

Initial Study and Proposed Negative Declaration

Pumpkin Hollow Restoration Project

February 4, 2016

**Upper Mokelumne River
Watershed Authority**

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PUMPKIN HOLLOW RESTORATION PROJECT

I. PROJECT DESCRIPTION

1.0 INTRODUCTION

The Upper Mokelumne River Watershed Authority (UMRWA) is proposing to implement the Pumpkin Hollow Restoration Project (Project). The purpose of the Project is to improve ecological resilience of forested communities within the project landscape. This will be accomplished through forest, meadow and aspen restoration and fuels management treatments on the Stanislaus National Forest. These treatments are designed to increase resistance to catastrophic wildfire while also improving water supply through snowpack accumulation and persistence. As discussed below, thinned forests with the appropriate tree stem density per acre (or basal area) have been shown to increase water supply through prolonged and increased density of snowpack accumulation (Kittredge 1953 and Lundquist et.al., 2013). This restoration project will result in a forested landscape that is more likely to withstand catastrophic wildfire and the ecological and water quality damage potentially caused by these events. The project will result in overall improved conditions and adaptations to climate change as well as habitat conditions for a variety of species and it will utilize the local work force to the extent possible.

1.1 Background

The Project is a subset of the 14,075-acre Hemlock Landscape Restoration project (Hemlock) which is in turn a component of the even larger Cornerstone Collaborative Forest Landscape Restoration Program (CFLRP) (390,904 acres). The Hemlock Landscape Restoration Environmental Assessment (Hemlock EA 2015) and Decision Notice/Finding of No Significant Impact (USDA-FS 2016) analyzed the environmental impacts of the Hemlock project area including Pumpkin Hollow project area. The proposed Project would include BMPs and management requirements designed to reduce all environmental effects to less than significant and no impact.

The Cornerstone Program was developed in collaboration with over 30 stakeholders that make up the Amador Calaveras Consensus Group (ACCG, see description below). The Pumpkin Hollow project is designed to implement a portion of the Hemlock project, which is considered a high priority area for implementation due to dense, overstocked, homogeneous conditions resulting in forest structures that are susceptible to mortality from drought, pests, pathogens, and catastrophic wildfire. A key component of the project is to actively manage the forests and create local jobs. As part of the potential local social/economic benefits provided by this project, ACCG is committed to providing opportunities to Calaveras, Amador, Alpine and Tuolumne counties. As described in the Hemlock EA, the project is proposed in an area of high importance and in need of vegetation management which is in line with the Watershed Improvement Program's (WIP) mission to implement projects in the most strategic locations possible. The project will also provide data to the WIP program.

Restoration treatments would include hand, mechanical, silviculture, prescribed fire, watershed or other actions employed to promote ecosystem stability by improving landscape resilience and watershed conditions, and by modifying fuel characteristics to lessen fire behavior or burn severity. Vegetation treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. The authors offer suggestions on how to design treatment areas to meet diverse forest objectives, retain existing large trees, promote recruitment of more large structures and provide for forest sustainability. Forest "structures" can be either live or dead trees that make up the forest environment at a particular location. The proposed treatments would result in a landscape matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; 4) improve watershed condition; 5) improve meadow function and water sequestration; and 6) maintain wildlife and ethno-botanical connectivity and diversity.

1.2 CEQA Review

To comply with the UMRWA's requirements under the California Environmental Quality Act (CEQA), this Initial Study (IS) and proposed Negative Declaration (ND) has been prepared (per CEQA Guidelines §15070-15075) to identify and address potential environmental effects and management requirements during implementation activities of the proposed Project. This IS/ND includes the UMRWA's understanding of applicable environmental regulatory review processes and required mitigation measures for implementing the proposed Project activities.

2.0 PROJECT LOCATION

The Pumpkin Hollow Restoration Project is located on the Calaveras Ranger District of the Stanislaus National Forest in Calaveras County, California. The majority of project activities are planned in the upper headwaters of Blue Creek which flows into the Mokelumne River with a small area near Big Meadow Creek which flows into the North Fork Stanislaus River. Large-scale catastrophic wildfires have plagued this region of the Sierra Nevada range for decades.

The Pumpkin Hollow project is located in Calaveras County, California. The approximate latitude is 120°9'31.703 and longitude is 38°25'14.08N. Elevations within the 972 acre project area range between 6,100 feet and 7,300 feet. The Project is located within Sections 25, 34, 35 and 36 of Township 7 North, Range 16 East, and Section 1 of Township 6 North, Range 16 East, Sections 30, 31, and 33 of Township 7 North, Range 17 East, and Section 6 of Township 6 North Range 17 East, Mount Diablo Baseline & Meridian on the United States Geological Survey (USGS) Calaveras Dome and Tamarack 7.5 Minute Quadrangle map. Please refer to Figure 1 for the Project Location and Vicinity Map and Figure 2 for the Vegetation Treatments.

3.0 PROJECT OBJECTIVES

The objectives and purpose for the Pumpkin Hollow project help protect water supply and water quality by:

1. Reducing future fire intensity and severity to federal land and adjacent private land and by reducing surface fuels, increasing the height to canopy, decreasing crown density (thereby allowing more snow accumulation), and retaining large fire-resistant tree species.
2. Increasing tree, stand, and landscape resiliency and sustainability by producing different stand structures and densities across the landscape. The project will enhance snowpack density and accumulation and thereby water supplies as well as the general health of forested stands by reducing susceptibility to insect, diseases, and drought-related mortality by improving and promoting stand and individual tree growth and vigor.
3. Maintaining or enhancing the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, meadows, and fens). It will implement restoration actions to maintain, restore or enhance water quality and habitat for riparian and aquatic species and aspen stands.
4. Maintaining and enhancing the extent and connectivity of aspen stands by reducing encroaching conifers, the visual character of the Ebbetts Pass Scenic Corridor through fuels management treatments, and important wildlife habitat, mature forest ecosystem values, and connectivity of mature forest stands (e.g., late seral with closed canopies, California Wildlife Habitat Relationship (CWHR) size classes of 4-6, and density classes of M and D).

4.0 PROPOSED PROJECT COMPONENTS

The Pumpkin Hollow Restoration Project reestablishes more resilient forest species composition, structure, and patterns on the landscape, as well as ecological processes (e.g., hydrologic function, fire regime) necessary for the long-term sustainability of terrestrial and aquatic ecosystems and water supply. An ecologically sustainable and resilient watershed would have a greater capacity to adapt and thrive in the face of natural disturbances and large-scale threats, such as; fire, drought, and insect and disease infestations which may be exacerbated by current and future climate warming. As discussed above, Kittredge (1953) and Lundquist (2013) demonstrated that a thinned forest with reduced canopy cover allows for more snow accumulation. This is because a dense canopy cover with high basal area, traps the snow in pine needles where it evaporates more quickly than from the ground.

4.1 Hand Treatments

Purpose of Treatment: Hand treatments in California spotted owl and northern Goshawk protected activity centers and home range core areas were designed to reduce the risk of catastrophic wildfire while maintaining existing habitat quality.

Major Tasks: Hand thinning of trees less than 10” diameter in stands, based on USFS descriptions of priorities for removal and desired tree spacing. Slash shall either be lopped and scattered or piled per USFS specifications.

Milestones: Reduction of ladder fuels and a decrease in trees per acre.

4.2 Aspen and Meadow Restoration

Purpose of Treatment: Aspen and meadow restoration treatments were designed to achieve an environmental context of ethno-botanical diversity similar to indigenous stewardship conditions and enhance the hydrologic, geomorphic, and biological characteristics of these important ecological communities.

Major Tasks: Removal of conifers less than 30” DBH (diameter at breast height) within meadow boundaries. Within 50 feet of meadows and aspen stands, conifers 30-40” dbh may be thinned where basal areas of conifers exceed 120 ft²/ acre (at least 3 trees >30” dbh per acre would be retained). Sawlogs would be decked on site and non-commercial material would be chipped or piled for future burning by USFS crews.

