada mountain beaver. Potential impacts to this species would be less than significant with mitigation.

Sierra Nevada snowshoe hare

Sierra Nevada snowshoe hare is designated by CDFW as species of special concern. This species is found within middle to high elevation in the Sierra Nevada. Snowshoe hare most frequently occupies riparian areas and other densely vegetated deciduous habitats. For shelter, snowshoe hares typically do not dig or occupy burrows; rather, they use scrapes or shallow depressions on the ground. Sierra Nevada snowshoe hare has been detected in the project vicinity, northwest of Silver Peak on the southern portion of the Tahoe National Forest near Squaw Valley (CDFW 2019); and, the project area contains suitable habitat for this species. Therefore, snowshoe hare could potentially occur within riparian habitat in the project area. Salvage logging, hazard tree removal, and other project activities could occur within suitable habitat for Sierra Nevada snowshoe hare. These activities could result in the temporary disturbance of foraging and breeding behaviors; however, the species does not use burrows where they may be trapped or crushed by project activities, and the project would not substantially remove habitat for snowshoe hare. Project RPMs would minimize the potential impacts to snowshoe hare by limiting prescribed fire ignition and mechanical harvest activities within RCAs. While activities that occur within RCAs may still temporarily disturb snowshoe hare breeding and foraging behaviors, with the implementation of RPMs the project would not substantially affect the distribution, breeding productivity, viability, or the regional population of Sierra Nevada snowshoe hare. Therefore, the impact to this species would be less than significant.

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

Less than significant. The EIS for the King Fire Restoration Project (USFS 2015a) and the supporting Botany Report for Watchlist Plants, Special Habitats, and Special Interest Areas (USFS 2015g) identified riparian habitat, lava caps, and a potential fen as special habitats. In addition, the Leonardi Falls Botanical Special Interest Area (SIA) and the Peavine Natural Research Area (RNA) occur in the project vicinity. The SIA was designated for high plant diversity and a high concentration of seeps and springs, which provide habitat for sensitive plant species. The SIA is located on a north-facing slope of the Rubicon River Canyon off Wentworth Springs Road. No project activities are proposed within the SIA with the exception of hazard tree removal at the southwest corner of the SIA along approximately 500 feet of the road that accesses the SIA. This hazard tree removal along this single road would not substantially disturb or degrade the quality or distribution of sensitive habitats in the SIA. Project RPMs (Section 2.5.5, "Resource Protection

Measures,” and Appendix A) would minimize potential adverse effects of project implementation on riparian habitats and the potential fen within the project area. In addition, lava caps would be avoided during salvage and fuels treatments; equipment staging and travel; and piling, planting, and release activities. During hazard tree removal within lava caps, a USFS botanist would review the site to determine the least impactful method of felling and removing or leaving the hazard tree on the ground (USFS 2015g). The Peavine RNA was established to preserve one of the few remnant ponderosa pine and California black oak forests. The RNA was burned during the King Fire. Only a small portion of the Peavine RNA would be affected by treatments, such as hazard tree removal, hand treatments, and mechanical salvage. None of the alternatives would result in substantial removal of habitat within the RNA or the natural succession within the RNA as the proposed treatments are largely focused on roadside hazard removal and treatment within the wildland urban interface (USFS 2015a). Therefore, the proposed project would have a less-than-significant effect on sensitive habitats.

c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than significant. Project activities include salvage logging, hazard tree removal, tree planting, and water-drafting to facilitate vegetation and fuels management efforts. These activities are exempt from U.S. Army Corps of Engineers (USACE) 404 permitting; therefore, Section 404 permitting and 401 certification would not be required. Project RPMs include measures to implement buffers from aquatic resources, limit drafting rates, to use appropriate intake screens, and to prevent overflow and leaks from entering the watercourse (Section 2.5.5, “Resource Protection Measures,” and Appendix A). The project would avoid or minimize adverse impacts to state or federally protected wetlands and other aquatic resources, and this impact would be less than significant.

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. As discussed in Section 3.4.1 and shown in Figure 3.4-1, the landscape within the central and southern portion of the project area are largely intact and connected to large blocks of adjacent habitat areas. On a finer scale, streams and creeks within the project site provide movement corridors for wildlife species, particularly aquatic species. Project activities such as tree removal and prescribed fire, as well as related activities (e.g., staging of equipment, use of vehicles, presence of staff) within treatment areas may temporarily interfere with wildlife species movement during project activities. However, the project RPMs (Section 2.5.5, “Resource Protection Measures” and Appendix A) would prevent or minimize impacts to important wildlife movement corridors by requiring protective buffers around RCAs and retention of large snags and coarse woody debris within forest habitat, which are important features for movement within forest habitats for mammal species such as martens and fishers (Sauder and Rachlow 2014, Moriarty 2016). Furthermore, salvage logging and hazard tree removal would not substantially degrade the existing habitat in a manner that would interfere with wildlife movement locally or regionally, and tree planting would restore tree cover on habitats that were damaged by the King Fire. Also, the project does not include any structures such as culverts or weirs within streams that could result in interference with movement of migratory fish or other aquatic species. The project area does not contain any known nursery sites (e.g., rookeries) and, as discussed above, riparian habitat that may serve as nursery sites for mule deer and other species would not be substantially degraded by project activities. Therefore, project-related disturbances to native fish and wildlife movements or important animal movement corridors would be less-than-significant.

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

No impact. The project area is located entirely within the El Dorado NF and would not be subject to any county or city policies or ordinances related to biological resource protection. Management activities within the project area are directed by the *El Dorado National Forest Land and Resource Management Plan* as amended by the *Sierra Nevada Forest Plan Amendment* Record of Decision (USFS 2004), with which the project is consistent. There would be

Therefore, project implementation would result in no impact related to local policies or ordinances protecting biological resources.

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 proposed Placer County Conservation Plan (PCCP) is a Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP). Phase I of the Plan covers most of western Placer County, and Phases II and III of the PCCP would cover the middle and eastern portions of the Placer County, including lands adjacent to a portion of the project area. However, the PCCP does not cover federal lands nor has it been completed or adopted. No additional HCPs, NCCPs, or conservation plans applicable to federal lands have been adopted in Placer County or El Dorado County. Project implementation would result in no impact related to adopted conservation plans.

3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources.				
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to Section 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 Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.5.1 Environmental Setting

The King Fire Restoration area contains evidence of an extensive record of human activity. By 5,000 years ago, permanent Native American villages were well established on the western Sierran slopes at elevations generally below 3,500 feet. Cultural resources in the project area from this phase consist of tools made of basalt. During the earliest phases of human activity, people hunted large animals, such as deer, with dart propelled atlatls (throwing sticks that were later replaced by the bow and arrow). Visitors to the area were developing a seasonal focus on harvesting, storing, and processing nut crops, as evidenced by portable millingstones and handstones.

Two different Native American ethnic groups (Nisenan & Washoe) utilized the resources and managed the landscape within the vicinity of the King Fire prior to and during the time of Euro-american contact. Archaeological evidence confirms rather heavy use within the vicinity of the project site due to the presence of seasonal villages, temporary camps, and areas that contain bedrock milling features, flaked stone materials (lithics), midden, and petroglyphs.

Historic-era activities since the Gold Rush also left an imprint on the landscape. The remains of mid-19th century emigrant wagon routes, used by westbound travelers to the gold fields of California and later used by eastbound travelers to the silver mines of Nevada, offer some of the earliest evidence of use from the historic era. Some of the historic transportation routes within the project area include the Johnson’s Cutoff, Georgetown Cutoff, Brockliss Grade, and Pony Express Trail.

Beginning in the early 1850s the project area began to be mined due to its close proximity to the original Gold Rush discovery at Coloma, along the South Fork of the American River. Many ditch systems were constructed in the project area to support mining activities, as well as to bring water to foothill mining communities. Along with temporary camps and residences, mining activity also prompted the development of larger occupation sites and homesteads in the mid-19th and early-20th centuries for families and individuals engaged in raising livestock and grazing. Associated features remaining today include collapsed wooden structures, rock foundations, and fences.

Major railroad logging in the project area began in the 1890s with the development of the Michigan-California Lumber Company. While the sawmill sites of this system are located primarily on private lands, a vast network of grades, spurs, trestles, and seasonal camps are located in the project area. The King Fire caused new disturbances and destroyed many of these features, though the majority of the system on public lands was already in poor condition and had already been determined to be not eligible for the National Register of Historic Places (NRHP).

As part of the *King Fire Restoration Project EIS* (USFS 2015), the project area was intensively surveyed to supplement previous survey records (Cultural Resource Manage Report file #: R2015-0503-00007). A total of 158 sites were identified within the analysis area, with 107 sites of Native American origin, 43 from the historic era, and eight sites that contain both historic and Native American features and artifacts. Four of the Native American sites have been evaluated to determine their eligibility for NRHP listing, with two of the sites considered eligible and two of the sites considered not eligible. The eligible Native American sites contain bedrock milling features, extensive lithic scatters with subsurface deposits, and midden; one of the sites contains petroglyphs. Six of the historic-era sites have been evaluated with the determination that three are eligible and three are not eligible for the NRHP. All three historic-era sites are 19th century wagon roads.

3.5.2 Discussion

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Less than significant. The King Fire Project area has a significant number of sites representing historic and prehistoric use. Historic features unique to the area are primarily associated with historic mining of the area and railroad features. Historic cultural resources found in the area include grades for roads and ditches, wagon routes, and features from occupation sites associated with mining and railroad activities. Prehistoric cultural resources include bedrock milling features, midden, and petroglyphs. Project activities are designed to enhance and protect cultural resources, while adhering to the provisions of the National Historic Preservation Act (NHPA) and the current Region 5 Programmatic Agreement with the State Historic Preservation Office (USFS 2015).

The project site has been surveyed and analyzed for cultural resources and the presence of prehistoric and historic archaeological sites and isolated features have been documented. As described in Section 2.4.5 above, several RPMs specific to the protection of cultural resources would be incorporated into the project (Appendix A). RPMs include avoiding known cultural sites. Mechanical equipment would not be operated within cultural resource sites and felling would be directed away from cultural sites. Assessment of historical and cultural resources within the project site indicates implementation of the proposed project would not affect any cultural resources eligible for listing in the NRHP, nor would it cause loss or destruction of any cultural resources. Potential effects on heritage resources would be avoided by locating project activities away from heritage sites and by avoiding cultural sites and following standard procedures as outlined in the RPMs (Appendix A). If any new cultural resources were discovered during project implementation, operations would cease in the area of new discovery until adequate protections measures were agreed upon, per RPM CR-8. For these reasons, the impact to historical resources would be less than significant.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less than significant. See discussion a), above.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less than significant. The project would include some ground-disturbing activities, but the extent of subsurface disturbance would not be substantial and project activities would not be expected to encounter human remains, including those interred outside of formal cemeteries. In accordance with existing regulations, if any human remains are discovered or recognized during project implementation, all ground-disturbing activity would stop in the vicinity of the remains and any nearby area reasonably suspected to overlie adjacent human remains until: the applicable County Coroner/Sheriff has been informed and has determined that no investigation of the cause of death is required. If the remains are of Native American origin, ground-disturbing activities would not resume until: the descendants of the deceased Native Americans have made a recommendation, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98; or the Native American Heritage Commission was unable to identify a most-likely descendant or the most-likely descendant failed to make a recommendation within 48 hours after being allowed access to the site. Therefore, this impact would be less than significant.

3.6 ENERGY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Energy.				
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.6.1 Environmental Setting

The analysis considers whether implementation of the proposed project would result in inefficient, wasteful, and unnecessary consumption of energy or if it would obstruct the deployment or use of renewable energy resources. The proposed project would not include the construction or operation of any land use types that would require grid-sourced energy. Treatments conducted under the proposed project would require the use of gasoline and diesel fuel to power passenger vehicles, trucks and heavy-duty equipment, but would not involve the consumption of electricity from the grid. Existing energy use within the project area is limited to vehicle use on forest roads, and intermittent use of equipment associated with USFS management activities.

3.6.2 Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than significant. The project would not include wasteful, inefficient, or unnecessary consumption or energy resources during fuel management and conifer planting activities. The energy resources used would only include diesel and gasoline necessary for vegetation management equipment (e.g., feller-bunchers, skidders, chippers, chainsaws) and vehicle use associated with worker commutes to and from the project area. The project would not involve ongoing operation of equipment or new facilities that would require energy. Energy use would be temporary and would only be associated with equipment necessary to implement the project. For this reason, this impact is less than significant.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency

Less than significant. The proposed project is consistent with state and local plans for energy efficiency and renewable energy including the 2017 CARB Climate Change Scoping Plan, State of California Energy Plan, California Renewables Portfolio Standard Program, Clean Energy and Pollution Reduction Act of 2015, and State Alternative Fuels Plan. None of these plans prohibit the use of equipment for vegetation management activities, and equipment would comply with all applicable state and federal energy efficiency standards. Therefore, the impact would be less than significant.

3.7 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils.				
Would the project:				
a) Directly or indirectly cause 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 California Geological Survey 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 checked="" type="checkbox"/>	<input 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, as updated), creating substantial direct or indirect 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"/>
f) 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"/>

3.7.1 Environmental Setting

Soils within the project area are primarily derived from volcanic rock on the ridges and sedimentary rock on hillslopes (USDA 2015a). There are smaller amounts of soils derived from glacial material primarily in the Rubicon drainage, and soils derived from granitic material situated at the higher elevations of the project area. The dominant soils within the analysis area are mostly loams and sandy loams, with gravelly to very gravelly texture modifiers, indicating high

natural infiltration rates and high rock content in many areas. These soils range from shallow to deep, reflecting a wide range of soil productivity and soil hydrologic groups. Specific dominant soils include the McCarthy, Zeibright, and Jocal soil series. Rock outcrop is also common, even dominant, in several map units. Although rock outcrop does not produce sediment, it commonly produces runoff which accelerates erosion on soils downslope.

Dominant geology in the area includes Mesozoic plutonic rocks including granite and granodiorite, Tertiary pyroclastic and volcanic mudflow deposits, and Jurassic and Paleozoic marine sedimentary and metasedimentary rocks. The closest fault is the Melones Fault approximately 5 miles to the west (DOC 2019c).

3.7.2 Discussion

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 California Geological Survey Special Publication 42.)**

No impact. There are no delineated Alquist-Priolo Earthquake Fault Zones (EFZs) in the project area (DOC 2019c). There would be no impact related to EFZs delineated under the Alquist-Priolo Act.

ii) **Strong seismic ground shaking?**

No impact. The project area lies between two seismically active regions on the eastern slope of the Sierra Nevada and along the edge of the North American plate on the California Coast; however, the closest active fault (recorded activity in the last 200 years) is located approximately 20 miles northeast of the project area, near Truckee (DOC 2019d). Additionally, there are several northeast trending pre-Quaternary faults in the vicinity of the southern portion of the project area. The project site may be subject to periodic seismic ground shaking events. However, the project does not include the construction of structures or buildings near faults or otherwise exacerbate an existing geologic hazard. Thus, there would be no impact related to seismic-related shaking.

iii) **Seismic-related ground failure, including liquefaction?**

No impact. Related secondary effects of seismic activity include liquefaction. The project does not include the construction of structures or buildings that could be affected by liquefaction. Additionally, there are no Seismic Hazard Zones located in Placer County or in El Dorado County outside of the Lake Tahoe Basin as defined by the Seismic Hazards Mapping Program administered by the California Department of Conservation (DOC 2016d). Therefore, there would be no impact.

iv) **Landslides?**

Less than significant. The project would not include construction of new structures or substantial ground disturbance that could substantially increase exposure of people or structures to landslides. While the removal of vegetation for release of seedlings, and through prescribed fire may increase the risk of landslide in the short term, the implementation of reforestation would reduce the risk of landslide in the area previously burned by the King Fire in the long term. The application of RPMs (Section 2.4.5, "Resource Protection Measures" and Appendix A) such as establishing minimum values for soil cover (i.e., 50 percent minimum soil cover on slopes less than 25 percent, and 70 percent minimum soil cover within RCAs, slopes greater than 25 percent, and within WSAs) would reduce the potential for landslides as compared to existing burned conditions. Therefore, implementation of the project would reduce the risk of exposing people or structures to potential substantial adverse effects associated with landslides. Thus, the impact related to landslides would be less than significant.

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

Less than significant. The King Fire resulted in variable soil burn severity throughout the project area. The southern portion of the project area was burned with a mosaic of high and low severity, while the Rubicon River Canyon in the northern portion of the project area burned with a high soil burn severity (USFS 2015a). Soils that are subject to a high soil burn severity lose their organic components and soil cover and are more easily eroded.

Implementation of project activities such as salvage logging, hazard tree removal and fuels treatments may result in soil erosion due to ground disturbance, prescribed burning, and pile burning. The long term effect of reforestation would be to reduce erosion in the project area. The use of mastication and lop and scatter methods in fuels treatment and WSA treatments would reduce the likelihood of soil erosion where they are applied. The application of RPMs (Section 2.4.5, "Resource Protection Measures" and Appendix A) would further reduce the soil erosion from project implementation. Overall, erosion may increase from project implementation; however, the amount of additional erosion would not be substantial when compared to erosion that is occurring currently as a result of the King Fire. Therefore, the impact from the project on soil erosion and loss of topsoil 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. See discussions a) and b), above.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?

No impact. The project would not result in the construction of buildings or infrastructure that would be sensitive to expansive soils and therefore would not result in risks to life or property. Therefore, there is no impact related to expansive soils.