Milestones: Removal of conifers encroaching on meadows and aspen stands and increase the meadow’s water sequestration potential.

4.3 Forest Restoration

Purpose of Treatment: Forest restoration treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. Treatments are expected to transition the landscape to a matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; and 4) improve watershed condition.

Major Tasks: Removal of trees less than 30” DBH based on silvicultural prescriptions and marking guides. Residual slash resulting from restoration activities would be piled and burned, lopped and scattered, masticated, or the biomass removed. Trees < 10”, other woody debris, and brush would be masticated (shredded), piled and burned (hand or grapple piles), lopped and scattered, or removed as biomass. Additional use of non-merchantable material may include firewood, shavings, small log removal, and pulpwood use.

Milestones: Reduction of canopy cover to 40%, 50% or 60% depending on unit location in order to restore forests patterns while improving residual tree vigor and reducing tree mortality from drought, pests, and other pathogens.

4.4 Plantation Thinning

Purpose of Treatment: Plantation treatments are focused on reducing plantation stocking conditions that have led to suppressed tree growth and health, an increased susceptibility to insect outbreaks, drought related mortality, and high risk of increased wildfire severity, intensity, and frequency.

Major Tasks: Plantations would be mechanically thinned to approximately 20x20 foot spacing. Brush and trees less than 10” dbh would be mechanically thinned through mastication, biomass removal, and/or hand piling and burning. Trees 10-16” dbh could be removed as biomass or other forest products.

Milestones: Reduction of tree densities in plantation areas in order to improve residual tree vigor, increase growth, and reduce fire severity.

4.5 Fuel Breaks

Purpose of Treatment: Fuel break treatments were designed to reduce the cumulative buildup of dead and down surface fuels, the dense understory ladder fuels, and reduce overstory tree density and canopy closures that exhibit high risk of stand replacing, high intensity fires. Fuel breaks will also provide for safer fire suppression areas. In addition, fuel treatments near the WUI would create defensible space around private property.

Major Tasks: Construct 300’-wide shaded fuel break along ridge tops, private property, and highway 4. Trees less than 30” dbh would be thinned to 40% canopy cover by ground based mechanical thinning or hand thinning, piling, and burning. Trees less than 10” dbh and brush would be treated through mastication, biomass removal, or hand cutting, piling and burning. Brush and small trees less than 10” dbh would be removed or masticated within 25 feet of designated roads. Excess fuels may be removed mechanically or through hand thinning, piling, and burning. Tree species retention would vary depending on site capacity, topographic position, and elevation. In general, firs and cedars would be targeted for removal. Prescribed fire activities may occur after fuel treatments by Forest Service staff.

Milestones: Lines of defense for fighting wildfire and a reduced risk of catastrophic wildfire.

4.6 Proposed Project Construction Methods

Construction activities would occur primarily during the business hours of 7:00 A.M. to 6:00 P.M.. Equipment for Project activities would include the following:

- Excavator
- Masticator
- Fellibuncher
- Skidder
- Log Loader
- Water Truck
- Light duty utility trucks
- Personal vehicles

5.0 PROPOSED PROJECT OPERATIONS AND MONITORING

Operations would be temporary and limited and would occur in remote areas. There would be no affect to public roadways and no need for road closures. Ongoing monitoring would involve a timber sale administrator onsite. Appendix A includes a detailed monitoring plan.

6.0 ENVIRONMENTAL REVIEW AND POTENTIAL PERMITTING REQUIREMENTS

UMRWA CEQA review, UMRWA Project approvals, and applicable permits would be required before commencement of the proposed Project activities. Table 1 lists the anticipated agency reviews and permits that would be necessary to implement the Project activities.

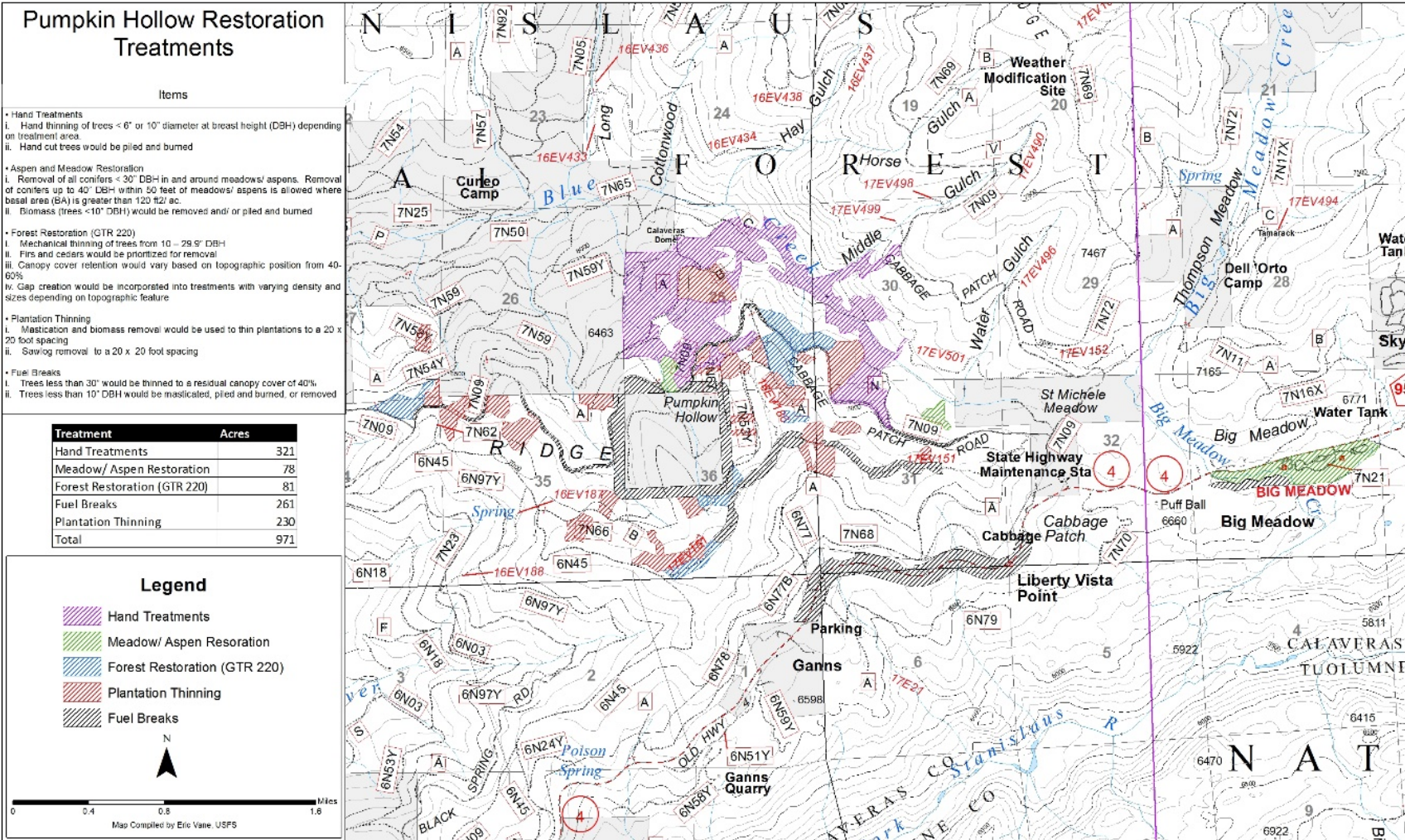
Table 1. Agency Review and Potential Permit Requirements