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?

No impact. The project would not involve the use or installation of septic tanks or alternative waste water disposal systems where sewer is not available for the disposal of wastewater. Thus, there would be no impact.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than significant. The bedrock under the project area is primarily volcanic and sedimentary with some granitic and glacial bedrock units (USFS 2015a). The volcanic and sedimentary rock within the project area may contain paleontological resources. Salvage logging, hazard tree removal, and other project activities would result in ground disturbance; however, unlike ground-disturbing activities such as grading and excavation, ground disturbance associated with project activities is not expected to be substantial enough to encounter paleontological resources. The lava caps within the project area are considered unique geologic features. However, the project RPMs (Section 2.4.5, "Resource Protection Measures" and Appendix A) would prevent or minimize impacts to lava caps. For example; all project related equipment and vehicles would remain on existing road corridors within lava caps, and no parking would be allowed off road. For the reasons listed above, this impact would be less than significant.

3.8 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions.				
Would the project:				
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 of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.8.1 Environmental Setting

Climate change is a global problem. Greenhouse gases (GHGs) are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remains stored in the atmosphere (IPCC 2013:467).

The quantity of GHGs that ultimately result in climate change is not precisely known; but is enormous; no single project alone would measurably contribute to an incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

GHG emissions are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors (California Air Resources Board [CARB] 2014a). In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB 2014a). Emissions of CO₂ are byproducts of fossil fuel combustion. Methane, a highly potent GHG, primarily results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. Nitrous oxide is also largely attributable to agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution (CO₂ dissolving into the water), respectively, two of the most common processes for removing CO₂ from the atmosphere. Within the project area, primary sources of GHG emissions include wood smoke from wildfire and prescribed fire operations, and motorized vehicle/equipment use associated with recreation and USFS management activities.

3.8.2 Discussion

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

Less than significant. Project activities would result in GHG emissions related to the use of vehicles, mechanized equipment and combustion of forest materials. Activities may include the use of loaders, feller-bunchers, skidders or

similar heavy-duty equipment. Smaller equipment such as tractors, mulchers and chippers, chainsaws, or other similar equipment would also be used. However, the project would result in a reduced risk of severe wildfire, which would reduce likely future GHG emissions. While the project would involve the one-time use of GHG-emitting, off-road equipment similar to construction equipment, it would also result in the long-term effect of increasing carbon sequestration. Therefore, this analysis evaluates short-term GHG emissions, as well as providing an estimate of the long-term net change in GHGs that would result from implementation of the proposed project.

The PCAPCD has adopted a significance threshold for construction-related GHG emissions which is 10,000 MTCO_{2e}. ECAQMD does not currently have adopted thresholds of significance for GHG emissions. Therefore, PCAPCD thresholds of significance are used to evaluate short-term GHG impacts, including for those portions of the project that are located in El Dorado County and under the jurisdiction of ECAQMD.

The GHG emissions from forest treatment activities vary depending on site conditions, timing and duration of treatments, treatment approach and equipment, and other factors. The Program Environmental Impact Report (PEIR) recently prepared by the California Board of Forestry and Fire Protection for a statewide vegetation treatment program provides typical GHG emission estimates for hand thinning, mechanical thinning, and prescribed fire (Board of Forestry 2017). While these do not reflect exact emissions from the project, these GHG estimates can be scaled-down to provide a reasonable estimate of GHG emissions from treatment activities associated with the project. See Appendix B for detailed emissions calculations.

Fire-Related Emissions

Prescribed burning (also known as broadcast burning) is proposed as the only treatment on approximately 2,075 acres. The prescribed burning would occur incrementally approximately 10 years. Prescribed burning treatments would require USFS staff and the use of handheld tools and some mechanical equipment. The Board of Forestry modeled emissions from typical broadcast burning scenarios in a Sierra Nevada Mixed Conifer forest, which considered emissions from combustion of vegetation, associated equipment, and worker trips. This analysis provided estimated emissions of approximately 20.22 MT CO_{2e} per acre (Board of Forestry 2017, Appendix H). For the 2,075 acres that could be subject to broadcast burning, this would result in total emissions of 41,956.5 MT CO_{2e} over the ten-year period of 2020 – 2029, or an estimated 4,196 MT CO_{2e} per year.

In addition, pile burning could be implemented as a follow up treatment on portions of areas subject to mechanical or ground-based salvage logging (4,390 acres), mechanical logging of biomass (2,373 acres), hand cut hazard trees (313 acres), hand cut and pile dead trees (1,017 acres), and masticate/chip or machine pile dead trees and shrubs (914 acres). Pile burning would occur incrementally after initial thinning treatments for approximately 10 years. The USFS modeled GHG emissions from pile burning associated with this project using the BlueSky emissions model. This analysis estimated that pile burning associated with the King Fire Restoration would result in approximately 9,329.77 tons of carbon dioxide and 15.55 tons of methane (USFS 2015:61). This equates to a total of 8,816.5 MT CO_{2e} over the seven-year period of 2020 - 2026, or an estimate of 1,259.5 MT CO_{2e} per year.

The project would reduce the risk for wildfire through the removal of dead and dying trees, shrubs, and other wildfire fuels. However, it is still possible that wildfires could occur on the site after treatment. Wildfires that occur after treatment would likely be smaller, of shorter duration, and less intense than under existing conditions, because of the reduction of understory biomass density after prescribed burning, compared to the untreated scenario of a large, intense, catastrophic fire. Treated and untreated CO_{2e} emission estimates from wildfires in Sierra Nevada forests are available from a USFS Region 5 modeling effort that evaluated a similar forest treatment project in the northern Sierra, just north of Lake Tahoe (USFS 2015b). This modeling effort used the Forest Vegetation Simulator (FVS) model to produce emission estimates from wildfires occurring on a northern Sierra forest before and after a similar forest fuel reduction treatment. While emissions would vary based on site-specific stand characteristics and treatment details, this modeling effort provides a reasonable approximation of wildfire emissions at the project site. The FVS modeling predicted that an untreated northern Sierra mixed conifer stand would emit 79 MT CO_{2e} per acre from a wildfire, and a treated stand would emit 17.6 MT CO_{2e} per acre (USFS 2015b). For the 11,082 acres subject to prescribed burning or pile burning, this would result in 875,478 MT CO_{2e} from a wildfire under existing conditions. After project implementation, the prescribed burning/pile burning area could be expected to produce approximately

195,043 MT CO₂e from a reduced-intensity wildfire. Thus, treatment activities would result in GHG emissions from prescribe burning and pile burning; however, these treatments could result in a substantial decrease in GHG emissions from a future wildfire.

Planting and Hand Treatments

Reforestation, hand cutting, and other non-mechanical treatment activities require large crew sizes and the use of handheld tools. The Board of Forestry estimated equipment emissions from power tools like chainsaws and power brush saws, as well as emissions from typical worker trips to and from a treatment site. This analysis provided estimated emissions of approximately 0.0004 metric tons of carbon dioxide equivalent (MT CO₂e) per acre for hand treatment activities. The project would involve initial and secondary planting on 10,609 acres, hand cutting of hazard trees on 313 acres, and hand cutting and piling of dead trees on 831 acres. This total of 11,753 acres subject to planting or other hand treatments would result in estimated emissions of approximately 4.7 MT CO₂e.

Mechanical Treatments

Mechanical treatments are more emissions-intensive than hand treatments because they involve the use of tractors, feller-bunchers, skidders, chainsaws, chippers, haul trucks, and other mechanized equipment. Mechanical treatments would occur on a total of up to 8,090 acres including salvage logging (4,390 acres), mechanical logging of biomass (2,373 acres), masticate/chip or machine pile (914 acres), hand cut and masticate (186 acres). This analysis also conservatively assumes that watershed sensitive area treatments (227 acres) would produce emissions similar to other mechanical treatments because these activities could require similar types of equipment. The Board of Forestry estimated equipment emissions from mechanical treatments, as well typical worker trips to and from a treatment site. This analysis provided estimated emissions of approximately 0.0099 MT CO₂e per acre for mechanical treatment activities. Mechanical treatment of the 8,090 acres would result in total estimated emissions of 80.1 MT CO₂e.

Conclusion

As shown in Table 3.7-1, the emissions from prescribed burning, pile burning, planting and hand treatments, and mechanical treatments would result in a total of 5,582.6 MT CO₂e per year, based on a conservative assumption that all non-fire treatments would occur in the same year. This would be less than construction-related GHG emission threshold of 10,000 MT CO₂e. Therefore, the impact would be less than significant.

Table 3.7-1 Annual GHG Emissions

Activity	Annual Project Emissions (MT CO ₂ e)
Planting and Hand Treatments	4.7
Mechanical Treatments	80.1
Prescribed Burns	4,196
Pile Burns	1,259.5
Total	5,582.6
Threshold	10,000
<i>Exceeds Threshold?</i>	no

MT CO₂e = metric tons of carbon dioxide equivalents; N/A = not applicable

Source: Board of Forestry 2017, USFS 2015, Appendix B

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

Less than significant. In December 2017, the California Air Resources Board (CARB) adopted its Climate Change Scoping Plan Update (Scoping Plan Update), which contains the main strategies California will use to reduce GHGs to reach the State’s 2030 GHG emissions reduction target (CARB 2017). This update builds upon the initial Scoping Plan with new strategies and recommendations. It defines ARB’s climate change priorities required to meet the 2030

target, and also sets the groundwork to reach longer-term goals. The Scoping Plan Update recognizes the role of California's Natural and Working Lands in meeting California's GHG reduction goals. These lands include both forests and rangelands and can act as both source and sink. The Scoping Plan Update recognizes that some actions taken to address ecosystem health may result in temporary, short-term reductions in sequestration, but are necessary to maintain forest health and reduce losses because of wildfire. The goals set forward for these landscapes include reducing vegetative fuels.

California's overall plan for climate adaptation is expressed in the *Safeguarding California Plan: 2018 Update* (California Natural Resources Agency [CNRA] 2017). The plan provides policy guidance for state decision-makers, and is part of continuing efforts to reduce impacts and prepare for climate risks. The plan highlights climate risks in nine sectors in California, discusses progress to date, and makes realistic sector-specific recommendations. One of the key sectors is forestry, where the emphasis is on preparing for increased wildfire hazards, including treatment of hazardous fuels, and improving forest management approaches in a changing climate (CNRA 2017).

Placer County and El Dorado County do not have adopted GHG reduction plans, policies, and regulations to reduce GHG emissions. Since the project would reduce vegetative fuels and implement forest management treatments consistent with the Scoping Plan Update and the Safeguarding California Plan, the impact would be less than significant.

3.9 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials.				
Would the project:				
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 checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.9.1 Environmental Setting

HAZARDOUS MATERIALS

The project area is located on National Forest lands within the ENF. Project actions include vegetation management to reduce fire fuels and conifer planting. Motorized vehicles, heavy equipment, small motorized equipment, such as chainsaws and hand tools, would be used to implement the project. The types of materials used for treatment activities that could be hazardous include herbicides and fluids such as motor vehicle and mechanical equipment fuels, oils, and other lubricants.

There are two hazardous materials cleanup sites in or near the southern portion of the project area near Highway 50 (SWRCB 2019). One was a leaking underground storage tank (LUST) at the PG& E Camp 5 which was closed in 1996 and the other was a LUST at the Chevron #9-5817 site near Fresh Pond which was closed also in 1996.

SCHOOLS

Schools near the project area include Pinewood Elementary School, Pine Top Montessori School, and Sierra Ridge Middle School in Pollock Pines. Pinewood Elementary school is the closest school to the project area and is located 0.66 miles to the south of the project area.

AIRPORTS

The Swansboro Country Airport is the nearest airport and is located approximately 2.18 miles west of the project area. This is a private airport that is a part of the Swansboro Country Property Owners Association. The Placerville Airport is 6.1 miles away from the project area and is available to the public.

EMERGENCY RESPONSE AND EVACUATION PLANS

The project area is currently undergoing Burned Area Emergency Response which recommends and performs actions to protect human life and safety, property, natural resources, and cultural and heritage resources. In addition to fire behavior modification, Strategically Placed Landscape Area Treatments (SPLAT) and Strategic Fire Management Zones (SFMZs) create safe travel route options for emergency ingress and egress. El Dorado and Placer Counties' Solid Waste and Hazardous Materials Divisions lead the Hazardous Materials Emergency Response Program. El Dorado and Placer Counties' Offices of Emergency Services have the mission to prepare for, respond to, and recover from emergencies that threaten life, property, or the environment. Highway 50 would be the major evacuation route in the project vicinity.

WILDLAND FIRE HAZARDS

The project area is in an area with a very high fire risk as the King Fire burned so quickly and with high intensity. Flammable fuels, abundant ignition sources, and hot, dry summers combine to produce conditions conducive to an active fire role in the vicinity of the project area. Dead and dying trees affected by the King Fire provide fuels that contribute to wildland fire hazards.

3.9.2 Discussion

a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Less than significant. Project implementation activities would involve the use of hazardous materials, such as herbicides (glyphosate), lubricants, gasoline, diesel, and oil. The use and storage of these materials could potentially expose and adversely affect workers, the public, or the environment as a result of improper handling or use; accident; environmentally unsound disposal methods; or fire, explosion, or other emergencies, resulting in adverse health effects. All activities would be subject to compliance with federal, state, and local hazardous materials regulations, which would be monitored by the USFS and state (e.g., California Department of Occupational Safety and Health Administration, and California Department of Toxic Substances Control). Therefore, it is anticipated that the routine use of these materials handled in accordance with these laws and regulations would not create any impacts to the public or the environment.

The USFS prepared a site-specific risk assessment to evaluate risk to human health and safety from proposed herbicide application associated with this project (USFS 2015). The pesticide risk assessment compared doses that people may get from applying the pesticide (worker doses) or from being near an application site (public doses) with

the US Environmental Protection Agency's (USEPA) established Reference Doses (RfD), a level of exposure that result in no adverse effect over a lifetime or chronic exposures. Those potentially at risk fall into two groups: workers and members of the public. Workers include applicators, supervisors, and other personnel directly involved in the application of herbicides. The public includes forest users or nearby residents who could be exposed through the drift of herbicide spray droplets; through contact with sprayed vegetation; or by eating forest products or drinking water that contains such residues.

For each type of dose assumed for workers and the public, a hazard quotient (HQ) was computed by dividing the dose by the RfD. In general, if HQ is less than or equal to one, the risk of effects is considered negligible. Because HQ values are based on RfDs, which are thresholds for cumulative exposure, they consider acute exposures. The assessment used the standard of one chance in one million for cancer risk and the RfD for non-carcinogen exposures. If all the exposures are below the RfD (a HQ less than or equal to one) the assumption is that the herbicide presents little risk of use to either the public or workers. If any exposure exceeds the RfD, a closer examination of various studies and exposure scenarios must be made to determine whether a toxic response is expected from the exposure.

The risk assessment found that all worker occupational exposures would result in a HQ of less than one reflecting a less than significant effect for workers (USFS 2015). The assessment also found that under normal conditions, members of the public would not be exposed to substantial levels of herbicides. Members of the public would generally not be in the areas during herbicide application, and signs would be posted around application areas to notify the public that the area was recently treated with herbicide. The assessment determined that likely scenarios of public exposure would result in a HQ of less than one. It notes that public exposure would only exceed a HQ of one in an unlikely scenario of a small child (2 to 3 years old) drinking 1.5 liters of standing water from a pond shortly after an accidental spill of a field solution of 200 gallons with no dilution or decomposition of herbicide. The assessment found that this scenario would be extremely unlikely because designated routes of travel and mixing sites would be located away from water bodies, herbicide mix in tanks would be limited while traveling between treatment sites, and applicators would be required to comply with spill prevention and emergency response plans (USFS 2015). For these reasons, this impact would be less than significant.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less than significant. As described above under question a), above, project activities would involve the use of hazardous materials. However, it is anticipated that the routine use of these materials handled in accordance with laws and regulations would not create any reasonably foreseeable upset and/or accident conditions on the public or the environment. This impact would be less than significant.

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

No impact. No schools are located within one quarter mile of the project site. There would be no impact.

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

No impact. There are two hazardous materials cleanup sites in or near the southern portion of the project area near Highway 50 (SWRCB 2019). One was a leaking underground storage tank (LUST) at the PG&E Camp 5 which was closed in 1996 and the other was a LUST at the Chevron #9-5817 site near Fresh Pond which was closed also in 1996. Both of these sites have been cleaned up for over twenty years, thus they would not create a significant hazard to the public or the environment. This impact would be less than significant.

- 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 or excessive noise for people residing or working in the project area?**

No impact. The project site is within the ENF and is not within an adopted airport land use plan. The nearest airport is a private air strip just over 2 miles away. Therefore, there would be no impact related to safety hazards near public airports.

- f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**

Less than significant. Transport of mechanical equipment along roadways to the project site could occur along evacuation routes, primarily Highway 50. However, the El Dorado County Office of Emergency Services (OES) is responsible for coordinating with County departments, local cities, and special districts to mitigate against, prepare for, and respond to disasters (El Dorado County 2016). The OES coordinates with other responsible agencies including the Federal Emergency Management Agency (FEMA) and the California Emergency Management Agency (CalEMA). In the event of an emergency, OES would notify the public of a possible hazardous condition and provide broadcasts of ongoing information and actions the public should take to protect its health and safety. Transport of equipment along possible evacuation routes would be minimal and would comply with direction provided by OES during an emergency. This impact would be less than significant.

- g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?**

Less than significant. The project is intended to reduce the risk of wildland fire through the management of vegetation and prescribed burning. No development is proposed as part of the project such that the project would expose people or structures to wildland fires. Prescribed burning would occur under conditions that allow fire to burn at low intensity but there is the possibility that a prescribed burn could result in a wildfire. All prescribed burns would have to adhere to a burn plan documenting that conditions are conducive to prescribed fire and the risk wildfire are minimized. These conditions include appropriate levels of air temperature and humidity as well as optimal soil and duff moisture concentrations. The King Fire Restoration Project would reduce the risk of wildfire in the area. The impact would be less than significant.

3.10 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Hydrology and Water Quality.				
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<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 or through the addition of impervious surfaces, in a manner which would:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) Result in substantial on- or offsite erosion or siltation;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) 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; or	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.10.1 Environmental Setting

The project area is within both the Middle Fork of the American River Watershed and the South Fork of the American River Watershed where average annual precipitation ranges from approximately 40-70 inches, depending on elevation, with most precipitation occurring between October and April. The lower elevations of the project area receive precipitation mostly in the form of rain while the higher elevations generally receive snow. Elevation of the project area ranges from 2,000 to 7,000 feet. Hydrologic Units for 5th field watersheds within the project area include the Upper Middle Fork American River, Rubicon River, South Fork American River-Alder Creek, Silver Creek, and South Fork American River – Chile Bar. There are 81.8 miles of perennial (year-round) stream channels, 113.3 miles of

intermittent (seasonal flow) stream channels, and 442 miles of ephemeral (precipitation or snowmelt induced flow) stream channels within the area burned by the King Fire.

The fire resulted in a range of soil burn severities. Soil burn severity is a measure of the effect of ground heat as a fire burns across a landscape. Post-fire conditions in areas that burned at low severity are similar to unburned areas. There are 50,526 acres in the King Fire Project area (54% of the burned area) that burned at low severity (USFS 2015a). Areas of moderate burn severity often had existing groundcover consumed; however, not all pine needles and leaves were completely burned. Erosion and sediment deposition to streams have been observed in these areas but has not been as widespread or severe as in areas of high burn severity. There are 21,767 acres in the King Fire Project area (23% of the burned area) that burned at moderate severity (USFS 2015a). In areas that burned at high severity, all or nearly all soil organic matter and soil cover was consumed, which resulted in extensive areas of bare ground highly susceptible to erosion. With the occurrence of multiple precipitation events since the fire, rill erosion and sediment deposition in streams is present in many areas. Sediment deposition of up to two feet has been observed in some streams, and pools in these locations are nearly or completely full of sediment. There are 21,443 acres in the King Fire Project area (23% of the burned area) that burned at high severity (USFS 2015a).

Post-fire logging generally takes place in areas where the canopy and soil have already been modified, it is reasonable to conclude that logging would not add significantly to the already altered landscape (USFS 2015a). Use of heavy equipment in logging operations can result in soil compaction, the degree of which is dependent upon site conditions such as soil moisture content and operational practices (USFS 2015a). As soils become compacted, the amount of water that can infiltrate the soil is reduced, which can increase surface runoff, erosion, and stream sediment delivery. Soil compaction can be minimized by using low-ground-pressure equipment and operating equipment on dry soils. Groundcover is an important factor in reducing erosion and sedimentation from logging operations. The presence of even a thin litter layer can substantially reduce soil erosion (USFS 2015a).

Stream water temperature is greatly influenced by shade from vegetation (USFS 2015a). Multiple studies have documented increased stream temperature following forest thinning due to removal of vegetation that provided shade to the stream (USFS 2015a). Kibler et al. (2013) found significantly higher stream temperatures in logged versus unlogged plots along four streams in Oregon but did not find differences in cumulative stream temperature effects at the catchment scale.

This project proposes the use of glyphosate to control shrub growth that could out-compete conifer regeneration. Glyphosate tends to bind readily and strongly to soil particles, does not leach through most soil types, mostly (~90%) decomposes to its natural components within approximately six months, and does not bioaccumulate (SERA 2011). Monitoring results, based on more than 150 surface water samples taken at locations in National Forests in California between 1991 and 2002, indicate that glyphosate applied by ground application seldom reached surface water even with "no spray" buffer widths as narrow as 10 feet (USFS 2015a). Herbicide monitoring for glyphosate in surface water on the ENF between 1993 and 2007 showed no detection of glyphosate in any of the 29 samples collected (USFS 2015a). Dust palliatives such as magnesium chloride ($MgCl_2$) or lignin sulfonate are commonly combined with water and used to reduce dust on unpaved roads generated by logging trucks. These palliatives have potential to impact water quality if transported to streams. Goodrich et al. (2009) monitored stream chemistry in 16 streams in the Rocky Mountains upstream and downstream of unpaved roads on which magnesium chloride had been applied. They found that 8 of the 16 streams monitored had statistically significant downstream increases in both magnesium and chloride concentrations, as well as other ions and compounds commonly found in dust palliatives such as sodium, calcium, and sulfate. However, the concentrations detected were below those reported to adversely affect aquatic organisms.

3.10.2 Discussion

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

Less than significant. The project would not involve discharging any waste or involve the production of wastewater; therefore, no violation of waste discharge requirement would occur.

While short-term impacts to water quality are likely, the proposed project would also promote long-term soil and hydrologic recovery of burned areas. The proposed forest management activities have the potential to affect water resources by causing soil disturbance, altering vegetative cover, fuel usage, and grading activities. Forest thinning and prescribed burning activities would result in some ground disturbance related to the use of mechanical equipment. Project activities could result in increased soil exposure and erosion which could enter runoff and increase siltation in waterways. The primary concern to water quality is the possible impairment of beneficial uses (i.e., municipal and domestic water supply, hydroelectric power generation, recreation, cold freshwater fisheries habitat, and wildlife habitat) because of an increase in fine sediment caused by accelerated erosion from the proposed activities.

The use of herbicide and dust palliatives may impact water quality if chemicals are transported to streams. Project RPMs (Section 2.4.5, "Resource Protection Measures" and Appendix A) such as near-stream exclusion zones would reduce potential for stream water contamination. Past monitoring in National Forests in California and specifically on the ENF indicates that surface water contamination is unlikely.

The project would implement RPMs (Section 2.4.5, "Resource Protection Measures" and Appendix A) to reduce the potential of fuels or other hazardous materials from entering the watershed. The following RPMs specific to hydrology would be implemented:

- ▶ Consultation with a watershed specialist would establish post roadway decommissioning methods, which generally require heavy mulching of slash, wood chips or weed free straw with at least 70 percent effective soil cover;
- ▶ The project would implement Riparian Conservation Area Guidelines and establish Riparian Conservation Areas for all stream courses in the project site including buffers within which no harvest, ground-disturbing activities, or prescribed fire activities would occur;
- ▶ The project would also implement dust and erosion control measures and would include post-haul maintenance measures, including clearing activity debris from ditches and culvert inlets;
- ▶ The project would comply with Forest Plan Standards and Guidelines; and
- ▶ The project would comply with CVRWQCB's waste discharge requirements for discharges related to timberland management activities (Order R5-2017-0061)

Project specific RPMs (Appendix A) also include implementation of controls for soil erosion, waste containments, as well as design measures to prevent on- or off-site contamination. Adherence to RMPs would reduce the potential for pollutant discharges to enter local streams and drainages, and safeguard against water quality degradation. Therefore, the impact would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No Impact. The project consists of fuels reduction and planting activities and would not involve the use of groundwater or otherwise affect recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level discharging into waterways. Thus, there would be no impact.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

Less than significant. Removal of trees within the project area would reduce potential for trees falling into streams that would improve bank stability. Due to near-stream exclusion zones, a more than sufficient number of trees would be retained to provide for future recruitment. The project would not generally change the existing drainage pattern and would not alter the course of the stream or river, nor increase the rate or amount of surface runoff. Erosion control treatments including placing mulch, seeding, subsoiling, water barring, removing in-slope berms, out-sloping, back blading, rehabilitating windrows, slash placement, stabilization of head cuts and gullies with wood or rock and reshaping headwalls, and/or planting riparian vegetation would occur. These activities would reduce the potential for erosions and restore drainages to pre-fire conditions without altering the course of a stream or river. No impervious surfaces are proposed in the project. The project would result in less than significant drainage impacts.

i) Result in substantial on- or offsite erosion or siltation;

Less than significant. Short-term ground disturbance such as compaction and displacement would occur with use of heavy equipment. Previous research has demonstrated that salvage logging can increase sediment routing to streams due to construction and use of skid trails and landings as well as use of heavy machinery to cut and remove trees. Increased sediment delivery to streams as a result of salvage logging can increase stream turbidity. However, implementation project RPMs would reduce potential for impacts to water quality. While short-term impacts are likely, implementation of the project would also promote long-term soil and hydrologic recovery of burned areas. RPMs stipulate minimum post-logging soil cover requirements, which would aid in infiltration and reduce overland flow and sediment delivery to streams. Best management practices would also require construction of waterbars, and subsoiling when appropriate, which would reduce potential for sediment from logged areas reaching streams. Existing disturbances such as legacy skid trails and landings would also be decommissioned with implementation of the project, and erosion from these areas would be reduced or eliminated. Further, watershed treatments would reduce erosion and sediment delivery to streams. The project would result in less than significant erosion or siltation impact.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Less than significant. The Project may have a slight but likely immeasurable impact to stream flow but would not contribute to flooding on or off site. Streamflow and surface runoff has likely increased as a result of the King fire, but would return to within the natural range of variability in one to five years as transpiration increases as vegetation recovers, and as overland flow decreases. The removal of trees in the project would not impact transpiration rates as the trees are already dead and not transpiring. Increasing groundcover, however, would likely reduce peak streamflows after precipitation and snowmelt events due to increased infiltration and reduced overland flow. The project would result in less than significant impact due to surface runoff which would result in flooding on or off site.

iii) 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; or

No impact. The project takes place on forested land or previously forested land and does not drain to a stormwater drainage system.

iv) Impede or redirect flood flows?

Less than significant. See discussion c), above.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No impact. See discussion cii), above. The project area is not in an area where tsunami or seiche could occur.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than significant. This project falls under the jurisdiction of the Central Valley Regional Water Quality Control Board. Each Regional Board has a Basin Plan that includes identified beneficial uses and water quality objectives (standards) for water bodies within each region. Basin Plans may include prohibitions of pollutant discharges and are incorporated into the California Water Code. As such, Basin Plans are enforceable laws. Regional Boards may establish Timber Waivers that regulate vegetation management activities on National Forests. Timber Waivers include conditions and requirements for reporting and monitoring. To be eligible for coverage under this waiver, the project must meet the definition of timber harvest activities and comply with all of the applicable eligibility criteria and conditions. Eligibility criteria for a Timber Waiver are:

- ▶ USFS has conducted a multi-disciplinary review of the timber harvest proposal, including review by watershed specialists, and has specified BMPs and additional control measures as needed in order to assure compliance with applicable water quality control plans.
- ▶ USFS has conducted a Cumulative Watershed Effects (CWE) analysis and included specific measures needed to reduce the potential for CWEs in order to assure compliance with applicable water quality control plans.
- ▶ USFS has allowed the public and other interested parties reasonable opportunity to comment on and/or challenge individual timber harvest proposals.

The USFS has met these eligibility criteria and is therefore consistent with the Basin Plan. The project does not propose any groundwater extraction. Thus, the project would not conflict with or obstruct implementation of a water quality control plan. The impact would be less than significant.

3.11 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Noise.				
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or 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"/>

3.11.1 Environmental Setting

Existing noise sources in the project area are limited to vehicle use along forest roads and intermittent equipment noise associated with USFS management activities. Noise receptors include nearby residences and recreationists on National Forest lands. It is anticipated that the project will create some temporary noise from motorized equipment associated with removal and mastication of vegetation. Loud noise from equipment such as chainsaws or tractors is expected to occur in salvage units, project roads, and at landings. Water drafting pumps would be used for dust abatement on roads. The operation of the drafting pumps generate noise. The noise will occur away from populated areas and will be temporary in nature.

3.11.2 Discussion

- a) **Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?**

Less than significant. Equipment associated with project activities could generate varying levels of noise, depending upon the equipment being used. Treatment activities are carried out in stages, during which the character and magnitude of noise levels surrounding the treatment area changes as different equipment is used and the location of the noise-generating work moves throughout the treatment area. However, these activities would be located in rural areas. The closest sensitive receptors would be visitors to the ENF and recreational trail users. Project activities closest to populated areas in Pollock Pines and Fresh Pond are conifer planting activities which would not create excessive noise. Noise-generating activities would be short-term, and intermittent. The noise associated with the operation of this equipment would be limited to daytime hours, and would not be considered substantial or exceed noise ordinances. This impact would be less than significant.

b) Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant. As described under a), above, the project would require the use of equipment and vehicles. This equipment could generate groundborne vibration or groundborne noise. However, activities would be located in rural areas for a short duration during daytime hours. Thus, they would not be considered excessive. This impact would be less than significant.

c) For a project located within the vicinity of a private airstrip or 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?

No impact. The project is not located within two miles of a public airport. There would be no impact.

3.12 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Recreation.				
Would the project:				
a) 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 checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.12.1 Environmental Setting

The ENF is used for dispersed recreation, which includes activities such as woodcutting, hunting, fishing, camping, trail use, skiing, and gathering of plant materials. The ENF is also situated near the original California gold discovery site on the American River at Coloma, and still provides numerous gold-bearing rivers and streams. The Forest offers several campgrounds, day use areas, and trail heads.

3.12.2 Discussion

a) 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?

Less than significant. The proposed project is within the ENF which is used for dispersed recreation. The public may pass through or near some of these areas while participating in these and other activities. This dispersed use is estimated to be less than 10 people a year in any given treatment unit (USFS 2015a). Project activities could result in temporary road and trail closures that could reduce the experience of recreational visitors. However, the proposed fuels treatments included in this project are typical of maintenance activities that regularly occur within the ENF and that result in short, temporary reductions in access. Public access into or through operationally active areas would be limited temporarily during project treatments to maintain safety for the public and operators. Detours would be established, when possible, to maintain availability of motorized recreation opportunities when closures of trail or road segments are required. Signage and announcements about the timing and location of project activities would partially mitigate unintended effects of the project by allowing private property owners and recreationists to plan or adjust their activities accordingly. Project activities are not anticipated to result in the disruption of winter sports activities because significant snowfall would stop project implementation.

Due to project-related closures, there could be short-term, minor increases in use on nearby trails from recreation users that would be diverted from trails or roads in the treatment sites. There is no evidence to suggest a short-term increase in use on trails near the treatment sites would result in substantial physical deterioration or acceleration of physical deterioration of existing nearby trails or other recreational facilities. Potential displacement of recreational use would be temporary and would only occur during active forest management treatments. In addition, as shown in Exhibit 2-1, the project area is surrounded by National Forest Lands, which would provide adequate capacity for dispersed recreational uses that are temporarily displaced during treatment activities.

The proposed treatments would reduce hazardous fuel and create a more diverse and fire-resilient forest, which would have an overall beneficial effect on recreational opportunities by reducing the risk of a severe wildfire. The project would not increase the use of recreational facilities such that substantial physical deterioration of the facility would occur. The impact is less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No impact. See discussion a), above. No new recreational facilities would be constructed as a part of the project. There would be no impact.

3.13 TRANSPORTATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Transportation				
Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.13.1 Environmental Setting

The project site is located on National Forest System (NFS) lands within portions of Placer and El Dorado Counties, south of Interstate 80 (I-80), north of U.S. Highway 50 (U.S. 50), and east of State Route 49 (SR 49). Access to the project site would primarily be provided by these highways, Wentworth Springs Road, and other NFS and county roads that provide access to treatment areas and sawmills and biomass facilities.

Within the Eldorado National Forest boundary, USFS maintains an estimated 2,158 miles of road, the counties maintain 209 miles of road, and private landowners operate on about 400 miles of road. Excluding highways, the public roadways are 14 percent paved, 28 percent gravel, and 58 percent native surfaces (USFS 1988: 2-17).

The forest also includes an extensive trail system, with USFS maintaining an estimated 75 miles of motorized trails and 274 miles of nonmotorized trails. Notable trails include the Pacific Crest Trail, the Emigrant Summit National Recreation Trails, the Pony Express Trail, and the Rubicon Springs four-wheel drive road.

The proposed project would involve fuel reduction activities, hazard tree removal, and salvage logging along NFS roads classified as follows (USFS 2015a: G-7):

- ▶ **Level 1 Road:** Roads that have been placed in storage between intermittent uses. Level 1 roads are closed to vehicular traffic, but may be available and suitable for non-motorized uses.
- ▶ **Level 2 Road:** Roads open for use by high-clearance vehicles. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Passenger cars are discouraged or prohibited.
- ▶ **Level 3 Road:** Roads open and maintained for travel by a prudent driver in a standard passenger car. Roads in this maintenance level are typically low speed with single lanes and turnouts.
- ▶ **Level 4 Road:** Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most Level 4 roads are double lane and aggregate surfaced, but may be single lane, paved, and/or dust abated.

There are currently no parking areas within the project site and no public parking areas are proposed. During implementation of the proposed project, employees would park along existing roads at the access points to the project site.