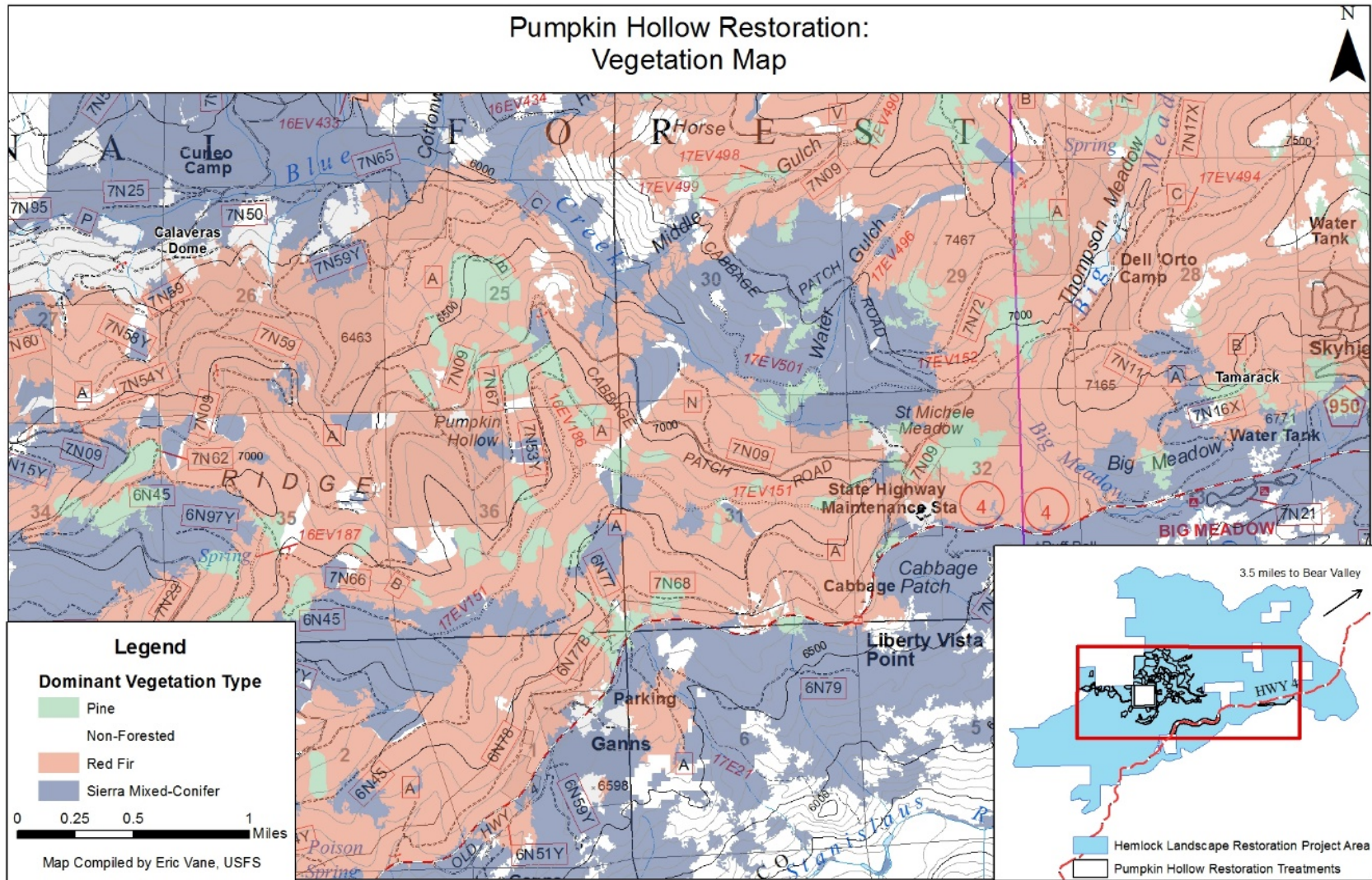
Agency	Applicable Laws/Reviews/ Approvals
UMRWA (CEQA Lead Agency)	Section 21000 et seq. of Public Resources Code and Section 15000 et seq. of the California Environmental Quality Act (CEQA) Guidelines.
U.S. Army Corps of Engineers	Nationwide Permit Section 404 under Clean Water Act, NPDES Waiver Permit for roads used for forestry for farming activities and silvicultural activities. BMPs are implemented and monitored annually and reported by timber sale administrators.
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation, Fish and Wildlife Coordination Act. Completed as part of Hemlock EA.
State Office of Historic Preservation	Section 106 of National Historic Preservation Act, completed as part of Hemlock EA
Central Valley Regional Water Quality Control Board	Clean Water Act, Section 401, Water Quality Certification under Clean Water Act. NPDES Waiver Permit for roads used for forestry for farming activities and silvicultural activities. BMPs are implemented and monitored annually and reported by timber sale administrators.
Department of Fish and Wildlife, North Central Region	Fish and Game Code, Section 1600 et seq., Streambed Alteration Agreement. Not Applicable. Forest Service does not meet definition of "Entity".

7.0 PROPOSED PROJECT DELEVERABLES AND SCHEDULE

Table 2. Detailed Project Deliverables and Timeline

TASK	TASK DESCRIPTION	DETAILED PROJECT DELIVERABLES (see Task Descriptions Above)	TIMELINE¹
1	Administration	<ul style="list-style-type: none"> • Executed Agreement • Invoices and backup documentation • Wet-signed Invoice Forms 	Ongoing
2	Reporting	<ul style="list-style-type: none"> • Quarterly Progress Reports • Draft Project Report • Final Project Report 	Ongoing
3	Hand Treatments	Hand thinning: 321 acres, Hand Pile & Burn: 321 acres.	Implementation: Fall 2016 through Spring 2018
4	Aspen and Meadow Restoration	Mechanical thinning: 78 acres.	Implementation: Fall 2017
5	Forest Restoration	Mechanical thinning: 81 acres.	Implementation: Summer 2018
6	Plantation Thinning	Mechanical thinning: 230 acres	Implementation: Summer 2018 through Fall 2019
7	Fuel Breaks	Mechanical thinning: 261 acres	Implementation: Summer, Fall 2017 and 2019
¹ Actual implementation dates are subject to funding streams, weather conditions and contract obligations.			





II. ENVIRONMENTAL CHECKLIST

1.0 OVERVIEW:

Project title: Pumpkin Hollow Restoration Project

Lead Agency name and address: Upper Mokelumne River Watershed Authority
5883 East Camanche Parkway
Valley Springs, CA 95252

Contact person and phone number: Rob Alcott
Executive Officer
(707) 785-1008

Project location: Calaveras Dome and Tamarack 7.5 Minute Quadrangle Maps, MDB&M. The Project is located within Sections 25, 34, 35 and 36 of Township 7 North, Range 16 East, and Section 1 of Township 6 North, Range 16 East, Sections 30, 31, and 33 of Township 7 North, Range 17 East, and Section 6 of Township 6 North Range 17 East.

Project sponsor's name and address: Upper Mokelumne River Watershed Authority
5883 East Camanche Parkway
Valley Springs, CA 95252

Land designation: Land administered by United States Forest Service, Stanislaus National Forest

2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this proposed Project, involving at least one impact that is a "Less-than-Significant" or "Less-than-Significant with Mitigation" as indicated by the accompanying environmental checklist.