3.13.2 Discussion

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Less than significant. Implementation of project activities would occur in intermittent periods over approximately ten years; it would not contribute to long-term increases in vehicle trips or vehicle miles traveled. Project activities would occur in a remote area where background traffic levels are not substantial. The traffic generated by the project would be associated with access to and from the project site by work crews and because of congestion caused by slow and oversized vehicles along access routes. About 100 log truck loads of material would be hauled from the King Fire area over the course of several years. Fuel reduction activities would occur intermittently during project implementation. Public access into or through operationally active areas would be limited temporarily during treatment activities to maintain safety for the public and operators.

Private properties are located along roadways providing access to the site. Signage and announcements about the timing and location of project activities would allow private property owners to plan or adjust their activities accordingly.

Strategic Fire Management Zones are located ridgelines and near established roadways. These zones create safe travel route options for emergency access and egress, which would be maintained throughout all project activities.

No new system roads would be constructed. Temporary roads may be constructed to access landings. The project would also include maintenance and improvements to existing roads to reduce erosion and facilitate forest product removal. Temporary roads would be scarified, drained, and blocked to vehicular traffic. Barriers would be used to prevent off-road vehicle use. Maintenance and repair work would occur sporadically along project roadways, which could result in temporary slowing of traffic and intermittent road closures.

Project traffic would not be substantial enough to affect an applicable plan, ordinance or policy related to transportation system performance and impacts would be temporary and sporadic. Therefore, this impact would be less than significant.

b) Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b), which pertains to vehicle miles travelled?

Less than significant. See question a), above.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than significant. The risk of collision is greatest where trucks are entering or exiting the highways. USFS requires safety signage as part of the administration of its timber sale contracts, which alerts the public to traffic hazards. The fire area is currently closed to the public pursuant to a Forest Order, which minimizes traffic hazards to the public in the fire area (USFS 2015: 171).

The project would result in the repair (92 miles) and maintenance (169 miles) of existing roads, reduction of road hazards (198 acres) through vegetation thinning, and some temporary roads to access landings. However, the objective of these activities is to access project treatment areas, and maintain safe and sustainable circulation throughout Eldorado National Forest in accordance with the Forest Plan and the Motor Vehicle Use Map. The activities would not substantially increase hazards due to a geometric design or incompatible uses. Therefore, the impact would be less than significant.

d) Result in inadequate emergency access?

Less than significant. See question a), above.

3.14 TRIBAL CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>XVIII. Tribal Cultural Resources.</p> <p>Has a California Native American Tribe requested consultation in accordance with Public Resources Code section 21080.3.1(b)?</p> <p style="text-align: right;"><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>				
<p>Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:</p>				
<p>a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.14.1 Environmental Setting

By 5,000 years ago, permanent Native American villages were well established on the western Sierran slopes at elevations generally below 3,500 feet. Cultural resources in the project area from this early phase consist of tools made out of basalt that came from relatively close sources to the north (USFS 2015a). During the earliest phases of human activity in the project area, people hunted large animals, such as deer and possibly bighorn sheep, with darts propelled by atlatls (throwing sticks that were replaced by the bow and arrow around 1,500 years ago). At this time, visitors to the area were developing a seasonal focus on harvesting, storing, and processing nut crops, such as acorns and pine nuts, as evidenced by portable millingstones and handstones. By 3,500 years ago, the distribution of obsidian artifacts from specific sources suggests that Great Basin hunters from the east side of the Sierras regularly made their way down the west slope conveying obsidian for trade purposes in conjunction with a high-altitude mobile hunting system (USFS 2015a). Family groups from lower slopes on the west side of the Sierras moved higher into the Sierra Nevada in late spring and summer, being drawn to the ripening of various small seeds, roots, bulbs, fruits, and berries (USFS 2015a). Semi-permanent sites in the foothills where seasonal use was extended into the fall and winter would have facilitated the maintenance and continued conveyance of large stores of plant foods needed to overcome winter shortfalls. Two different Native American ethnographic groups (Nisenan & Washoe) were utilizing the resources and managing the landscape within the vicinity of the King Fire prior to and during the time of historic Contact (USFS 2015a). Archaeological evidence confirms rather heavy use due to the presence of seasonal villages, temporary camps, and task-specific activity areas that contain bedrock milling features, flaked stone materials (lithics), midden, and petroglyphs within the vicinity of the project area.

Within the analysis area, 107 Native American sites have been identified. At present, four of the Native American sites have been evaluated to determine their eligibility for the National Registrar of Historic Places (NRHP), with two of the sites considered eligible and two of the sites considered not eligible (USFS 2015a). Both eligible Native American sites contain bedrock milling features, extensive lithic scatters with subsurface deposits, and midden; one of the sites also contains petroglyphs.

Consultation with Native American Tribes and other interested and concerned members of the public occurred throughout the NEPA process for this project. ENF archaeologists led field trips for Tribal members and representatives from the Oregon California Trails Association to cultural resource sites in the project area to discuss management options. ENF archaeologists also gave a PowerPoint presentation at a Washoe Tribe Cultural Committee meeting to share project information and gather input.

On March 8, 2019, the Sierra Nevada Conservancy notified the following tribal organizations of the opportunity for consultation pursuant to PRC section 21080.3.1(b): the Washoe Tribe of Nevada and California; United Auburn Indian Community of the Auburn Rancheria of California; Colfax-Todds Valley Consolidated Tribe; and Shingle Springs Band of Miwok Indians, Shingle Spring Rancheria. None of the contacted tribes requested consultation.

3.14.2 Discussion

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Less than significant. The project would not cause substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the California Register of Historical Resources or other register. Only two tribal sites within the project area were evaluated and considered eligible for listing. While ground-disturbing activities associated with fuels treatments, construction of landings and temporary roads, road repair and maintenance, prescribed burning, and reforestation activities proposed under this alternative have the potential to disturb or destroy cultural resources, implementation of this alternative is not expected to have any direct adverse effects on known cultural resource sites located within the Area of Potential Effects (APE) (USFS 2015a).

The effects of the King Fire on groundstone and lithic materials primarily found at Native American sites included spalling, exfoliation, fracturing, potlidding, discoloration, and the loss of scientific data, such as provenience, dating potential, and material source (USFS 2015a). These sites would continue to experience negative effects from the wildfire. In heavily forested areas, damage from falling dead trees is likely. Past studies and observations have demonstrated that the natural tree fall within sites after wildfires can cause considerable damage upon impact to certain classes of cultural resources (USFS 2015a). Without management intervention there is also a concern for future high-severity fires within the sites due to increased fuel loading from downed fire-killed trees and the presence of dense brush fields, which tend to replace timber after stand-replacing fire events (USFS 2015a). Therefore, the King Fire Restoration would have positive affect on tribal cultural resources.

In all cases where fuels removal will occur within site boundaries, Forest heritage resource specialists will be present to authorize and direct access, and for monitoring purposes. All ground disturbing activities, including hand scraping when planting seedlings and subsequent manual release, within tribal cultural resource site boundaries will be directed away from sensitive features and loci of artifact concentrations. Therefore, the project would have a less-than-significant impact on eligible tribal cultural resources.

- b) **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?**

Less than significant. The Sierra Nevada Conservancy has considered the significance of resources to California Native American Tribes and has determined that the impact is less than significant for the reasons discussed under 3.14.2a.

3.15 WILDFIRE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XX. Wildfire.				
Is the project located in or near state responsibility areas or lands classified as high fire hazard severity zones?				
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
	<input checked="" type="checkbox"/> Yes		<input type="checkbox"/> No	
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.15.1 Environmental Setting

The King Fire Restoration Project proposes to remove dead trees in strategic areas within the burn scar and to restore conifer forests in areas that are ecologically sustainable and that can be managed to have a high probability of surviving subsequent wildfire. The proposed action includes fuel reduction, salvage logging, hazard tree removal, repairing roads, tree planting and release treatments, watershed improvements, prescribed fire, and other specific treatments for research. The removal of dead trees in strategic fire management areas is needed to reduce the future volumes of snags and surface fuels, which limit the ability of firefighters to safely and effectively control future wildfires and to manage prescribed fires.

3.15.2 Discussion

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

Less than significant. The project is proposed in a rural area and does not interfere with an emergency response plan or emergency evacuation plan. See discussion under 3.9.2f.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less than significant impact. The project does not include any temporary or permanent development; therefore the project will not involve permanent occupants. There will be occasional recreationists using the forest and USFS personnel during project implementation. The goal of the project is to reduce additional wildfire risk. The project does include prescribed burns. Weather and fuel conditions would dictate when prescribed burning could be used in order to reduce damage, mortality, and spotting potential which could lead to wildfire. This is a less than significant impact.

c) Require the installation of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Less than significant. The project proposes the installation of temporary roads in order to perform fuel management activities. No other infrastructure is proposed. Disturbed soil areas will be revegetated in order to reduce risks of erosion. See discussion under 3.7.2b. This impact would be less than significant.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less than significant. The project does not propose any development and therefore would not expose people or structures to significant risks associated with flooding, landslides as a result of runoff, slope instability, or drainage changes. See discussion under 3.10.2c. This impact would be less than significant.

3.16 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Mandatory Findings of Significance.				
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 an endangered, rare, or threatened species, 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 that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.16.1 Discussion

- 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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?**

Less than significant. As described above in Section 3.4, Biological Resources, with implementation of RPMs (Appendices A and B) and MM-BIO-1 and MM-BIO-2, the project would not substantially degrade the quality of the environment, substantially reduce the habitat or 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 reduce the number or restrict the range of an endangered, rare, or threatened species.

The project consists of vegetation management and fuels reduction, to reduce the potential for severe wildfire. As described in Section 3.5, Cultural Resources, the project would not affect important examples of major periods of California history or prehistory.

The project would result in less-than-significant impacts to biological and cultural resources.

b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less than significant. Cumulative environmental effects are multiple individual effects that, when considered together would be considerable, or compound or increase other environmental impacts. Individual effects may result from a single project or a number of separate projects and may occur at the same place and point in time or at different locations and over extended periods of time.

The project would result in implementation of vegetation management and fuels reduction activities that would include prescribed burning. Potential project impacts would be less than significant and short-term and would not combine in such a way that a significant cumulative effect could occur. Furthermore, the USFS prepared an Environmental Impact Statement (USFS 2015a) and technical support that included forest vegetation, fire and fuels, soil productivity, hydrology, wildlife, aquatic wildlife, plants, air quality, recreation, economics, and cultural resources. The analysis included cumulative impacts of past, present, and foreseeable future actions and events that include fuels reduction projects, fire suppression, grazing, and recreational and road use of the project site. These documents found no significant cumulative effects. In addition, the project RPMs minimize potential cumulative environmental impacts (Appendix A). Thus, cumulative impacts would be less than significant.

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

Less than significant. Based on the nature and scope of the project (i.e., temporary, dispersed project activities) and the analysis herein, the project would not result in any direct or indirect substantial adverse effects on human beings. The project would result in temporary impacts to human health during project implementation, including:

- ▶ changes to air quality as a result of ozone precursors, PM₁₀ emissions, and GHG emissions (discussed in Section 3.3, Air Quality and Section 3.7, Greenhouse Gas Emissions);
- ▶ exposure to wildfire risk and hazardous materials associated with their transport, use, and disposal (discussed in Section 3.9, Hazards and Hazardous Materials); and
- ▶ exposure of persons to noise impacts from forest fuel treatment equipment (discussed in Section 3.11, Noise).

All the identified potential impacts to human beings would be temporary and intermittent and smoke management plans, RPMs, and BMPs would be implemented to reduce or avoid project impacts. Each of the impacts that may cause adverse effects on human beings have been evaluated and found to be less than significant. No substantial adverse effects on human beings would occur; the impact would be less than significant.

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Appendix A

Resource Protection Measures

Appendix A

Approved Design Criteria

The Forest Service also developed the following design criteria to be used during project implementation. Best Management Practices for roads, soil and water protection are included in the EIS Appendix F and apply to project implementation in addition to the design criteria.

Summary of Design Criteria

The following Design Criteria either minimize or avoid adverse effects to resources and apply to all alternatives. These measures are presented in Tables A.1 and A.2.

Table A.1. Exclusion zones for mechanical equipment in proximity to aquatic features. Water drafting equipment.

Aquatic Feature Type ¹	Exclusion Distance In Feet ²
Perennial Streams and Special Aquatic Features (SAF)	100
Intermittent Streams above 4,500 feet elevation	100
Intermittent Streams below 4500' elev.	50
Ephemeral Streams above 4,500' elev.	25
Ephemeral Streams below 4,500' elev.	10

¹ Perennial streams flow year-long. Intermittent streams flow during the wet season but dry by summer or fall. Ephemeral streams flow only during or shortly after rainfall or snowmelt. SAFs include lakes, ponds, meadows, bogs, fens, wetlands, vernal pools, and springs.

² Exclusion distance is 25 feet beyond riparian vegetation, if greater. Riparian vegetation is composed of the plant species that grow in or adjacent to streams, meadows, seeps, springs, etc., where soils are inundated or saturated for varying durations of the growing season. Typically, some or many of these component species are classified as obligate wetland or facultative wetland by the USGS. Examples include willows, alders, dogwood, big-leaf maple, Indian rhubarb, monkey flower, sedges, rushes, mosses, etc.

Table A.2 Summary of Design Criteria

ID	Name	Measure
RIPARIAN CONSERVATION AREAS AND AQUATIC RESOURCES: For the applicable design criteria discussed below, the California red-legged frog (CRLF buffer is within 300 feet of CRLF breeding and non-breeding aquatic habitat, as mapped by the aquatic biologist. The Sierra Nevada yellow-legged frog (SNYLF buffer is within 100 feet of SNYLF aquatic habitat as mapped by the aquatic biologist.		
RCA-1	Operating Requirements	Exclusion zones for ground-based mechanized equipment in RCA are presented in Table 2.14 above. Exceptions to the exclusion zones such as use of existing landings, may occur with concurrence from a member of the RCA team, which consists of a Forest Service hydrologist, soil scientist, botanist, or aquatic biologist. RCAs are defined in the SNFPA as 300 feet each side of perennial streams and special aquatic features, and 150 feet each side of intermittent and ephemeral streams. See Table 2.14 (above) for a detailed description.
RCA-2	Equipment in RCA	Use only low ground pressure track laying machines, such as feller bunchers and masticators Use only low ground pressure track laying machines, such as feller bunchers and masticators, rubber tired skidders and track laying machines.
RCA-3	Allowance for Equipment in Exclusion Zones	Mechanical equipment may operate in equipment exclusion zones for water drafting and for Watershed Sensitive Area RCA restoration actions, consistent with all other design criteria.
RCA-4	Soil Cover in RCAs	Within the RCAs, 70% soil cover would be maintained when possible and dominated by material less than 3 inches in diameter. For watershed sensitive areas, a minimum of 70% soil cover would be attained. Application methods could include cutting and lopping, or mastication of pre-commercial material, cutting and scattering of activity material, non-whole tree harvesting methods, or weed-free mulch applications. Utilize onsite biomass to generate mulch materials wherever possible.
General		
AR-1	Special-Status Species Sighting	If a sensitive or listed amphibian or turtle is sighted within the project area, cease operations in the sighting area, and inform a Forest Service aquatic biologist of the sighting immediately. Before commencing activities, consultation may need to be reinitiated with United States Fish and Wildlife Service (USFWS).
AR-2	Fish Passage	When replacing or adding culverts, design them to pass the 100-year flood flow plus associated sediment and debris; armor to withstand design flows and provide desired passage of fish and other aquatic organisms where appropriate.
AR-3	Materials for Erosion Control	Do not use tightly woven fiber netting, plastic

ID	Name	Measure
		monofilament netting, or similar materials for erosion control or other purposes in the SNYLF buffer when netting is left exposed.
Hazard Tree Removal and Mechanical Operations		
AR-4	Ground disturbing activities in CRLF and SNYLF buffers	Ground disturbing activities in CRLF and SNYLF buffers will be limited to hand-felling of hazard trees as specified in AR-5 except where activities have been site-specifically described and analyzed in the project Biological Assessment.
AR-5	Hazard Trees within CRLF and SNYLF buffers	Within the CRLF and SNYLF buffer, trees may be hand-felled away from the channel and Special Aquatic Features (SAFs) to abate hazards, but will be left in place to avoid further site disturbance. If mechanical removal of the tree is necessary, a qualified biologist will perform a survey 24 hours before project activities occur in the area. If CRLF or SNYLF are detected, follow design criteria AR-1.
AR-6	Hazard Trees in Mechanical Exclusion Zone	Within the mechanical exclusion zone in Table 2.14, trees may be hand felled to abate imminent hazards. If logs can't be removed with full suspension, they will be left in place. The portion of a felled tree outside of mechanical exclusion zone or on a road may be bucked and removed. If hazard trees must be removed from within the mechanical exclusion zone, consult with the RCA team for specific site exceptions and requirements for down wood retention.
AR-7	New Stream Crossings	New crossings are limited to dry channels. Consult with a member of the RCA team for new crossings on intermittent streams. Crossings would be limited to armored channels and approaches of less than 15% grade. Number of crossing on ephemeral channels should not exceed 3 per mile of stream.
AR-8	Erosion Control	End-lining is not permitted through riparian vegetation. Grooves and bare soil created by end-lining will be mitigated with hand-built water bars and/or slash placement. Slash in the RCA will be lopped and scattered (not to exceed 18"). Removal of trees across a perennial, intermittent or ephemeral stream will require full suspension across the entire channel. If full suspension cannot be obtained then the portion of the log that cannot be suspended will be left in the riparian buffer.
AR-9	Soil Cover in RCAs	When operating within the RCAs, 70% soil cover would be maintained dominated by material less than 3 inches in diameter. Application methods could include cutting and lopping, or mastication of pre-commercial material, cutting and scattering of activity material, non-whole tree harvesting methods, or weed-free mulch applications. Utilize onsite biomass to generate mulch materials wherever possible.
AR-10	Guidelines for Skid Trails and Landings	Do not construct new primary skid trails or landings within 150 feet of perennial or intermittent streams or SAFs or within 50 feet of ephemeral streams unless approved by a member of the RCA team. When expanding or constructing

ID	Name	Measure
		landings or skid trails in the RCA outside these zones utilize guidelines outlining special situations that require consultation with an RCA team member. Use existing skid trails and landings to the extent use will avoid impact from new trails and landings.
AR-11	Equipment Operations in CRLF Habitat During Wet Season	Off-road mechanical equipment operations will not occur within 1 mile of areas identified as CRLF breeding habitat during the wet season (defined as starting with the first frontal rain event that deposits a minimum of 0.25 inch of rain after October 15 and ending April 15).
Reforestation		
AR-12	Reforestation Near Riparian Areas	No reforestation activities would occur within mechanical exclusion zones or within 25 feet of riparian vegetation along perennial or intermittent streams and SAFs, or within 25 feet of ephemeral stream channels, with the exception of planting native riparian hardwood and understory species.
Herbicide Use and Chemical Dust Abatement		
AR-13	Restricted Areas for Herbicide Application	No herbicide application within CRLF buffers, within RCAs of perennial and intermittent streams, or within 25 feet of ephemeral streams within this project. Targeted invasive plant treatments are covered under the Forest-Wide Treatment of Invasive Plant Environmental Assessment (ENF 2013) and would be reviewed and approved in accordance with that decision.
AR-14	Stream Buffers for Dust Abatement Use	No chemicals for dust abatement would be applied within 100 feet of perennial or intermittent streams and SAFs, within 25 feet of ephemeral streams, or within CRLF buffers.
AR-15	No Spray Areas	No herbicides would be used in the upper Incline Creek watershed until monitoring by the Regional Water Quality Board is completed, Incline creek is located northeast of Brush Creek Reservoir. The restriction for herbicide use is for the purpose of facilitating the California Central Valley Regional Water Quality Control Board water quality study.
AR-16	Hand-felling Trees for Aquatic Habitat Improvement	Where recommended by the RCA team, fire-killed trees within the mechanical exclusion buffer may be hand-felled into the stream channel to maintain or improve hydrologic function or aquatic habitat, If within CRLF or SNYLF habitat, a qualified biologist will perform a survey 24 hours before project activities occur in the area. If CRLF or SNYLF are detected, follow design criteria AR-1.
Large Wood Retention within RCAs		
AR-17	Large Wood Retention	Where harvest occurs within the RCA, leave a minimum of 10-20 pieces of large wood per acre (standing and on the ground) within the treatment unit. Large wood is defined as being a minimum of 12 inches in diameter and 10 feet in length. The largest trees should be retained; however, a range of sizes may be included.
Burning		

ID	Name	Measure
AR-18	Igniting Hand Piles in CRLF Habitat	When igniting hand piles within 1 mile of suitable CRLF breeding habitat, ignite only on one side, not to exceed half the circumference of the pile, on the side furthest from the nearest aquatic feature.
AR-19	Consultation with Forest Service (FS) Aquatic Biologist	Consultation with aquatic biologist will occur when proposing to treat noxious weeds using torching methods within CRLF and SNYLF habitat buffers.
AR-20	Ignition Avoidance Areas	Do not actively ignite prescribed fire within RCAs, or piles within CRLF or SNYLF buffers.
Water Drafting		
AR-21	Water Drafting Assessment	An aquatic biologist will assess the water drafting sites for sensitive and listed species prior to using. If sensitive, threatened, or endangered species are identified at a potential water drafting site, that site would not be used for water drafting.
AR-22	Pump Intake Screens	In perennial and intermittent streams, pump intake screens shall have openings not exceeding 3/32-inch (0.09375 inch) and be sized according to the pump intake capacity. Place hose intake into bucket in the deepest part of the pool. Use a low-velocity water pump and do not pump natural ponds to low levels beyond which they cannot recover quickly (approximately one hour).
AR-23	Water Drafting on Fish-Bearing Streams	For water drafting on fish-bearing streams: do not exceed 350 gallons per minute for streamflow greater than or equal to 4.0 cubic feet per second (cfs); do not exceed 20% of surface flow below 4.0 cfs; and cease drafting when bypass surface flow drops below 1.5 cfs.
AR-24	Water Drafting on Non-Fish-Bearing Streams	For water drafting on non-fish-bearing streams: do not exceed 350 gallons per minute for stream flow greater than or equal to 2.0 cfs; do not exceed 50% of surface flow; and cease drafting when bypass surface flow drops below 10 gallons per minute. Water sources designed for permanent installation, such as piped diversions to offsite storage, are preferred over temporary, short-term-use developments. Locate water drafting sites to avoid adverse effects to instream flows and depletion of pool habitat.
AR-25	In-Channel Water Drafting Locations	In-channel water drafting locations will include rocking of approaches, barrier rock, straw wattles, straw bales, or other measures to prevent overflow and leaks from entering the watercourse.
WATER AND SOILS		
WS-1	Soil Retention	Although 100% soil cover is considered ideal for soil stabilization, the following minimum values should be retained to the extent practical and allowable by fuel loading limits: a. 50% on slopes less than 25%; and b. 70% within RCAs, slopes greater than 25% and within WSAs.
WS-2	Skid Trail and Landing Guidelines	Use existing skid trails and landings where practical. Limit skid trail footprint (main and branching secondary trails) to less than 15% of the unit area or to the existing disturbed

ID	Name	Measure
		area.
WS-3	Subsoil and Slash and Biomass Guidelines	Subsoil if feasible and place slash or biomass material on skid trails and temporary roads between landings and a distance of 100 feet from landings. A 25-foot-wide slash mat will also be placed on the downslope portion of landings. All slash mats will be crushed either by equipment treads or equipment heads.
WS-4	Mitigations and Restoration of Mechanical Activities	As mitigations to mechanized activities and as restoration activity in WSAs, slash mats will be placed on primary skid trails with a goal of 100% soil cover to the extent material is available. In lieu of slash, skid trails may be subsoiled where topographic conditions would be favorable or biomass is deficient. In addition, landings and temporary roads will be subsoiled and additional erosion control measures applied after use is completed. Subsoiling may be excluded from areas of high soil sensitivity, such as shallow or rocky soils or where extensive regrowth of bear clover has established. Obliterate outsloped berms. Outslope reused skid trails where gullies formed from water concentration along insloped segments.
WS-5	Protection Measures for Ground-Based Equipment	Limit ground-based equipment (except masticators) to less than 35% slopes and masticators to 45% slopes unless a soil scientist evaluates soil conditions and disturbance patterns to determine operability on steeper slopes. Feller bunchers may do short pitches up to 45% slope.
WS-6	Erosion Control on Skid Trails	Use a very high erosion hazard rating when considering application of erosion control on skid trails unless otherwise determined by the soil scientist at the time of activities. In areas where slash mats will be placed as erosion control, use a moderate erosion hazard rating to determine waterbar spacing.
WS-7	Decommissioning Skid Trails	Once skid trails are decommissioned, construct earth berms and/or place logs and/or rocks to discourage unauthorized motor vehicle use.
WS-8	Screen Protection Measures for Trails and Roads	To discourage pioneering OHV travel off system trails, leave a 10-foot screen on both sides of system trails in proposed units. Screens would consist of retained surface material and standing non-commercial trees where available. Where feasible and within fuel criteria, leave uncut downed wood adjacent to roads, to discourage unauthorized OHV travel.
WS-9	Planning for Road, Trail, and Landings	Temporary roads, skid trails, and landings shall be planned and located to avoid unstable areas and connected headwall scarps and swales. These areas will be identified and flagged for avoidance. Where feasible, temporary roads, skid trails, and landings will be drained away from headwall scarps and swales.
WS-10	Limitations for Burn Piles	Burn piles would generally be limited to a footprint not

ID	Name	Measure
		exceeding 10% of a unit. When feasible, place piles on existing mechanical disturbances.
WS-11	Excess Biomass Placement	Where feasible, place excess biomass at the outlet of waterdrips and waterbars.
WS-12	Protection Measures in WSAs	<p>When working within WSAs:</p> <ul style="list-style-type: none"> a. Inform a member of the RCA team when implementation will occur on a unit that has a WSA or a stand-alone WSA. b. Consider mastication as the primary method of cover treatment. Use lop and scatter or import weed-free material when mastication is not practical. c. Obliterate tread depressions from mechanical equipment operating in the 100-foot RCA exclusion zone.
BOTANICAL RESOURCES		
General		
BR-1	Flag and Avoid Sensitive and Watch List Plants and Lava Caps	<p>Flag occurrences of sensitive and watch list plants, lava caps, and high-risk invasive plant infestations, and include boundaries on unit maps. All occupied occurrences, as well as unoccupied historic occurrences which are expected to recolonize, will be flagged. No staging, vehicle traffic, heavy equipment travel, skidding, lop and scatter, mastication, or piling (machine or hand) within flagged areas. Fall trees away from flagged areas wherever possible. All project related equipment and vehicles will remain on existing road corridors within lava caps, including no parking off road. Exceptions are provided below:</p> <ul style="list-style-type: none"> a. Prior to implementation activities occurring within flagged areas, the FS botanist will field-review the site with the FS project administrator and/or purchaser/contractor to determine the least impactful method to use for the site. b. With approval and direction by the FS botanist, fire-killed or hazard trees rooted within flagged occurrences of <i>Calochortus clavatus</i> var. <i>avius</i> (CACLA), <i>Horkelia parryi</i> (HOPA), <i>Navarretia prolifera</i> ssp. <i>lutea</i> (NAPRL), <i>Phacelia stebbinsii</i> (PHST), watch list species, lava caps, and invasive plant infestations may be cut and removed if mechanical ground disturbance can be avoided. Lop and scatter, and mastication to meet ground-cover and fuel-reduction objectives may occur within CACLA, HOPA, and watch list plant occurrences if mechanical ground disturbance can be avoided; material would be spread to a depth of less than 2 inches thick and less than 70% groundcover, or be spread outside of the occurrence. c. Mechanical ground disturbance could occur through small NAPRL occurrences located in existing disturbances (roads, landings) or

ID	Name	Measure
		<p>ephemeral habitat outside of lava caps and other persistent openings. These areas will be identified by the FS botanist.</p> <p>d. With approval and direction by the FS botanist, mechanical ground disturbance could occur in treatment units that overlap large, dispersed occurrences of <i>Chlorogalum grandiflorum</i> (CHGR).</p> <p>Where necessary, hand firelines within occurrences may be constructed if approved and directed by the FS botanist.</p>
BR-2	Retain a 50-Foot Buffer at Defined Locations	Where material is available, retain a 50-foot buffer of live or dead shrubs, biomass, snags, downed wood, etc., around <i>Arctostaphylos nissenana</i> (ARNI) sites and lava caps to discourage motorized access. If deemed necessary by the FS botanist, install barriers at these sites where there is an increased threat of vehicle intrusion due to loss of screening vegetation and snags. These areas will be identified on project maps.
BR-3	Post-Implementation Monitoring	During and following implementation within or adjacent to flagged occurrences and lava caps, monitoring will be conducted by the FS botanist and buffers adjusted if impacts are observed.
BR-4	Newly Discovered Occurrences	Any previously unknown botanical resources encountered prior to or during project implementation will be reported to the FS botanist. Design criteria would be implemented to protect the occurrences or reduce invasive species risk.
Reforestation		
BR-5	Reforestation near Flagged Plants	Reforestation activities would not occur within flagged sensitive and watch list plant occurrences, unsurveyed suitable habitat, or lava caps. Exceptions for reforestation within large dispersed occurrences of <i>Chlorogalum grandiflorum</i> would be developed in consultation with the FS botanist.
Burning		
BR-6	Surveys in Burn-Only Units	Areas of burn-only units proposed for fireline construction or fire ignition would be surveyed prior to implementation. Prescribed fire ignition would not occur within flagged areas around sensitive, watch list, or invasive plants. Prescribed fire would not be allowed to back into masticated sensitive and watch list plant occurrences.
BR-7	Placement of Firelines and Burn Piles	Firelines and burn piles would be placed away from invasive plant infestations where feasible. Follow-up treatments would be completed where prescribed fire burns through high-risk invasive plant infestations. Manual, mechanical, and herbicide treatments would be conducted in accordance with the design features of the <i>Forest-Wide Treatment of Invasive Plants Project</i> (ENF 2013).
BR-8	FS Botanist Consultation	The FS botanist will be consulted prior to burning in flagged areas.
Herbicide Use and Chemical Dust Abatement		
BR-9	No Herbicide Spray Areas	Glyphosate for release treatments would not be applied

ID	Name	Measure
		within 50 feet of sensitive or watch list plant occurrences to minimize impacts from drift or misapplication. Buffer width may be reduced if approved and directed by the FS botanist. Occurrences will be monitored by the FS botanist during and following release treatments and buffers adjusted if impacts are observed.
BR-10	No Dust Abatement Chemical Areas	No chemicals for dust abatement would be applied within 100 feet of sensitive and watch list plant occurrences or lava caps.
Invasive Species		
BR-11	Pre-Implementation Treatments	Pre-implementation treatments to reduce the risk of invasive plant spread would be identified by the FS botanist and completed prior to project operations; otherwise the infestation would be flagged and avoided or risk minimization strategies employed, depending on the species and location. Manual, mechanical, or chemical treatments would be conducted in accordance with the design features of the <i>Forest-Wide Treatment of Invasive Plants Project</i> (ENF 2013).
BR-12	Post-Implementation Monitoring	As salvage and reforestation activities are completed over multiple years, the project area will continue to be monitored for new or expanding infestations, and treatments will be conducted to control and/or eradicate the expanding infestations. Manual, mechanical, and herbicide treatments would be conducted in accordance with the design features of the <i>Forest-Wide Treatment of Invasive Plants Project</i> (ENF 2013). Broadcast seeding of native grasses and forbs would occur where active revegetation is necessary to provide competition for highly aggressive invasive plant species in accordance with the design features of the <i>Forest-Wide Treatment of Invasive Plants Project</i> (ENF 2013).
BR-13	Risk Minimization Strategies	When conducting salvage or reforestation activities within flagged infestations, risk minimization strategies would be employed, such as working in the infested area last, working in infested areas when prop gules are not viable, limiting the number of people or equipment within the infestation, and cleaning mechanical and hand equipment, clothing, boots, etc., before moving to other uninfested National Forest System lands. These areas will be identified on project maps.
BR-14	Release Treatments near Infestations	Follow-up conifer release activities within high-risk infestations and the surrounding 25- to 50-foot buffer area around the infestation would be limited to radial treatments or developed in consultation with the FS botanist.
BR-15	Equipment Cleaning	Off-road equipment (Forest Service and contracted) used for project implementation must be free of invasive plant material before moving into the project area. Equipment will be considered clean when visual inspection does not

ID	Name	Measure
		reveal soil seeds, plant material, or other such debris. Education/prevention measures will be provided to contracted and Forest Service workers that recommend vehicles, clothing, boots, and field equipment be inspected for propagative materials (regularly and especially after working in infested areas) and washed/cleaned as needed.
BR-16	Certified Weed-Free Materials for Roads	All gravel, fill, or other materials used for road construction are required to be from sources certified as weed-free or approved by the FS botanist.
BR-17	Certified Weed-Free Materials for Erosion Control	Erosion control materials are required to be certified weed-free. Utilize onsite biomass from a weed-free area to generate ground-cover materials wherever possible. Seed or plant mixes for erosion control revegetation or restoration would be a locally collected native seed mix approved by the FS botanist.
CULTURAL RESOURCES		
CR-1	Avoidance Measures	Cultural resource sites will be designated on the ground prior to implementation of project activities to ensure their protection through avoidance and/or prescribed protection measures.
CR-2	Field Visit	Prior to implementing project activities in the vicinity of cultural resource sites, the FS project administrator and/or archaeologist will field visit these locations and sites with the purchaser or contractor.
CR-3	Follow Established Guidelines and Protection Measures	<p>a. Felling and removal of hazard or salvage trees from within cultural resource site boundaries will follow the guidelines established in the 2013 Regional Programmatic Agreement Regarding Compliance with Section 106 of the National Historic Preservation Act, and will follow Heritage Program Manager approved guidelines in regard to use of equipment within site boundaries.</p> <p>b. Prescribed burning, pile burning, and related fuels management activities in the vicinity of cultural resource sites will also follow the guidelines established in the 2013 Regional Programmatic Agreement Regarding Compliance with Section 106 of the National Historic Preservation Act.</p>
CR-4	Avoidance Area Maps	Cultural resource sites where implementation monitoring by an archaeologist is required to authorize and direct work within site boundaries will be identified on sale administrator maps, harvest cards, and/or burn plan maps to facilitate planning and scheduling of such work.
CR-5	Directional Felling	Directional felling methods will be utilized as appropriate to protect cultural resource sites.
CR-6	Placement of Wildlife Snag Retention Patches	Wildlife snag retention patches will not be located within or immediately adjacent to cultural resource sites, whenever possible.
CR-7	Working Outside Area of Potential Effects Boundaries	Should the project boundaries of proposed activities (i.e., staging areas, roadwork) be expanded beyond the analyzed area of potential effects, additional cultural resource review