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Agriculture and Forestry	<input type="checkbox"/> Air Quality
<input checked="" type="checkbox"/> Biological Resources	<input type="checkbox"/> Cultural Resources	<input type="checkbox"/> Geology/Soils
<input type="checkbox"/> Greenhouse Gas Emissions	<input type="checkbox"/> Hazards and Hazardous Materials	<input type="checkbox"/> Hydrology/Water Quality
<input type="checkbox"/> Land Use/Planning	<input type="checkbox"/> Mineral Resources	<input type="checkbox"/> Noise
<input type="checkbox"/> Population/Housing	<input type="checkbox"/> Public Services	<input type="checkbox"/> Recreation
<input type="checkbox"/> Transportation/Traffic	<input type="checkbox"/> Utilities/Service Systems	<input type="checkbox"/> Mandatory Findings of Significance

3.0 EVALUATION OF ENVIRONMENTAL IMPACTS:

The degree of change from existing conditions caused by the Project is compared to the impact evaluation criteria to determine if the change is significant. Where it is determined that one or more significant impacts could result from implementation of the Project, mitigation measures are developed to reduce or eliminate the significant impacts. Existing conditions serve as a baseline for evaluating the impacts of the Project.

The following terminology is used in this document to describe the various levels of environmental impacts associated with the Project:

- A finding of *no impact* is identified if the analysis concludes that the proposed Project would not affect a particular environmental topical area in any way.
- An impact is considered *less than significant* if the analysis concludes that the proposed Project would not cause a substantial adverse change in the environment.
- An impact is considered *less than significant with mitigation* if the analysis concludes that the proposed Project has the potential to cause a substantial adverse change in the environment, but the proposed Project includes measures to mitigate the potential impact to a less than significant level.
- An impact would be considered a *potentially significant impact* if the analysis concludes that the proposed Project could cause a significant environmental effect. Proposed Projects that potentially produce a significant impact(s) warrant the greater level of analysis and consideration provided by an Environmental Impact Report (EIR).

4.0 CEQA ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Pumpkin Hollow Restoration Project (Project) is located between the foothills and the western slopes of the central Sierra Nevada mountain range and at the eastern edge of the Central Valley, with elevations ranging from 6,100 to 7,300 feet. The region is characterized as a natural and forested environment, which is owned and operated by the United States Forest Service. The Project would remove fuel build up along Ebbett's Pass and improve this Scenic Corridor.

Vegetation treatments adjacent to the Scenic Corridor include the positive effects on scenic qualities by opening previously shaded or inaccessible areas for viewing and increased sunlight to reach the ground to promote the growth of new vegetation. Rebirth of new tree and shrub form, spring and fall color, and new texture being created by foliage and bark, would be new highlights as seen from the scenic corridor and recreation areas. As such, the scenic corridor proposed treatments would open the foreground vegetation, panoramic and geologic views along Highway 4.

Explanations

- a) No Impact. The project would result in no substantial adverse effect to a scenic vista.
- b) No Impact. As described on page 113 of the Hemlock EA, the project would enhance the scenic quality associated with the Highway 4, National Scenic Byway (see also chapter 3.14 Visual Resources of the Hemlock EA). The project would not substantially damage scenic resources, including trees, rock outcroppings, or historic buildings within a state scenic highway.
- c) No Impact. The project would not substantially degrade the existing visual character or quality of the site and its surroundings. The project would result in beneficial effects to the visual character.
- d) No Impact. The project would not create a new source of substantial light or glare nor which would it adversely affect day or nighttime views in the area.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in</p>				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<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 type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The land surrounding the Project is administered by the Stanislaus National Forest. UMRWA has a 10 year Master Stewardship Agreement in place with the Stanislaus National Forest to implement the proposed project.

Explanations

- a) No Impact. The Project would not 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 Department of Conservation (CDC), to non-agricultural use (CDC 2014).

- b) No Impact. The Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.
- c) No Impact. The Project would not 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)).
- d) No Impact. The Project would not result in the loss of forest land or conversion of forest land to non-forest use.
- e) No Impact. The Project would not involve other changes in the existing environment, which could result in the conversion of Farmland to non-agricultural use.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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

Environmental Setting

Air emissions are generally managed and analyzed spatially by air basins where topographic features delineate common air quality characteristics. Air quality conditions are highly controlled by short and long-term meteorological and climate conditions. Most of the land in the Stanislaus National Forest is located in the Tuolumne County Air Pollution Control District (APCD). A smaller portion of the Forest is located in the Great Basin (Alpine County), Calaveras and Mariposa County Air Pollution Control Districts. Tuolumne, Calaveras, and Mariposa APCDs are part of the Mountain Counties Air Basin. A Smoke Management Plan and Burn Permit would be required for all prescribed burning activities, in accordance with Title 17, Smoke Management Guidelines for Agricultural and Prescribed Burning as required by the California Air Resources Board. The project would also comply with additional requirements set forth by the Mountain Counties Air Basin and the Great Basin Air Pollution Control Districts and the Forest Plan.

Particulate Matter, Ozone, Nitrogen oxides and natural occurring asbestos may pose a threat to human health and forest ecosystems in the Stanislaus National Forest and Sierra Nevada. Some of the pollutants regulated under the National Ambient Air Quality Standards and the California Ambient Air Standards are created by motorized vehicles and can cause detrimental effects to public health and ecosystems. The air pollutants of concern in this area include particulate matter (PM2.5 and PM10/fugitive dust), ozone, and natural occurring asbestos. Air quality within the project area is within national and state standards for visibility, particulate levels (PM10), and pollutants. Air quality in the project area could be effected by agricultural, and adjacent private forest activities producing seasonal dust and smoke as well as recreational activities using dirt roads in and around the project area. These

effects would generally be short-term (less than 24 hours) and localized. The proposed action of piling activity fuels (machine and hand) and prescribed burning would occur after the completion of thinning harvest. Depending on the amount of activity fuels in the project area, it is estimated that it could take five to ten years to complete all burning activities. Burning would be conducted on permissive burn days for Calaveras County, which should result in a negligible effect to the air quality of the project area, and ensure smoke dispersion to meet air quality standards and minimize short-term or long-term effects.

Explanations

- a) No Impact. Implementation of the Project would not conflict with or obstruct implementation of the Calaveras County Air Pollution Control District plans or policies.
- b) No Impact. The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- c) No Impact. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance. The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- d) No Impact. There are no known sensitive receptors nearby the Project site, and therefore no impacts would occur to sensitive receptors.
- e) No Impact. The Project would not create objectionable odors and would not result in excessive odors as defined under the Calaveras County AQMD rules for public nuisance odors.

Mitigation Measures

- No mitigation is required or warranted.

	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 U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

Environmental Setting

A biological evaluation (BE) and biological assessment (BA) of the Project area was completed in 2015 and the results of the field surveys are included in the NEPA Project Record for the Hemlock EA (USDA-FS, 2015). The various habitat types identified during the biological survey and ecotones are described below.

The forested landscape of the Project area lies in the western side of the central Sierra Nevada range within the ecological transition zone (ecotone) between lower moist mixed conifer and higher elevation true fir forests, with white fir (*Abies concolor*) and red fir (*Abies magnifica*) being the main overstory trees in most stands. Sugar pine (*Pinus lambertiana*) is a minor overstory component in many of these true fir dominated stands. Douglas-fir (*Pseudotsuga menziesii*), Jeffrey pine (*Pinus jeffreyi*), ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*) and lodgepole pine (*Pinus contorta var. murrayana*) are present in many stands at lower elevations and on south to southwest facing slopes. Ponderosa/Jeffrey pine plantations established after harvest or wildfire exist throughout the project area. The majority of the land within the project area ranges from Forest Survey Site Class (FSSC) 3 to 5 (based on a 1-7 index where FSSC 7 represents the least productive site class), corresponding to Dunning site class I-IV with a growth rate of 50 to 164 cubic feet per acre per year.

Part of the project area lies within or near the wildland urban intermix (WUI) and thus experiences large amounts of human interaction (e.g. firewood collection, recreation, etc.). Past management actions, including fire suppression, have created undesirable conditions within this fire-adapted ecosystem.

The Hemlock Landscape Restoration project EA determined the project would not affect the above mentioned species due to the lack of suitable habitat or the Hemlock Landscape Restoration project location being outside of the species' range. Further, sensitive plant species with no known occurrences following thorough surveys are not expected to have direct or indirect project effects, and therefore, the 30 above species will not be considered in further effects analyses in this BE.