ID	Name	Measure
		will be required prior to implementation.
CR-8	Discovery of Previously Unknown Cultural Resources	Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area (within 150 feet) and the archeologist be notified immediately. Work may resume after approval by the archeologist, provided that any recommended standard protection measures are implemented.
RANGELAND RESOURCES		
RR-1	Notify Rangeland Specialist	The rangeland specialist would be notified annually of planned project activities. The rangeland specialist would include any needed special instructions regarding livestock operations such as timing of range improvement reconstruction or maintenance in the range permittee Annual Operating Instructions.
RR-2	Avoidance Measures	Range improvements, including fences and corrals, would be protected during project activities. Debris and burn piles would be located at least 20 feet from fences to allow access for maintenance and to protect from heat damage. Range improvements damaged during project operations would be restored to equal or better condition.
TERRESTRIAL WILDLIFE		
Surveys and Site Protections		
TW-1	Protocol Surveys for Spotted Owl	Protocol surveys will be conducted in 2015 and 2016 to establish or confirm the location of California spotted owl nest sites or activity centers prior to implementing vegetation treatments within project areas. (Surveys conducted for the Eldorado spotted owl demography study will provide nest site and activity center data within the portion of the King Fire overlapping the spotted owl demography study.)
TW-2	Limited Operating Period for CSO	Maintain a Limited Operating Period (LOP) prohibiting vegetation treatments and road reconstruction/landing construction within approximately one-quarter mile of post-fire spotted owl activity centers (or PACs if the post-fire activity center remains unknown) during the breeding season (March 1 through August 15) unless surveys confirm that spotted owls are not nesting. Review the need for LOPs prior to road and landing construction. In order to effectively implement LOPs throughout the duration of project implementation (expected to be year 2026), a biologist will annually review upcoming project implementation and perform surveys where needed to confirm nest site or activity center locations for LOPs.
TW-3	Surveys for Goshawks	Surveys will be conducted to establish or confirm the location of northern goshawk nest sites (or PACs if the current year nest site is unknown) prior to implementing activities within or in proximity to northern goshawk nesting habitat in the project area. If new nest stands are detected, northern goshawk Protected Activity Centers

ID	Name	Measure
		(PACs) will be designated and vegetation treatments will be adjusted or excluded in compliance with Sierra Nevada Forest Plan Amendment Standards and Guidelines.
TW-4	Limited Operating Period for Goshawks	Maintain a LOP prohibiting vegetation treatments and road reconstruction/landing construction within approximately one-quarter mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. Review the need for LOPs prior to road and landing construction. In order to effectively implement LOPs throughout the duration of project implementation (expected to be year 2026), a biologist will annually review upcoming project implementation and perform surveys where needed to confirm nest site locations for LOPs.
TW-5	Limited Operating Period for Nesting Bald Eagles	If bald eagles are found to be nesting at Stumpy Meadows Reservoir, a LOP prohibiting vegetation treatments and road reconstruction/landing construction within one-quarter mile of bald eagle nests will be applied (January 1 through August 31). Review the need for LOPs prior to road and landing construction.
TW-6	Flag and Avoid Valley Elderberry Longhorn Beetle Habitat	Treatment units below 3,000 feet in elevation will be surveyed for the presence of elderberry prior to ground or vegetation disturbance. Elderberry plants with stems 1 inch in diameter or larger will be flagged and treatments will be avoided within 100 feet (USDI FWS Valley Elderberry Longhorn Beetle Conservation Guidelines).
TW-7	Notify Wildlife Biologist	Notify the wildlife biologist if any Federally Threatened, Endangered, Candidate, or Region 5 Forest Service Sensitive Species are discovered during project implementation so that LOPs or other protective measures can be applied, if needed.
TW-8	Hazard Tree Removal within Post-fire PACs	Desired conditions within spotted owl and goshawk PACs are specified as providing “higher than average levels of snags and down woody material. The following would be implemented to achieve these desired conditions: 1) Along ML 1 and ML 2 roads bisecting PACs, fell only imminent hazard trees with >90% probability of mortality. A wildlife biologist will review trees marked for felling in PACs. 2) Along ML 1 and ML 2 roads bisecting PACs, retain felled trees in the largest size available (> 15” dbh and >20’ long) providing up to 15 tons/acre).
Salvage Logging		
TW-9	Down Wood Retention in Harvest Units	All existing logs greater than 15 inches in diameter and 10 feet long would be retained onsite and additional large logs left to total approximately five per acre. Additional logs to be left are greater than or equal to 15 inches in diameter and over 10 feet long, with a preference for leaving the largest size class representative of the area.
TW-10	Snag Dependent Wildlife	Pre-fire spotted owl or goshawk nest trees will be retained as wildlife snags. General Principles for Snag Retention (EIS Appendix G) will be utilized when identifying snag

ID	Name	Measure
		retention patches within treatment units in accordance with Alternative descriptions.
Reforestation		
TW-9	Herbaceous Plant Cover for Pollinators	Maintain at least 50% herbaceous native plant cover during follow-up release treatments in conifer plantations.
TW-10	Shrub Cover within Critical Winter Range for Deer	Within critical winter range for the Pacific deer herd, herbicide release in conifer plantations would retain 30% shrub cover within each unit.
RECREATION		
R-1	Protect and Repair Trails	Protect system hiking trails and repair tread or signs that become damaged as a result of activities.
R-2	Protect and Repair OHV Staging Area	Protect the OHV staging area located at the intersection of roads 12N34 and 11N12.
REFORESTED AREAS		
RA-1	Coordinate with Resource Specialists	Before prescribed burning in areas with planted trees, the Fuels Specialist will coordinate with the Silviculturist and/or Culturist to implement burning techniques or protection measures (as specified in the burn plan) to minimize mortality of planted trees.

Best Management Practices

Table A.3 – Region 5 Best Management

Practices In the following table, design criteria are coded as:

- RCA Riparian Conservation Areas
- AR Aquatic Resources
- WS Watershed
- WSA Watershed Sensitive Areas
- TSC Timber Sale Contract (provisions listed herein apply to corresponding provisions in stewardship contracts)
- FSH Forest Service Handbook
- FP-03 Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects

BMP Number	BMP Practice	BMP Objective	Project BMPs
12.12 Timber Management Best Management Practices			
1-1	Timber Sale Planning Process	To incorporate water quality and hydrologic considerations into the TSPP.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ RCAs: 1 ▪ AR-6, 11, 13, 21 ▪ WS-1 through 7, and 9 through 12 TSC FSH 2409.13, Chap. 21-41 R-5 FSH 2409.26, Section 13 WSA development
1-2	Timber Harvest Unit Design	To ensure that timber harvest unit design will secure favorable conditions of water quality and quantity while maintaining desirable stream channel characteristics and watershed conditions. The design should consider the size and distribution of natural structures (snag and down logs) as a means of preventing erosion and sedimentation.	TSC Prov. C6.6 – R5 TSC Prov. C6.5 – R5 R5 Soil Quality Standards WSA development
1-3	Determination of Surface Erosion Hazard for Timber Harvest Unit Design	To identify high erosion hazard areas in order to adjust treatment measures to prevent downstream water quality degradation.	EHR analysis: Soil Section WSA development
1-4	Use of Sale Area Maps (SAM) and/or Project Maps for Designating Water Quality Protection Needs	To ensure recognition and protection of areas related to water quality protection delineated on a SAM or Project Map.	TSC Prov. B1.1 TSC Prov. B6.5 TSC Prov. B6.6 TSC Prov. C6.5 TSC Prov. C6.6

BMP Number	BMP Practice	BMP Objective	Project BMPs
1-5	Limiting the Operating Period of Timber Sale Activities	To ensure that the purchasers conduct their operations, including erosion control work, road maintenance, and so forth, in a timely manner, within the time specified in the Timber Sale Contract.	TSC Prov. B6.3 TSC Prov. B6.311 TSC Prov. B6.31 TSC Prov. B6.6 TSC Prov. B6.65 TSC Prov. B6.66 TSC Prov. C6.315 – R5
1-6	Protection of Unstable Lands	<p>To provide special treatment of unstable areas to avoid triggering mass slope failure with resultant erosion and sedimentation.</p> <p>Minimum 50 feet Avoid headwall swale areas Avoid concave slopes Tighten up water bars Minimize surficial erosion Drain away from headwalls</p>	Unstable areas were identified using LiDAR and flagged. The most unstable areas were identified as WSA to minimize erosion. Treatments in general include keeping skid trails 50 feet from flagged areas, drain skid trails away from flagged areas where feasible, and avoiding headwall swale areas.
1-7	Prescribing the Size and Shape of Regeneration Harvest Units	To control the physical size and shape of regeneration harvest units as a means of preventing erosion and sedimentation.	N/A: There are no regeneration harvest units.
1-8	Streamside Management Zone Designation	To designate a zone along riparian areas, streams, and wetlands that will minimize potential for adverse effects from adjacent management activities. Management activities within these zones are designed to improve riparian values.	<p>EIS Design Criteria:</p> <ul style="list-style-type: none"> ▪ RCAs: 1 ▪ AR-6, 11, 13, 21 ▪ WS-1 through 7, and 9 through 12 ▪ AR-13 <p>TSC Prov. B6.5 TSC Prov. C6.5 – R5 R5 FSH 2409.26 Sec. 12 and 13 R5 FSH 2409.15, Sec. 61.41</p>
1-9	Determining Tractor Loggable Ground	To minimize erosion and sedimentation resulting from ground disturbance of tractor logging systems.	Slope limitations and buffers FSH 2509.15 Soil Section
1-10	Tractor Skidding Design	By designing skidding patterns to best fit the terrain, the volume, velocity, concentration, and direction of runoff, water can be controlled in a manner that will minimize erosion and sedimentation.	<p>EIS Design Criteria:</p> <ul style="list-style-type: none"> ▪ RCAs: 1 ▪ WS-2 and 9. Existing disturbances were identified using LiDAR.

BMP Number	BMP Practice	BMP Objective	Project BMPs
1-11	Suspended Log Yarding in Timber Harvesting	<ol style="list-style-type: none"> 1. To protect the soil mantle from excessive disturbance. 2. To maintain the integrity of the SMZ and other sensitive watershed areas. 3. To control erosion on cable corridors. 	R-5 FSH 2409.15 Sec. 61 TSC Prov. B6.42 TSC Prov. C6.425 TSC Prov. C6.429
1-12	Log Landing Location	To locate new landings or reuse old landings in such a way as to avoid watershed impacts and associated water quality degradation.	R-5 FSH 2409.15 Sec. 61 EIS Design Criteria: <ul style="list-style-type: none"> ▪ RCAs: 1 ▪ WS-9 TSC Prov. B6.422 TSC Prov. C6.428 TSC Prov. C6.6
1-13	Erosion Prevention and Control Measures During Timber Sale Operations	To ensure that the purchasers' operations will be conducted reasonably to minimize soil erosion.	R-5 FSH 2409.15 Sec. 61 TSC Prov. B6.3 TSC Prov. B6.6 TSC Prov. C6.6 – R5
1-14	Special Erosion-prevention Measures on Disturbed Land	To provide appropriate erosion and sedimentation protection for disturbed areas.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ WS-3, 4, 6, 7, 8, 9, 11, and 12 ▪ Development of WSAs R-5 FSH 2409.15 Sec. 61 FSH 2509.11 TSC Prov. B6.6 TSC Prov. C6.6 – R5
1-15	Revegetation of Areas Disturbed by Harvest Activities	To establish a vegetative ground cover on disturbed sites to prevent erosion and sedimentation.	BMP 2-13: An erosion control plan will be developed prior to implementation.
1-16	Log Landing Erosion Control	To reduce the impacts of erosion and subsequent sedimentation associated with log landings by use of mitigating measures.	R-5 FSH 2409.15 Sec. 61 TSC Prov. B6.422 TSC Prov. B6.64 TSC Prov. B6.6 TSC Prov. B6.67 TSC Prov. C6.428 TSC Prov. C6.6 - R5
1-17	Erosion Control on Skid Trails	To protect water quality by minimizing erosion and sedimentation derived from skid trails.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ RCA-1 ▪ WS-2, 3, and 9 R-5 FSH 2409.15 Sec. 61 TSC Prov. B6.6 TSC Prov. B6.65 TSC Prov. B6.66 TSC Prov. C6.6 - R5

BMP Number	BMP Practice	BMP Objective	Project BMPs
1-18	Meadow Protection During Timber Harvesting	To avoid damage to the ground cover, soil, and the hydrologic function of meadows.	N/A: No activities will occur in identified meadows and fens.
1-19	Streamcourse and Aquatic Protection	<ol style="list-style-type: none"> 1. To conduct management actions within these areas in a manner that maintains or improves riparian and aquatic values. 2. To provide unobstructed passage of storm flows. 3. To control sediment and other pollutants entering stream courses. 4. To restore the natural course of any stream as soon as practicable, where diversion of the stream has resulted from timber management activities. 	<p>EIS Design Criteria:</p> <ul style="list-style-type: none"> ▪ Development of WSAs ▪ RCA-1 ▪ AR-2, 6, 9, 10, 11 and 13 ▪ WS 1, 3, 4, 6, 11, and 12 <p>R-5 FSH 2409.15 Sec. 51, 61 R-5 FSH 2409.26, Sec. 13 R-5 FSH 2509.22, Chap. 30</p> <p>TSC Prov. B6.34 TSC Prov. B6.341 TSC Prov. B6.342 TSC Prov. B6.5 TSC Prov. B6.6 TSC Prov. C6.5 TSC Prov. C6.6</p>
1-20	Erosion Control Structure Maintenance	To ensure that constructed erosion control structures are stabilized and working.	TSC Prov. B4.225 TSC Prov. B6.6 TSC Prov. B6.66 TSC Prov. B6.67
1-21	Acceptance of Timber Sale Erosion Control Measures Before Sale Closure	To ensure the adequacy of required erosion control work on timber sales.	R-5 FSH 2409.15 Sec. 61 TSC Prov. B6.36 TSC Prov. B6.6 TSC Prov. B6.63 TSC Prov. B6.64 TSC Prov. B6.65 TSC Prov. B6.66 TSC Prov. B9.5 TSC Prov. C6.6 – R5
1-22	Slash Treatment in Sensitive Areas	To maintain or improve water quality by protecting sensitive areas from degradation which would likely result from using mechanized equipment for slash disposal.	R5 FSH 2409.15 Sec. 61 TSC Prov. C6.7 – R5
1-23	Five-Year Reforestation Requirement	To assure a continuous forest cover and to limit disturbance on areas with limited regeneration potential where there is no assurance that the site can be reforested within the timeframe.	EIS: Reforestation proposal FSH 2409.13, Chap. 21 and 42 FSH 2409.26, Sec. 12 & 13 FSM 2470.3

BMP Number	BMP Practice	BMP Objective	Project BMPs
1-24	Non-recurring “C” Provisions that can be used for Water Quality Protection	To use the option of inserting Special “C” provisions in the timber sale contract to protect water quality where standard “B” or “C” provisions do not apply or are inadequate to protect watershed values.	None identified as needed at this time.
1-25	Modification of the Timber Sale Contract	To modify the TSC if new circumstances, or conditions indicate that the timber sale will damage soil, water, or watershed values.	TSC Prov. B8.3 TSC Prov. B8.31 TSC Prov. B8.33 FSH 2409.15, Sec. 33

12.22 Road and Building Site Construction Best Management Practices

2-1	Travel Management Planning and Analysis	Roads impact water quality to varying degrees. Use the travel analysis and road management planning processes to develop measures to avoid, minimize, and mitigate adverse impacts to water, aquatic, and riparian resources during road management activities, contribute toward restoration of water quality where needed, and identify the road system which can be effectively maintained.	<p>During field surveys, roads causing environmental degradation were identified.</p> <p>A Transportation Analysis for this project will be completed as part of the Transportation Report.</p> <p>A review and design of roads for installation and repair of water drainage features, culvert replacement and cleaning and road resurfacing activities is completed as part of the road engineering package and will be included in the Timber Sale Contract.</p>
2-2	General Guidelines for the Location and Design of Roads	Locate roads to minimize problems and risks to water, aquatic, and riparian resources. Incorporate measures that prevent or reduce impacts, through design for construction, reconstruction, and other route system improvements.	<p>No new permanent roads are proposed.</p> <p>Road Reconstruction/repair: FP-03 Special Project Specifications TSC: Prov. B5.211; Drawings TSC Prov. B5.1 TSC Prov. B5.12 TSC Prov. B5.2</p> <p>Temporary Roads: TSC Prov. B5.1 TSC Prov. B6.63 TSC Prov. B6.631</p>

BMP Number	BMP Practice	BMP Objective	Project BMPs
2-3	Road Construction and Reconstruction	Minimize erosion and sediment delivery from roads during road construction or reconstruction and their related activities.	Erosion Control Plan (not yet completed) FP-03 Special Project Specifications TSC: Prov. B5.211; Drawings TSC Prov. B6.6 TSC Prov. B6.63 TSC Prov. B6.66 TSC Prov. B6.67 TSC Prov. C6.6 – R5
2-4	Road Maintenance and Operations	To ensure water quality protection by providing adequate and appropriate maintenance and by controlling road use and operations.	Timber Sale Road Maintenance Specifications EIS Proposed Action <ul style="list-style-type: none"> ▪ Roads TSC Prov. B5.3 TSC Prov. C5.31
2-5	Water Source Development and Utilization	To supply water for road construction, maintenance, dust abatement, fire protection, and other management activities, while protecting and maintaining water quality.	Water sources were evaluated by an aquatics biologist for this project. EIS Design Criteria: <ul style="list-style-type: none"> ▪ AR-17 through 21 FP-03 Special Project Specifications TSC: Prov. B5.211; Drawings TSC Prov. C5.31 TSC Prov. C5.35 – R5
2-6	Road Storage	Ensure that roads placed in storage are maintained to so that drainage facilities and runoff patterns function properly, and damage to adjacent resources is prevented. Stored roads are managed to be returned to service, at various intervals.	FSM 7720 FSH 7709.56, Chap. 10 FP-03