If sensitive plant species, undetected during 2013-14 surveys, do occur in wetland habitats (i.e., Special Aquatic Features), these plants would be protected through the use of a 50 foot buffer around perennial and intermittent wetland features as part of a RCA management requirement. This buffer would prohibit mechanized ground disturbance in and around areas with ground or surface water and suitable sensitive plant habitat. Sensitive plant species which may occur on lava caps would not be impacted by the Hemlock Landscape Restoration project as treatments are not proposed on lahar flows and these habitats and/or are protected with a Management Requirement within the project boundary.

Explanations

- a) Less Than Significant. As a result of the effects analysis detailed in the Aquatic Species Biological Assessment and consultation with the Fish and Wildlife Service

completed through batch consultation under a programmatic biological opinion (USFWS 2014), it was determined that that actions in Alternatives 3 may affect, and are likely to adversely affect the Yosemite toad (Threatened) and the Sierra Nevada yellow-legged frog (Endangered). The US Fish and Wildlife Service has concluded that projects consistent with the Forest Plan and that fully implement appropriate conservation measures were not likely to jeopardize the continued existence of these species (Hemlock EA, Section 3.02 Aquatics). The proposed action would not affect any other Federally listed species or critical habitat (Hemlock EA, Section 3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife).

Habitat requirements can be found in the Hemlock EA, Management Indicator Species Report and BE and BE/BA.

Plant Species

Table 3 summarizes the existing environment, anticipated environmental effects to plant species from the Hemlock Landscape Restoration project, and Determinations of effects on species.

Of the 35 Forest Service sensitive plant species considered on the Calaveras Ranger District, Stanislaus National Forest, 14 plant species are either outside the geographic or elevation range of the project area, or no suitable habitat is present in or near the project area (Table 3). In addition, field surveys did not yield species presence, or proposed treatments were not in sensitive plant suitable habitats for 16 plant species.

Species excluded from further discussion are those whose distribution (i.e., geographic or elevation) does not occur in the Hemlock Landscape Restoration cumulative analysis area. Further, field surveys, office records, and aerial photo interpretation were used to determine whether habitat occurred for species whose distribution was in the range of the Hemlock Landscape Restoration cumulative analysis area. Those species which did not have habitat will be excluded from further discussion in this BE and are documented in Table 3. Hemlock Landscape Restoration project is outside the current or historical range and/or there is no suitable habitat for the following Forest Service designated sensitive species (Table 3): *Allium jepsonii*, *Arctostaphylos nissenana*, *Balsamorhiza macrolepis*, *Boechera evadens*, *Botrychium ascendens*, *B. crenulatum*, *B. lineare*, *B. lunaria*, *B. montanum*, *B. pedunculatum*, *B. pinnatum*, *B. tunux*, *B. yaaxudakei*, *Bruchia bolanderi*, *Calochortus clavatus* var. *avius*, *Cypripedium montanum*, *Dendrocollybia racemosa*, *Draba asterophora* var. *asterophora*, *Draba asterophora* var. *macrocarpa*, *Eriogonum luteolum* var. *saltuarium*, *Erythronium tuolumnense*, *Fissidens aphelotaxifolius*, *Helodium blandowii*, *Horkelia parryi*, *Lewisia kelloggii* ssp. *kelloggii*, *Meesia uliginosa*, *Mielichhoferia elongate*, *Mielichhoferia shevockii*, *Mimulus pulchellus*, and *Pinus albicaulis*.

Thorough sensitive plant surveys were conducted in the Hemlock Landscape Restoration project area from April through September in both 2013 and 2014, including riparian areas and Special Aquatic Features (i.e., fens, meadows, springs and seeps), lahar (lava cap) flows and granitic outcropping, mixed conifer, and other suitable habitats.

Results from these surveys detected four sensitive plant species: Mingan moonwort, Hutchison's lewisia, Stebbins' lomatium, and veined water lichen. A historical occurrence of three-bracted onion was assumed present because snow accumulation restricted access to survey locations; three-bracted onion was detected in the project area in 1991 and recorded in California Natural Diversity Database.

Mingan moonwort was located in a seep near the Middle Fork Mokelumne River, below the Pumpkin Hollow Restoration project area. The occurrence had only one specimen which was present in 2013 and 2014. Mingan moonwort is eligible for state listing in California as an endangered species. Currently, there are two Mingan moonwort specimens known on the Calaveras Ranger District, and only one other Mingan moonwort specimen is mapped on the Stanislaus National Forest. This specimen is on the Groveland Ranger District and survived the Rim fire in 2013. There are no populations mapped in Amador County. There appear to be three specimens mapped in Yosemite National Park. There are only 57 unconfirmed records of Mingan moonwort in the state of California. Rare Plant Rank for Mingan Moonwort is reported as Endangered, and Fairly Endangered in California (2B.2) and has a State Rank of Imperiled (2) (CNPS 2015). All plants constituting California Rare Plant Rank 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing (CNPS 2015). Stable population estimates for Mingan moonwort are poorly documented, as habitat conditions and disturbances can greatly influence the number of aboveground plants at a given site (Chadde and Kudray 2001). Vanderhorst (1997) reported populations of 200 individuals in one occurrence. Mingan moonwort can develop vegetatively from underground propagules, which contributes to stable plant densities.

Veined water lichen was detected in the upper Middle Fork Mokelumne River, below the Pumpkin Hollow Restoration project area. This occurrence is one of only two known occurrences on the Calaveras Ranger District. The occurrence in the Middle Fork Mokelumne River had 8 specimens in 2013, 10 in 2014, and only 1 in 2015. This is biologically significant because this rapidly decreasing population provides a source of spores/plants to help repopulate the population in the lower part of the occurrence which at one time measured between 1000-5000 plants. Veined water lichen has a Rare Plant Rank of "Uncommon in California, and Fairly Endangered in California" (4.2) and has a State Rank of "Vulnerable" (3) (CNPS 2015). This species is not known in Amador County, but there are known occurrences on Mi-Wok and Groveland Ranger Districts. Some of these occurrences were affected by direct mortality during the Rim fire and their habitats were rendered unsuitable.

Occurrences of Stebbins' lomatium and Hutchison's lewisia were located on lahar flows with shallow volcanic derived soil, outside of the Pumpkin Hollow Restoration project. An elevation range expansion was noted as Stebbins' lomatium was detected at 8,200 ft. in the project area. Previously, Stebbins' lomatium was not known above 7,200 ft. Stebbins' lomatium is endemic to California and more specifically, only known in Calaveras and Tuolumne Counties. Stebbins' lomatium, likewise, is considered rare, threatened, or endangered in California and elsewhere. Rare plant status for Hutchison's lewisia is imperiled and vulnerable (CNPS 2015).

Of the 35 Forest Service sensitive plant species considered on the Stanislaus National Forest, 14 plant species are either outside the geographic or elevation range of the project area, or no suitable habitat is present in or near the project area (Table 3). In addition, field surveys did not yield species presence, or proposed treatments were not in sensitive plant suitable habitats for 16 plant species. As such, a "No Effect" determination was provided for these 30 sensitive plant species. These species were not discussed in greater depth in the Hemlock EA.

The Hemlock Landscape Restoration Project related effects on the Three-bracted onion, Mingan moonwort, Hutchinson's lewisia, Stebbin's lomatium, and veined water lichen are summarized below. However, these three sensitive plant species were not detected in the Pumpkin Hollow Restoration project area and there is no suitable habitat available for the Three-bracted onion, Hutchinson's lewisia, or Stebbin's lomatium in the Pumpkin Hollow Restoration project area.