BMP Number	BMP Practice	BMP Objective	Project BMPs
2-7	Road Decommissioning	<p>Stabilize, restore, and vegetate unneeded roads to a more natural state as necessary to protect and enhance NFS lands, resources, and water quality. The end result is that the decommissioned road will not represent a significant impact to water quality by:</p> <ol style="list-style-type: none"> 1. reducing erosion from road surfaces and slopes and related sedimentation of streams; 2. reducing risk of mass failures and subsequent impact on water quality; 3. restoring natural surface and subsurface drainage patterns; and 4. restoring stream channels at road crossings and where roads run adjacent to 	<p>No roads are proposed for decommissioning; however, identification and stabilization of priority disturbances are planned</p> <p>EIS Proposed Action</p> <ul style="list-style-type: none"> ▪ Watershed Sensitive Areas <p>EIS Design Criteria:</p> <ul style="list-style-type: none"> ▪ WS-3, 4, 6, 7 and 9
2-8	Stream Crossings	<p>Minimize water, aquatic, and riparian resource disturbances and related sediment production when constructing, reconstructing, or maintaining temporary and permanent water crossings.</p>	<p>FSH 2409.15 Sec. 51, 61</p> <p>EIS Design Criteria</p> <ul style="list-style-type: none"> ▪ AR-2 and 6 <p>Timber Sale Road Maintenance Specifications</p> <p>Standard Specifications for Roads and Bridges</p> <p>Special Project Specifications</p> <p>TSC: Prov. B5.211; Drawings</p> <p>TSC Prov. B6.5</p> <p>TSC Prov. B6.6</p> <p>TSC Prov. B6.63</p> <p>TSC Prov. B6.66</p> <p>TSC Prov. B5.3</p> <p>TSC Prov. C5.31</p> <p>TSC Prov. C6.5 – R5</p> <p>TSC Prov. C6.6 – R5</p>
2-9	Snow Removal and Storage	<p>Prevent or reduce erosion, sedimentation, and chemical pollution that may result from snow removal and storage activities.</p>	<p>Timber Sale Road Maintenance Specifications</p> <p>TSC Prov. B5.31</p> <p>TSC Prov. B5.35 – R5</p>
2-10	Parking and Staging Areas	<p>Construct, install, and maintain an appropriate level of drainage and runoff treatment for parking and staging areas to protect water, aquatic, and riparian resources.</p>	<p>FSH 2409.15 Sec. 61</p> <p>Typically landings.</p> <p>Refer to BMP 1-16</p>

BMP Number	BMP Practice	BMP Objective	Project BMPs
2-11	Equipment Refueling and Servicing	Prevent fuels, lubricants, cleaners, and other harmful materials from discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources.	TSC Prov. B6.34 TSC Prov. B6.341 TSC Prov. B6.342
2-12	Aggregate Borrow Areas	Minimize disturbance to water, aquatic, and riparian resources when developing and using aggregate borrow sites.	N/A: No borrow pits will be used in the project area.
2-13	Erosion Control Plan	Effectively limit and mitigate erosion and sedimentation from any ground-disturbing activities, through planning prior to commencement of project activity, and through project management and administration during project implementation.	Erosion Control Plan will be developed prior to commencement of project. Wet Weather Project Plan developed and agreed to prior to operations outside normal operating season
12.31 Mining BMPs			No Mining Best Management Practices apply to this Project
12.41 Recreation BMPs			No Recreation Best Management Practices apply to this project
12.52 Vegetation Manipulation Best Management Practices			
5-1	Soil-disturbing Treatments on the Contour	To decrease sediment production and stream turbidity, while mechanically treating slopes.	EIS Design Criteria: ▪ WS: 1 through 7, 9 through 12
5-2	Slope Limitations for Mechanical Equipment Operation	To reduce gully and sheet erosion and associated sediment production by limiting tractor use.	EIS Proposed Action: ▪ WSA development EIS Design Criteria: ▪ WS-5 TSC Prov. C6.42 Stewardship project specifications; IRTC Prov. K-G.9
5-3	Tractor Operation Limitation in Wetlands and Meadows	To limit turbidity and sediment production resulting from compaction, rutting, runoff concentration, and subsequent erosion by excluding the use of mechanical equipment in wetland and meadows except for the purpose of restoring wetland and meadow function.	N/A: No activities are planned within wetlands or meadows Meadows are identified on contract map for avoidance/protection; TSC Prov. B6.61

BMP Number	BMP Practice	BMP Objective	Project BMPs
5-4	Revegetation of Surface-disturbed Areas	To protect water quality by minimizing soil erosion through the stabilizing influence of vegetation foliage and root network.	EIS Proposed Action <ul style="list-style-type: none"> ▪ WSA development TSC Prov. C6.6 – R5
5-5	Disposal of Organic Debris	To prevent gully and surface erosion with associated reduction in sediment production and turbidity during and after treatment.	EIS Purpose and Need to reduce the risk to soils in future fires. EIS Proposed Action <ul style="list-style-type: none"> ▪ WSA development EIS Design Criteria: <ul style="list-style-type: none"> ▪ WS-1-12
5-6	Soil Moisture Limitations for Mechanical Equipment Operations	To prevent compaction, rutting, and gully, with resultant sediment production and turbidity.	Wet Weather Project Plan developed and agreed to prior to operations outside normal operating season TSC Prov. B6.31 TSC Prov. B6.6 TSC Prov. B6.66 TSC Prov. C6.6 – R5
5-7	Pesticide Use Planning Process	To introduce water quality and hydrologic considerations into the pesticide use planning process.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ AR-9 through 11
5-8	Pesticide Application According to Label Directions and Applicable Legal Requirements	To avoid water contamination by complying with all label instructions and restrictions for use.	FSM 2150 and FSH 2109.14 EIS Human Health and Safety Risk Assessment in project file and Chapter 3 of EIS Applications method described in EIS
5-9	Pesticide Application Monitoring and Evaluation	<ol style="list-style-type: none"> 1. To determine whether pesticides have been applied safely, restricted to intended target areas, and have not resulted in unexpected non-target effects. 2. To document and provide early warning of possible hazardous conditions resulting from possible contamination of water or other non-target areas by pesticides. 3. To determine the extent, severity, and possible duration of any potential hazard that might exist. 	FSH 2109.14

BMP Number	BMP Practice	BMP Objective	Project BMPs
5-10	Pesticide Spill Contingency Planning	To reduce contamination of water by accidental pesticide spills.	FSH 2109.14
5-11	Cleaning and Disposal of Pesticide Containers and Equipment	To prevent water contamination resulting from cleaning, or disposal of pesticide containers.	FSH 2109.14 (40)
5-12	Streamside Wet Area Protection During Pesticide Spraying	To minimize the risk of pesticide inadvertently entering waters, or unintentionally altering the riparian area, SMZ, or wetland.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ AR-9 through 11
5-13	Controlling Pesticide Drift During Spray Application	To minimize the risk of pesticide falling directly into water, or non-target areas.	FSH 2109.14
12.62 Fire Suppression and Fuels Best Management Practices			
6-1	Fire and Fuels Management Activities	To reduce public and private losses and environmental impacts which result from wildfires and/or subsequent flooding and erosion by reducing or managing the frequency, intensity, and extent of wildfire.	EIS Purpose and Need
6-2	Consideration of Water Quality in Formulating Fire Prescriptions	To provide for water quality protection while achieving the management objectives through the use of prescribed fire.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ AR-13 ▪ WS-10
6-3	Protection of Water Quality from Prescribed Burning Effects	To maintain soil productivity, minimize erosion, and minimize ash, sediment, nutrients, and debris from entering water bodies.	EIS Design Criteria: <ul style="list-style-type: none"> ▪ AR-13 ▪ WS-10
6-4	Minimizing Watershed Damage from Fire Suppression Efforts	To avoid watershed damage in excess of that already caused by the wildfire.	N/A
6-5	Repair or Stabilization of Fire Suppression-related Watershed Damage	To stabilize all areas that have had their erosion potential significantly increased, or their drainage pattern altered by suppression-related activities.	N/A

BMP Number	BMP Practice	BMP Objective	Project BMPs
6-6	Emergency Rehabilitation of Watersheds Following Wildfires	Objective: To minimize as far as practicable: a. loss of soil and onsite productivity; b. overland flow, channel obstruction, and instability; and c. threats to life and property, both onsite and offsite.	N/A
12.72 Watershed Management Best Management Practices			
7-1	Watershed Restoration	To repair degraded watershed conditions, and improve water quality and soil	EIS Proposed Action: ▪ WSA development includes limited watershed restoration.
7-2	Conduct Floodplain Hazard Analysis and Evaluation	To avoid, where possible, the long- and short-term adverse impacts to water quality associated with the occupancy and modification of floodplains.	N/A: No activities are proposed within floodplains
7-3	Protection of Wetlands	To avoid adverse water-quality impacts associated with destruction, disturbance, or modification of wetlands.	N/A: Implementation of activities are not planned in wetlands.
7-4	Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan	To prevent contamination of waters from accidental spills.	An annual spill plan is maintained for project implementation reference and planning. The SPCC Plan is developed and maintained at the Forest level and is tiered to in the annual spill plan. TSC Prov. B6.341
7-5	Control of Activities under Special Use Permit	To protect surface and subsurface water quality from physical, chemical, and biological pollutants resulting from activities that are under special use permit.	N/A
7-6	Water Quality Monitoring	To collect representative water data to determine baseline conditions for comparison to established water quality standards that are related to beneficial uses for that particular watershed.	EIS Watershed Monitoring Plan

BMP Number	BMP Practice	BMP Objective	Project BMPs
7-7	Management by Closure to Use (Seasonal, Temporary, and Permanent)	To exclude activities that could result in damages to either resources or improvements, such as roads and trails, resulting in impaired water quality.	Seasonal Forest Closure Order Gates installed per Road Plans/Drawings on applicable Maintenance Level 1 Roads EIS Design Criteria: WS-8
7-8	Cumulative Offsite Watershed Effects	To protect the identified beneficial uses of water from the combined effects of multiple management activities which individually may not create unacceptable effects but collectively may result in degraded water quality conditions.	EIS: Cumulative Watershed Effects analysis
12.81 Range Management BMPs			No Range Management BMPs are necessary for this project

**Table A.4 – National Best Management Practices Applicable To and Used
in Project Planning and Design**

BMP	Objective	Compliance
Plan-1. Forest and Grassland Planning	Use the land management planning and decision-making processes to incorporate direction for water quality management consistent with laws, regulation, and policy into land management plans.	Applicable to Land Management Plan. Direction from the Land Management Plan is tiered in project planning and through Regional BMPs.
Plan-2. Project Planning and Analysis	Use the project planning, environmental analysis, and decision-making processes to incorporate water quality management BMPs into project design and implementation.	Interdisciplinary Team project planning and effects analysis. Analysis of Riparian Conservation Objectives (RCO). Regional BMPs (12.12 1-1; 12.22 2-1 and 2-13; 12.52 5-7)
Plan-3. Aquatic Management Zone Planning	To maintain and improve or restore the condition of land around and adjacent to waterbodies in the context of the environment in which they are located, recognizing their unique values and importance to water quality while implementing land and resource management activities.	RCO analysis and Interdisciplinary Team development of proposed action items for improvement of aquatic ecosystems including reduced fire hazard and transportation improvements. Regional BMP 12.12 1-19.
AqEco-1. Aquatic Ecosystem Improvement and Restoration Planning	Reestablish and retain ecological resilience of aquatic ecosystems and associated resources to achieve sustainability and provide a broad range of ecosystem services.	Identification of project activities such as transportation improvements and rehab of areas to improve hydrologic and aquatic functioning. RCO planning and analysis process.
AqEco-2. Operations in Aquatic Ecosystems	Avoid, minimize, or mitigate adverse impacts to water quality when working in aquatic ecosystems.	RCO analysis and Interdisciplinary team development of design criteria to protect aquatic ecosystems. Regional BMP 12.12 1-19.
AqEco-3. Ponds and Wetlands	Design and implement pond and wetlands projects in a manner that increases the potential for success in meeting project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality, and riparian resources	Wetland improvements will occur as part of this project; however, this BMP will be addressed with specific designs (WSAs)
AqEco-4. Stream Channels and Shorelines	Design and implement stream channel and lake shoreline projects in a manner that increases the potential for success in meeting project objectives and avoids, minimizes, or mitigates adverse effects to soil, water quality, and riparian resources.	Channel projects will occur as part of this project; however, this BMP will be addressed with specific designs.

BMP	Objective	Compliance
Chem-1. Chemical Use Planning	Use the planning process to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from chemical use on NFS lands.	RCO and ID Team involvement in action and design criteria development including nozzle requirements, buffer widths, and chemicals proposed. Project conformance with local, State, Federal, and agency policies, regulations, and laws through compliance with Regional BMP 12.52 5-9 and project design elements.
Chem-2. Follow Label Directions	Avoid or minimize the risk of soil and surface water or groundwater contamination by complying with all label instructions and restrictions required for legal use.	Compliance with label requirements is built into compliance with Regional BMP 12.52 5-8 and project design.
Chem-3. Chemical Use Near Waterbodies	Avoid or minimize the risk of chemical delivery to surface water or groundwater when treating areas near waterbodies.	Proximity of application, mixing and storage of chemicals near waterbodies and identification of these areas evaluated and incorporated into the RCO and design criteria. Operation during weather conditions that could increase risk to aquatic and hydrologic resources have be restricted. Regional BMPs 12.52 5-10, and 5-12
Chem-4. Chemical Use in Waterbodies	Avoid, minimize, or mitigate unintended adverse effects to water quality from chemical treatments applied directly to waterbodies.	N/A. Waterbodies are not proposed for treatment under this project.
Chem-5. Chemical Handling and Disposal	Avoid or minimize water and soil contamination when transporting, storing, preparing and mixing chemicals; cleaning application equipment; and cleaning or disposing chemical containers.	Chemical handling and disposal is incorporated in this project through Regional BMP 5-11 compliance and FSH and FSM compliance.
Chem-6. Chemical Application Monitoring and Evaluation	<ol style="list-style-type: none"> 1. Determine whether chemicals have been applied safely, have been restricted to intended targets, and have not resulted in unexpected non-target effects. 2. Document and provide early warning of possible hazardous conditions resulting from potential contamination of water or other non-target resources or areas by chemicals. 	Monitoring of compliance and safety have been addressed in the design criteria and monitoring elements of the project. Regional BMP 5-9.