Table 3. Forest Service sensitive plant species considered in the project analyses

Species Name	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/Indirect Effects	Determination
Jepson's onion (<i>Allium jepsonii</i>)	Yes	Yes	Yes	No	No/No	No Effect
Three-bracted onion (<i>Allium tribracteatum</i>)	Yes	Yes	Yes	AP ¹	No/No	No Effect
Nissenan Manzanita (<i>Arctostaphylos nissenana</i>)	Yes	No	No	No	No/No	No Effect
Big-scale balsamroot (<i>Balsamorhiza macrolepis</i>)	Yes	No	No	No	No/No	No Effect
Hidden rockcress (<i>Boechera evadens</i>)	Yes	No	No	No	No/No	No Effect
Moosewort (<i>Botrychium tunux</i>)	Yes	No	No	No	No/No	No Effect
Upswept moonwort (<i>B. ascendens</i>)	Yes	Yes	Yes	No	No/No	No Effect
Scalloped moonwort (<i>B. crenulatum</i>)	Yes	Yes	Yes	No	No/No	No Effect
Slender moonwort (<i>B. lineare</i>)	Yes	Yes	Yes	No	No/No	No Effect
Common moonwort (<i>B. lunaria</i>)	Yes	Yes	Yes	No	No/No	No Effect
Mingan moonwort (<i>B. minganense</i>)	Yes	Yes	Yes	Yes	No/Yes	MA/NL ²
Western goblin (<i>B. montanum</i>)	Yes	Yes	Yes	No	No/No	No Effect
Stalked moonwort (<i>B. pedunculosum</i>)	Yes	Yes	Yes	No	No/No	No Effect
Northwestern moonwort (<i>B. pinnatum</i>)	Yes	Yes	Yes	No	No/No	No Effect
Giant moonwort (<i>B. yaaxudakeit</i>)	Yes	No	No	No	No/No	No Effect
Bolander's bruchia (<i>Bruchia bolanderi</i>)	Yes	Yes	Yes	No	No/No	No Effect
Pleasant Valley mariposa lily (<i>Calochortus clavatus</i> var. <i>avius</i>)	Yes	Yes	Yes	No	No/No	No Effect
Mountain lady's slipper (<i>Cypripedium montanum</i>)	Yes	Yes	Yes	No	No/No	No Effect
Branched collybia (<i>Dendrocollybia racemosa</i>)	Yes	Yes	Yes	No	No/No	No Effect
Tahoe draba (<i>Draba asterophora</i> var. <i>asterophora</i>)	Yes	No	No	No	No/No	No Effect
Cup Lake draba (<i>Draba asterophora</i> var. <i>macrocarpa</i>)	Yes	No	No	No	No/No	No Effect
Jack's buckwheat (<i>Eriogonum luteolum</i> var. <i>saltuarium</i>)	Yes	Yes	No	No	No/No	No Effect

Species Name	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/Indirect Effects	Determination
Tuolumne fawn lily (<i>Erythronium tuolumnense</i>)	Yes	No	No	No	No/No	No Effect
Brook pocket moss (<i>Fissidens aphelotaxifolius</i>)	Yes	Yes	Yes	No	No/No	No Effect
Blandow's bog moss (<i>Helodium blandowii</i>)	Yes	Yes	Yes	No	No/No	No Effect
Parry's horkelia (<i>Horkelia parryi</i>)	Yes	No	No	No	No/No	No Effect
Hutchison's lewisia (<i>Lewisia kelloggii</i> ssp. <i>hutchisonii</i>)	Yes	Yes	Yes	Yes	Yes/No	MA/NL
Kellogg's lewisia (<i>Lewisia kelloggii</i> ssp. <i>kelloggii</i>)	Yes	Yes	Yes	No	No/No	No Effect
Stebbin's lomatium (<i>Lomatium stebbinsii</i>)	Yes	Yes	Yes	Yes	Yes/No	MA/NL
Broad nerved hump moss (<i>Meesia uliginosa</i>)	Yes	Yes	Yes	No	No/No	No Effect
Elongate copper moss (<i>Mielichhoferia elongate</i>)	Yes	No	No	No	No/No	No Effect
Shevock's copper-moss (<i>M. shevockii</i>)	Yes	No	No	No	No/No	No Effect
Pansy monkey flower (<i>Mimulus pulchellus</i>)	Yes	No	No	No	No/No	No Effect
Veined water lichen (<i>Peltigera gowardii</i>)	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Whitebark pine (<i>Pinus albicaulis</i>)	Yes	No	No	No	No/No	No Effect

¹ AP = Assume species presence for effects analyses.

² MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Wildlife

Mature forest ecosystems in the Hemlock Landscape Restoration project area are well distributed across the project area and host suitable habitats for Forest Service sensitive species. Mature forest patches are fragmented by natural features (rock outcrops, lakes, etc.) and historical land management practices, but currently exhibit a mosaic of canopy layers (1-3 layers) and cover (50-90% canopy cover). The Bailey Ridge area ingress and egress for species relying on contiguous mature forest ecosystems (CSO, NGO, and American marten) is predominantly to the east, towards Pumpkin Hollow. Adequate snags are present in the project area for potential nesting structures; however, there are pockets of excessive down and woody debris and ladder fuels in PACs that place them at risk of stand replacing wildfire. A complete description of suitable habitat for federally listed endangered, threatened, or candidate terrestrial species and Forest Service sensitive species considered in the project area is available in the Hemlock Landscape Restoration Terrestrial Wildlife BA/BE.

California spotted owls and northern goshawks were detected during occupancy and nest success surveys conducted from 2011-2013. Of the seven spotted owl PACs (approximately 1,480 acres) that overlap with the project area, three were determined to be occupied and two were breeding during the survey period. The reproduction attempt of both was successful. The third occupied PAC had a non-breeding pair. In addition, approximately 4,533 acres of CSO HRCA (portions of 10 owl territories) occur in the project area. Three goshawk PACs (approximately 391 acres) partially occur within the project area. One PAC was determined to be occupied and reproductively successful during the survey period.

Baited camera surveys were conducted in project area with a focus to detect target carnivore species (American marten, Pacific fisher, California wolverine). American martens were detected at eight wildlife camera stations from 2012-2013, with multiple individual sightings (two to four) occurring at three stations. No Pacific

fishers or California wolverines were detected during these surveys. Formalized surveys were not conducted for willow flycatcher, great gray owl, fringed myotis, Townsend’s big-eared bat, or pallid bat. Suitable habitat occurs for these species in the project area; and, therefore, presence was assumed for these species for effects analyses.

Federally listed endangered, threatened or proposed terrestrial species and Forest Service sensitive species considered for analyses are included in Table 4. Detailed analysis for the valley elderberry longhorn beetle was not conducted because the Hemlock Landscape Restoration project area was not within the species’ geographic or elevation range, and suitable habitat was not present in or around the project area. Likewise, detailed analyses for the Sierra Nevada red fox was not warranted because there was not sufficient suitable habitat within the project area.

The effects of project proposed activities on the Pacific fisher, California wolverine, American martin, northern goshawk, California spotted owl, willow flycatcher, great gray owl, fringed myotis, Townsend’s big-eared bat, and pallid bat were disclosed in the Hemlock Landscape Restoration EA and Terrestrial Wildlife BA/BE. Overall determinations are provided in Table 4 below. Required consultation with US Fish and Wildlife was completed.

Table 4. Forest Service sensitive wildlife species considered in the project analyses

Species Name	Status	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/ Indirect Effects	Determination
Valley Elderberry Longhorn Beetle (<i>Desmocerus californicus dimorphus</i>)	Threatened	No	No	No	No	No/No	No Effect
Pacific fisher (<i>Pekania pennanti</i>)	Candidate	Yes	Yes	Yes	AP ¹	No/ Yes	MA/NL ²
California wolverine (<i>Gulo gulo luteus</i>)	Candidate, Sensitive	Yes	Yes	Yes	No	No/No	No Effect
American marten (<i>Martes americana</i>)	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Sierra Nevada red fox (<i>Vulpes vulpes necator</i>)	FS Sensitive	Yes	Yes	No	No	No/No	No Effect
Fringed myotis (<i>Myotis thysanodes</i>)	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Townsend’s big-eared bat (<i>Corynorhinus townsendii</i>)	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Pallid bat (<i>Antrosous pallidus</i>)	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Bald eagle (<i>Haliaeetus leucocephalus</i>)	FS Sensitive	Yes	Yes	No	No	No/No	No Effect
Northern goshawk (<i>Accipiter gentilis</i>)	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
California spotted owl (<i>Strix occidentalis occidentalis</i>)	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Willow flycatcher (<i>Empidonax traillii</i>)	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Great gray owl (<i>Strix nebulosa</i>)	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL

¹ AP = Assume species presence for effects analyses.

² MA/NL = MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Aquatic Resources

The project area provides approximately 20 miles of perennial aquatic habitat that sustains some surface flow through the summer. The perennial habitat contains approximately 16.6 miles of fish bearing streams that support self-sustaining

populations of non-native trout (rainbow trout, brown trout). The project area has a high variability in fine sediment. The Middle Fork Mokelumne River and Blue Creek watersheds have a low amount of fine sediment (<14%) and have a large capacity to assimilate sediment influx. Big Meadow Creek showed high levels of fine sediment with five out of six stream reaches measuring pool tail fine sediment amounts above 14%. There is no fine sediment threshold for the Sierra Nevada yellow legged frog; however, effects analyses utilized the fine sediment threshold reported for the Foothill yellow-legged frog of 13% (Bryce et al. 2010).

Sierra Nevada yellow legged frogs are strongly associated with montane riparian habitats. The project area contains approximately 20.2 miles of perennial stream channels in Big Meadow Creek, Middle Fork Mokelumne River, Blue Creek, Hay Gulch, Water Gulch, and Pumpkin Hollow. Known localities of Sierra Nevada Yellow Legged Frog are located approximately 1.0 miles from the project area in Moore Creek (4,600 ft.) and Mattley Meadow. No known yellow legged frog localities occur within habitats which could be affected by project activities.

Yosemite toads occupy high elevation montane meadows and surrounding forest upland. On the Stanislaus National Forest, Yosemite toads are known to occur at approximately 110-120 sites, all above 7,000 feet in elevation. Adults breed in meadows and then travel into the surrounding forest upland over-wintering. The nearest known occupied site by the toad is found approximately five miles east of the project area at Wheeler Lake. No known Yosemite toad localities occur within habitats which could be affected by project activities.

In the Stanislaus National Forest, the western pond turtle is associated with low gradient streams and ponds at elevations from 1,520 to 5,360 ft. The highest elevation riverine population of turtles on Forest occurs at an elevation of 3,720 ft. Two of 18 known occurrences are above 4,000 ft. in pond environments. The Middle Fork Mokelumne River has approximately 510 acres of suitable breeding and dispersal western pond turtle habitat in the project area. Although pond turtles may travel further than 980 feet from aquatic habitat for overwintering purposes, these movements appear to be far less frequent. Since most nesting occurs within 328 ft. of aquatic habitat (Holland 1994, Lovich and Meyer 2002), potential for impacts beyond 328 ft. of suitable aquatic habitat is very low and would likely result in negligible effects to the species. Systematic surveys of the project area were not conducted for pond turtles in all potentially suitable aquatic habitats. As such, species presence was assumed for effects analyses.

Federally listed endangered, threatened or proposed aquatic wildlife species, their associated critical habitat, and Forest Service sensitive species considered for analyses are included in Table 5 Detailed analysis for California red-legged frog, California red-legged frog critical habitat, delta smelt, and Central Valley steelhead, Lahontan cutthroat trout, Limestone salamander, Foothill yellow-legged frog, and hardhead was not conducted because the Hemlock Landscape Restoration project area was not within the species' geographic or elevation range, and suitable habitat was not present in or around the project area. These species were not discussed in greater depth in the Hemlock Landscape Restoration EA.

The effects of project proposed activities on the Sierra Nevada yellow-legged frog, Yosemite toad, and Western pond turtle were disclosed in the Hemlock Landscape Restoration EA and Aquatic Wildlife BA/BE. Overall determinations are provided in Table 5 below. The effects analysis assumes the effective implementation of all BMPs and Standards and Guidelines outlined in Chapter 2. The Hemlock project area does not contain critical habitat for either the Sierra Nevada yellow-legged or the Yosemite toad. Required consultation with US Fish and Wildlife was completed.

Most literature published up to 2007 pertaining to yellow-legged frogs could refer to either *R. muscosa* or *Rana sierrae* (Mountain yellow-legged frog or Sierra Nevada yellow-legged frog). All of this published literature was considered for effects analyses. *Rana sierrae* is the recognized species that occurs on the Stanislaus National Forest.

Table 5. Estimated direct, indirect, and cumulative effects with determination for Federally listed endangered, threatened, or candidate aquatic species and Forest Service sensitive species considered in the Hemlock project analyses

Species Name	Status	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/ Indirect Effects	Determination
California red-legged frog (<i>Rana draytonii</i>)	Threatened	No	No	No	No	No/No	No Effect
California red-legged frog Critical Habitat	Designated	No	No	No	No	No/No	No Effect
Sierra Nevada yellow-legged frog (<i>Rana sierrae</i>)	Endangered	Yes	Yes	Yes	AP ¹	Yes/Yes	MA/LAA ²
Sierra Nevada yellow-legged frog Critical Habitat	Proposed	Yes	Yes	No	No	No/No	No Effect
Yosemite toad (<i>Anaxyrus canorus</i>)	Threatened	Yes	Yes	Yes	AP	Yes/Yes	MA/LAA
Yosemite toad Critical Habitat	Proposed	Yes	No	No	No	No/No	No Effect
Lahontan cutthroat trout (<i>Oncorhynchus clarki henshawi</i>)	Threatened	No	No	No	No	No/No	No Effect
Delta smelt (<i>Hypomesus transpacificus</i>)	Threatened	No	No	No	No	No/No	No Effect
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	No	No	No	No	No/No	No Effect
Limestone salamander (<i>Hydromantes brunus</i>)	FS Sensitive	No	Yes	No	No	No/No	No Effect
Foothill yellow-legged frog (<i>Rana boylei</i>)	FS Sensitive	Yes	No	No	No	No/No	No Effect
Hardhead (<i>Mylopharodon conocephalus</i>)	FS Sensitive	No	No	No	No	No/No	No Effect
Western pond turtle (<i>Actinemys marmorata</i>)	FS Sensitive	Yes	Yes	Yes	AP	No/Yes	MA/NL ³

¹ AP = Assume species presence for effects analyses.

² May affect and is likely to adversely affect.

³ MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

- b) No Impact. The project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- c) No Impact. The Project activities would not involve any activity that would restrict the movement of fish or wildlife or impede the use of native wildlife nursery sites.
- d) No Impact. The Project would not interfere or conflict with any local ordinances or policies protecting biological resources. The Project activities would be in compliance with existing Calaveras County General Plan policies related to biological resources (CCGP 2004).
- e) No Impact. The Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- f) No Impact. The Project would not interfere or conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Mitigation Measures

- No mitigation is required or warranted.