BMP	Objective	Compliance
Facilities and Non-recreation Special Uses BMPs (FAC 1-10)	The purpose of this set of BMPs is to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from development, use, maintenance, and reclamation of facilities located on National Forest System lands.	N/A. Facility use and Special Uses are not included in this project.
Fire-1. Wildland Fire Management Planning	Use the fire management planning process to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during wildland fire management activities.	N/A. Wildland fire management is not a part of this project.
Fire-2. Use of Prescribed Fire	Avoid, minimize, or mitigate adverse effects of prescribed fire and associated activities on soil, water quality, and riparian resources that may result from excessive soil disturbance, as well as inputs of ash, sediment, nutrients, and debris.	Design criteria and project design features including compliance with Regional BMPs 12.62 6-1, 6-2, and 6-3 has been developed to minimize potential for negative effects resulting from prescribed fire implementation.
Fire-3. Wildland Fire Control and Suppression	Avoid or minimize adverse effects to soil, water quality, and riparian resources during fire control and suppression efforts.	Not directly applicable to this project; however, with implementation of this project, potential for adverse effects from control and suppression of wildfire would be reduced.
Fire-4. Wildland Fire Suppression Damage Rehabilitation	Rehabilitate watershed features and functions damaged by wildland fire control and suppression-related activities to avoid, minimize, or mitigate long-term adverse effects to soil, water quality, and riparian resources	N/A. Not a fire rehabilitation project.
Minerals Management Activities (Min-1-8)	The purpose of this set of BMPs is to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from various mineral exploration, development, operation, and reclamation activities.	N/A. Mineral management is not included in this project.
Rangeland Management Activities (Range-1-3)	The purpose of this set of BMPs is to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from rangeland management activities.	N/A. Rangeland management is not included in this project

BMP	Objective	Compliance
Recreation Management Activities (Rec-1-2 and 4-12)	The purpose of this set of BMPs is to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources that may result from recreation activities.	N/A. Recreation management is not included in this project except to include EIS Design Criteria: WS-8 to discourage unauthorized OHV use.
Rec-3. Dispersed Use Recreation	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by managing dispersed activities and undeveloped sites to maintain ground cover, maintain soil quality, control runoff, and provide needed sanitary facilities to minimize the discharge of nonpoint source pollutants and maintain streambank and riparian area integrity.	N/A. Control and rehabilitation of dispersed recreation sites is not included in proposed activities for this project except to include EIS Design Criteria: WS-8 to discourage unauthorized OHV use.
Road-1. Travel Management Planning and Analysis	Use the travel management planning and analysis processes to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during road management activities.	Included in the NEPA ID Team analysis of the project.
Road-2. Road Location and Design	Locate and design roads to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.	Design of roads was evaluated and planned as part of the ID Team process for project design. Regional BMP 12.22 2-1.
Road-3. Road Construction and Reconstruction	Avoid or minimize adverse effects to soil, water quality, and riparian resources from erosion, sediment, and other pollutant delivery during road construction or reconstruction.	Compliance with Regional BMP 2-3 and contract road package requirements.
Road-4. Road Operations and Maintenance	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling road use and operations and providing adequate and appropriate maintenance to minimize sediment production and other pollutants during the useful life of the road.	Regional BMP 12.22 2-3. Maintenance and appropriate use of roads used during the project is built into the timber sale and stewardship contracts.
Road-5. Temporary Roads	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from the construction and use of temporary roads.	Temporary road construction, use, and management are dealt with through compliance with contract provisions for timber sale and stewardship projects and FSH 2409.15. Regional BMPs 12.22 2-2, and 2-8

BMP	Objective	Compliance
Road-6. Road Storage and Decommissioning	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by storing closed roads not needed for at least one year (Intermittent Stored Service) and decommissioning unneeded roads in a hydrologically stable manner to eliminate hydrologic connectivity, restore natural flow patterns, and minimize soil erosion.	Compliance with Regional BMPs (12.22 2-6 and 2-7) and contract provisions for a timber sale or stewardship contract. Additionally, opportunities for road decommissioning were reviewed as part of the ID Team planning and project design process.
Road-7. Stream Crossings	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing, reconstructing, or maintaining temporary and permanent waterbody crossings.	ID Team project design and evaluation for road work activities, project design criteria, and compliance with Regional BMP 12.22 2-8.
Road-8. Snow Removal and Storage	Avoid or minimize erosion, sedimentation, and chemical pollution that may result from snow removal and storage activities.	Compliance with Regional BMP 12.22 2-9 and contract provisions for a timber sale or stewardship contract.
Road-9. Parking and Staging Areas	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when constructing and maintaining parking and staging areas.	Compliance with Regional BMP 12.22 2-10. Parking and staging is usually connected to landing development and use, or is dealt with in road plans.
Road-10. Equipment Refueling and Servicing	Avoid or minimize adverse effects to soil, water quality, and riparian resources from fuels, lubricants, cleaners, and other harmful materials discharging into nearby surface waters or infiltrating through soils to contaminate groundwater resources during equipment refueling and servicing activities.	Compliance with Regional BMP 12.22 2-11 and project design features.
Road-11. Road Storm Damage Surveys	Monitor road conditions following storm events to detect road failures; assess damage or potential damage to waterbodies, riparian resources, and watershed functions; determine the causes of the failures; and identify potential remedial actions at the damaged sites and preventative actions at similar sites.	Monitoring would apply during project implementation until final acceptance of work items and contract and water quality waiver termination.
Veg-1. Vegetation Management Planning	Use the applicable vegetation management planning processes to develop measures to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during mechanical vegetation treatment activities.	ID Team planning process and compliance with Regional BMP 12.12 1-1.

BMP	Objective	Compliance
Veg-2. Erosion Prevention and Control	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by implementing measures to control surface erosion, gully formation, mass slope failure, and resulting sediment movement before, during, and after mechanical vegetation treatments.	ID Team planning process and Regional BMPs 12.12 1-2, 1-3, 1-6, 1-9, 1-10, 1-12, 1-13, 1-14, 1-15, 1-16, 1-17, 1-20, 1-21; and 12.52 5-1, 5-2, 5-4, and 5-6.
Veg-3. Aquatic Management Zones	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources when conducting mechanical vegetation treatment activities in the AMZ.	RCO analysis and Regional BMPs 12.12 1-8, and 1-19; 12.52 5-3, and 5-12
Veg-4. Ground-Based Skidding and Yarding Operations	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during ground-based skidding and yarding operations by minimizing site disturbance and controlling the introduction of sediment, nutrients, and chemical pollutants to waterbodies.	Regional BMPs 12.12 1-9, 1-10, 1-11, 1-13, 1-17, and 1-20.
Veg-5. Cable and Aerial Yarding Operations	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources during cable and aerial yarding operations by minimizing site disturbance and controlling the introduction of sediment, nutrients, and chemical pollutants to waterbodies.	ID Team planning process and evaluation was used to develop design criteria to minimize or mitigate potential adverse effects. Regional BMPs 12.12 and 12.52 FSH 2409.15.
Veg-6. Landings	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from the construction and use of log landings.	Regional BMPs 12.12 1-12 and 1-16
Veg-7. Winter Logging	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from winter logging activities.	Regional BMP 12.12 1-5 and 12.52 5-6
Veg-8. Mechanical Site Treatment	Avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources by controlling the introduction of sediment, nutrients, chemical, or other pollutants to waterbodies during mechanical site treatment.	National BMPs Veg-2 and Veg-3 and Regional BMPs 12.12 1-19 and 12.52 5-1, 5-2, 5-3, and 5-4.
Water Uses Management Activities	The purpose of this set of BMPs is to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources from development and operation of infrastructure to collect, impound, store, transmit, and distribute water for uses on and off National Forest System lands.	N/A. Not a part of this project.

Appendix B

Air Quality and Greenhouse Gas Emissions Calculations

King Fire Restoration Project AQ Emissions Summary				
Activity	Emissions Source	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)
Hand Thinning	Equipment Emissions	0.01	0.00	0.00
	Worker Trip Emissions	0.13	1.64	0.23
	<i>Activity Subtotal</i>	0.14	1.64	0.23
Mechanical Thinning	Equipment Emissions	2.32	20.84	3.11
	Worker Trip Emissions	0.30	0.50	1.10
	<i>Activity Subtotal</i>	2.62	21.34	4.21
Prescribed Fire	Equipment Emissions	0.23	2.17	0.34
	Worker Trip Emissions	0.18	0.30	0.61
	<i>Activity Subtotal</i>	0.41	2.47	0.95
	Fire Emissions	286000.00	NA	95333.00
	<i>All Emissions</i>	286000.41	2.47	95333.95
Total Project Activity Emissions		286005.61	51.55	95345.63
Project Equipment and Worker Commute Subtotal		3.17	25.45	5.39

Air Pollutant Emissions Thresholds		
ROG	NOx	PM10
82 lb/day	82 lb/day	82 lb/day

Emissions Factors

Emissions Factors from VTPEIR and Forest Vegetation Simulator

Activity	Emission Source	ROG (lb/day)	NOx (lb/day)	PM10 (lb/day)	CO2e (MT/year)	VTPEIR	Calculated	Project Acres Treated	Project GHG
						Treated Acres Per Year	CO2e (MT/acre)		Emissions (MT CO2e)
Hand Thinning for Tree-Dominated Area (1)	Equipment Emissions	0.01	0.00	0.00	0.01				
	Worker Trip Emissions	0.13	1.64	0.23	0.96	2256.00	0.0004	11753	4.7012
Mechanical Removal (1)	Equipment Emissions	2.32	20.84	3.11	116.28	12000.00	0.0099	8090	80.091
	Worker Emissions	0.30	0.50	1.10	2.50				
Prescribed Fire for Tree-Dominated Area Mediterranean Climate Mixed Forest, Sierra Nevada Mixed Conifer (Sugar Pine, Douglas Fir, Oak Forest) (1)	Equipment Emissions	0.23	2.17	0.34	6.35				
	Worker Trip Emissions	0.18	0.30	0.61	6.14	11072.00	20.22	2075	41956.5
Wildfire on Treated Stand (2)	Fire Emissions	286000.00	NA	95333.00	223852.00				
Wildfire on Untreated Stand (2)	Fire Emissions	NA	NA	NA	NA	NA	17.60	110	195043
	Fire Emissions	NA	NA	NA	NA	NA	79.00	10	875478

Note: Mechanical Removal Acreages include (acres), (acres), mast (acres), (86 acres) because these activities require similar types of mechanical equipment and would produce comparable amounts of emissions. Prescribed Fire acreages include as well as all other treatments that may include subsequent pile burning. This approach does result in double-counting of some acreages, but this would be a conservative estimate of emissions.

(1) Source for "Hand Thinning for Tree-Dominated Area Acreage": California Board of Forestry and Fire Protection. 2017. Draft Vegetation Treatment Program PEIR for Recirculation, Appendix H. Available: https://bofdata.fire.ca.gov/media/6346/33-appendix_h_air_quality_and_greenhouse_gas_emission_calculations.pdf

(2) Source: U.S. Forest Service. 2015. Unpublished data. United States Forest Service, Region 5. Forest Vegetation Simulator modeling prepared by Nadia Tase, Acting Region 5 Co-Climate Change Coordinator, to evaluate the North Tahoe Interagency Forest Health and Bioenergy Project.

Conversions	
Value	Unit
2000.00	lb/ton
24.00	hr/day
453.59	g/lb
25.00	GWP of CH4
2204.62	lb/MT
0.91	ton/MT

Appendix C

Special-Status Plant and Animal Species

Table C-1 Special-Status Plant Species Known to Occur in the Project Region not Addressed in Project NEPA Documents

Species	Status			Habitat and Blooming Period	Potential for Occurrence ³
	Federal ¹	State	CRPR ²		
mud sedge (<i>Carex limosa</i>)	-	-	2B.2	Bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest. In floating bogs and soggy meadows and edges of lakes. 4495 to 9154 ft in elevation. Blooms June-August.	Could Occur: A potential fen which may be suitable habitat is known to occur in the project area. Species is documented to occur in the project vicinity (CNPS 2019).
starved daisy (<i>Erigeron miser</i>)	USFS-S ⁴	-	1B.3	Upper montane coniferous forest. Rocky, granitic outcrops. 5085 to 9104 ft in elevation. Blooms June-October.	Could Occur: Suitable upper montane coniferous forest and rock outcrops are known to occur in the project area. Species is not documented on the Eldorado National Forest, but occurs nearby on the Tahoe National Forest and Lake Tahoe Basin Management Unit (CNPS 2019).
Donner Pass buckwheat (<i>Eriogonum umbellatum</i> var. <i>torreyanum</i>)	USFS-S ⁴	-	1B.2	Upper montane coniferous forest, meadows and seeps. Steep slopes and ridgetops; rocky, volcanic soils; usually in bare or sparsely vegetated areas. 6086 to 8596 ft in elevation. Blooms July-September.	Could Occur: Suitable habitats are known to occur in the project area. Species is not documented on the Eldorado National Forest but occurs nearby on the Tahoe National Forest and Lake Tahoe Basin Management Unit (CNPS 2019).
Munro's desert mallow (<i>Sphaeralcea munroana</i>)	-	-	2B.2	Great Basin scrub. 6562 to 6562 ft in elevation. Blooms May-June.	Not expected to occur: No suitable Great Basin scrub habitat occurs in project area. The only known California occurrence of the species is from the Squaw Creek area.

Notes: CRPR = California Rare Plant Rank; ESA = Federal Endangered Species Act; CESA = California Endangered Species Act

¹ Federal status definitions: USFS-S = U.S. Forest Service Sensitive Species

² California Rare Plant Ranks:

- 1B Plant species considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA)
- 2B Plant species considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA)

Threat Ranks

- 0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- 0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
- 0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

³Potential for Occurrence Definitions

- Not expected to occur: Species is unlikely to be present on the project site due to poor habitat quality, lack of suitable habitat features, or restricted current distribution of the species.
- Could occur: Suitable habitat is available at the project site; however, there are little to no other indicators that the species might be present.
- Known to occur: The species, or evidence of its presence, was observed at the project site during reconnaissance surveys, or was reported by others.

⁴These species are on the Regional Forester's Sensitive Plant List for the Lake Tahoe Basin Management Unit and Tahoe National Forest but are not on the list for the Eldorado National Forest where the Project is located.

Sources: CDFW 2019, CNPS 2019

Table C-1 Special-Status Animal Species Not Considered in Project NEPA Documents and Documented in the Project Region

Species	Status ¹		Habitat	Potential for Occurrence ²
	Federal	State		
Fish				
Lahontan cutthroat trout (<i>Oncorhynchus clarkii henshawi</i>)	T	-	Historically in all accessible cold waters of the Lahonton Basin in a wide variety of water temperatures and conditions. Requires gravels and riffles for spawning and generally does not persist or occur with nonnative salmonids.	Not expected to occur: One CNDDDB record from Pole Creek, a tributary of the Truckee River (CDFW 2019). Project area is outside of the known range of the species, which is restricted to the eastern slopes of the Sierra Nevada.
Amphibians				
southern long-toed salamander (<i>Ambystoma macrodactylum sigillatum</i>)	-	SC	High elevation meadows and lakes in the Sierra Nevada, Cascade, and Klamath mountains. Aquatic larvae occur in ponds and lakes. Outside of breeding season, adults are terrestrial and associated with underground burrows of mammals and moist areas under logs and rocks.	Could occur: Multiple recent and historic occurrences recorded in the CNDDDB in the vicinity of the project (CDFW 2019). Suitable wet meadow and pond habitat may occur in project area.
Birds				
bank swallow (<i>Riparia riparia</i>)	-	T	Riparian scrub, riparian woodland. Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Not expected to occur: One historic CNDDDB record from Placerville area (CDFW 2019). Outside of the current range of the species (CHWR 2000a).
black swift (<i>Cypseloides niger</i>)	-	SC	Coastal belt of Santa Cruz and Monterey Co; central and southern Sierra Nevada; San Bernardino and San Jacinto Mountains. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely	Could occur: Suitable habitat may exist within project area along creeks and streams. Recent CNDDDB record from Grouse Creek (CDFW 2019).
harlequin duck (<i>Histrionicus histrionicus</i>)	-	SC	Riparian scrub, Sacramento/San Joaquin flowing waters. Breeds on west slope of the Sierra Nevada, nesting along shores of swift, shallow rivers. Nest often built in a recess, sheltered overhead by stream bank, rocks, woody debris, usually within 7 feet of water.	Not expected to occur: One historic CNDDDB record along North Fork of the American River from 1992 (CDFW 2019). Most recent known breeding activity in Sierra Nevada occurred on the Merced River in 2002 (Beedy 2008).
tricolored blackbird (<i>Agelaius tricolor</i>)	-	T	Freshwater marsh, marsh and swamp, swamp, wetland. Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	Not expected to occur: Nearest CNDDDB record near Gold Hill (CDFW 2019). Project area is outside of the range of the species (CHWR 2000b).

Mammals

Table C-1 Special-Status Animal Species Not Considered in Project NEPA Documents and Documented in the Project Region

Species	Status ¹		Habitat	Potential for Occurrence ²
	Federal	State		
fisher - West Coast DPS (<i>Pekania pennant</i>)	USFS-S	T	North coast coniferous forest, old growth, riparian forest. Intermediate to large-tree stages of coniferous forests and deciduous-riparian areas with high percent canopy closure. Uses cavities, snags, logs and rocky areas for cover and denning. Needs large areas of mature, dense forest.	Not expected to occur: CNDDDB reports multiple historic records in the project vicinity; however, the project area is outside of the current range of the species (CDFW 2010).
Sierra Nevada mountain beaver (<i>Aplodontia rufa californica</i>)	-	SC	Riparian forest, riparian scrub, riparian woodland. Dense growth of small deciduous trees and shrubs, wet soil, and abundance of forbs in the Sierra Nevada and east slope. Needs dense understory for food and cover. Burrows into soft soil. Needs abundant supply of water.	Could occur: The CNDDDB reports multiple historic and recent occurrences within the project vicinity and potentially suitable habitat exists within the project area.
Sierra Nevada red fox (<i>Vulpes vulpes necator</i>)	C, USFS-S	T	Alpine, alpine dwarf scrub, broadleaved upland forest, meadow and seep, riparian scrub, subalpine coniferous forest, upper montane coniferous forest, wetland. Historically found from the Cascades down to the Sierra Nevada. Found in a variety of habitats from wet meadows to forested areas. Uses dense vegetation and rocky areas for cover and den sites. Prefers forests interspersed with meadows or alpine fell-fields.	Not expected to occur: The CNDDDB reports multiple historic records in the project vicinity. However, the project area is outside of the current range of the species, which is limited to areas in the vicinity of Sonora Pass and Lassen National Park (USFWS 2015).
Sierra Nevada snowshoe hare (<i>Lepus americanus tahoensis</i>)	-	SC	Riparian woodland. Boreal riparian areas in the Sierra Nevada. Thickets of deciduous trees in riparian areas and thickets of young conifers.	Could occur: One recent CNDDDB record from NW of Silver Peak on Tahoe National Forest (CDFW 2019). Suitable riparian habitat in the project area.

Note: CNDDDB = California Natural Diversity Database ESA = federal Endangered species Act; CESA = California Endangered Species Act; CDFW = California Department of Fish and Wildlife

¹ Status Definitions

Federal:

- C Candidate for listing under the federal Endangered Species Act ((legally protected)
- T Listed as threatened under the ESA (legally protected)
- USFS-S = U.S. Forest Service Sensitive

State:

- SC CDFW species of special concern (no formal protection other than CEQA consideration)
- T listed as threatened (legally protected)

² Potential for Occurrence Definitions

Not expected to occur: Species is unlikely to be present in the project area due to poor habitat quality, lack of suitable habitat features, or restricted current distribution of the species.

Could occur: Suitable habitat is available in the project area; however, there are little to no other indicators that the species might be present.

Known to occur: The species, or evidence of its presence, was observed in the project area during surveys, or was reported by others.

Sources: CWHR 1990c, Beedy 2008, CDFW 2019

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