	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 as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in §21074?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Heritage resource surveys have identified more than 100 archeological sites within the Hemlock Landscape Restoration project area. Approximately 80% of these sites represent Native American prehistoric land use, represented by seasonal villages, temporary camps, and bedrock mortar milling locations. The Miwok and Washoe still actively use the Forest for gathering traditional food and medicinal plants, hunting, and conducting ceremonies. Thus, some of the proposed landscape and habitat restoration areas included in this analysis are significant heritage resources. The additional 20% of these sites represent historic land uses such as European American emigration, mining, ranching, and forestry practices from ca 1846 to present. These sites represent historic ditches, pits, trails, roads, buildings, camps, arbor-glyphs (tree carvings), and historic inscriptions. Few sites retain evidence of both prehistoric and historic land use. Previous fire suppression activities, forestry practices, and recreational activities have also left a mark on the landscape. Some of these practices have fostered resource preservation, while others have been addressed in this analysis to improve long-term preservation and management of heritage resources within the project area. Heritage sites provide many opportunities for interpretation and public appreciation.

All heritage resources that have not been evaluated for eligibility to the National Register of Historic Places are being considered eligible for the purposes of this analysis.

Explanations

a-b) No Impact. Forest Restoration and Scenic Corridor

Project design and management requirements for Forest Restoration actions were specifically included to eliminate visual demarcation of heritage sites, preserve site integrity, and promote traditionally used plants. Mastication would not be allowed within the known boundaries of heritage resources. Hand treatments within heritage sites would be directed under the guidance of a Forest or District Archeologist in accordance with Programmatic Agreements between Stanislaus National Forest and the California State Historic Preservation Office. As such, direct effects to heritage resources from Forest Restoration actions would be negligible.

No Impact. Fuels Reduction

Fuels reduction within the vicinity of heritage resources is intended to reduce the intensity and duration of wild land fires, thus reducing the potential damages to heritage sites. Fuels thinning would be implemented in accordance with established management requirements and pre-burn site preparation as determined appropriate by a Forest or District Archeologist. Pre-burn condition assessments and preparation would guide the implementation process for this proposed action. For example, in sensitive heritage areas vegetation would be carried, not dragged, out of known site boundaries and placed in burn piles. Mastication would not be permitted within the boundaries of known heritage sites. In light of these management requirements, actions proposed for Fuels reduction would have negligible effects.

No Impact. Mature Forest Wildlife Habitat Restoration

Heritage considerations for Mature Forest Wildlife Habitat Restoration are similar to those proposed for Forest Restoration and Fuels Reduction. Restoration of wildlife habitat and a healthy ecosystem further support heritage values and traditional indigenous lifeways. Due to the nature of heritage resources and natural events that affect traditional gathering practices, Stanislaus National Forest heritage staff would continue to work with tribal members during implementation and monitoring of proposed treatments. Effects of these actions on heritage resources would be negligible.

No Impact. Streams, Riparian Areas, Special Aquatic Feature and Aspen Restoration

Restoration of waterways and aquatic wildlife supports heritage values and traditional lifeways. Barrier placement has been designed to favor the preservation of heritage features rather than detrimentally impact or bisect them. Watershed restoration and removal of encroaching conifers within meadows further promotes wildlife and traditionally used plant habitats. Additional site specific tribal consultation would be incorporated into project implementation. Effects of these actions on heritage resources would be negligible.

- c) No Impact. As part of the Hemlock EA NEPA process, the Forest Service mailed scoping letters to Tribes interested in this project, including the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe Chicken Ranch Tribal council, and the Tuolumne Band of Me-Wuk Indians. In addition, the project was discussed at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015.
- d) No Impact. The project would not disturb any human remains, including those interred outside of formal cemeteries.
- e) No Impact. No geologic strata that would contain paleontological resources exist at the site.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Geological history and climate have defined the diversity of soil types found in the Hemlock Landscape project area. Abundant sign of glacial moraine features and glacial drift are found on the south side of the project area along Highway 4. The upper basins of the Mokelumne and Blue Creek drainages show less evidence of glacial action, but likely were influenced by the older glacial periods.

The dominant soil series mapped in the Hemlock area include the Windy, McCarthy, and Gerle family soils (USDA 1995). Windy and McCarthy soils develop within the volcanic mudflow along the Sierra west slope. The Gerle typically indicates granitic and glacially influenced terrain, but can have some volcanic material mixed in. Overall, soils generally have moderately deep (20 to 60”) to shallow depth (< 20”). Clay accumulation is very low; most soils have rapid water infiltration rates, and very weak soil structure and cohesion. On the landscape, soils in valley gorges and narrow stream bottoms typically consist of granitic shallow soils. Up the hillslope, soil depth deepens where colluvium is able to accumulate. These areas host the most productive mature forest stands with the best soil condition. Farther upslope, soil types and depth depend on the orientation of volcanic mudflows with the slope, and rock contact between granitics and mudflow. Upper slopes form broad ridges of shallow soils that break to bedrock outcrop of volcanics (Archer and Moser 2014). For example, the parent material is dominantly extrusive igneous or volcanic rocks that were deposited as mudflows on Mattley and Bailey ridges. These volcanic rocks form a hard surface that parallels the ridges in much of the upper catchment of Blue Creek, and outcrops are visible on ridges and side slopes.

Explanations

- a) No Impact. This Project would not expose people or structures to potential substantial or adverse effects.
 - i) California Geological Survey does not list the County of Calaveras as a county affected by the Alquist-Priolo Earthquake Fault Zone. According to the Fault Activity Map of California and Adjacent Areas, no active faults are located on the Project site.
 - ii) The Project would not expose people or structures to seismic ground shaking, and does not occur in an area of active seismicity. Additionally, the Project does not involve the construction of structures.
 - iii) The Project would not create ground failure or liquefaction.
 - iv) The Project would not create landslides.
- b) No Impact. The project will not result in substantial soil erosion or the loss of topsoil.
- c) No Impact. The Project is not located in an area prone to on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse; nor would activities increase the likelihood of creating on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse in the Project area.
- d) No Impact. The project is not located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), and does not create substantial risks to life or property
- e) No Impact. The Project would not introduce septic tanks or alternative wastewater disposal systems that require soil infiltration.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS: Would the project:				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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 type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Greenhouse Gases (GHGs) are present in the atmosphere naturally, are released by natural and anthropogenic (human-caused) sources, and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change:

- ▶ Carbon dioxide (CO₂)
- ▶ Methane (CH₄)
- ▶ Nitrous oxide (N₂O)
- ▶ Hydrofluorocarbons
- ▶ Perfluorocarbons
- ▶ Sulfur hexafluoride

Assembly Bill 32 (AB 32) established legislation in September 2006 for the State of California to combat human-induced GHGs and promote the development and use of energy-efficient technologies. In addition, AB 32 established a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gas emissions. The law requires a reduction of carbon emissions in California to 1990 levels by 2020. CARB is the primary state agency designated to implement the requirements outlined in AB 32.

- a) No Impact. Direct effects of forest restoration and fuels reduction treatments include the removal of carbon from the forest carbon cycle in the form of approximately 19.2 million board feet of sawlogs and removed biomass. Carbon from this harvested material would be stored in wood products until they decompose or are burned, ultimately releasing the carbon back to the atmosphere. Additional activity generated fuels may be left in the woods and would slowly emit

carbon back to the atmosphere. Other emissions include smoke, dust, and greenhouse gases from prescribed fire, pile burning, and vehicle and equipment use during implementation.

While the project would reduce a long-term store of carbon through vegetation treatments, the stability of the existing stores would be increased by reducing the risk of large wildfire. This trade-off is in agreement with Stephens et al. (2009) and Hurteau and North (2009) who conclude that when weighing the risk of reducing existing carbon stocks in the short-term by thinning forests and reducing fire risk, compared to allowing forests to grow untreated with higher amounts of carbon storage but high risk of wildfire, the more prudent approach is to reduce fire risk. These studies and subsequent studies (Hurteau and North 2009; North and Hurteau 2010) suggest creating a more stabilized, long-term store for carbon in forests with an active fire regime by emphasizing low density stands dominated by large, fire-resistant trees. Treatments which retain or protect large trees are believed to allow for more rapid recovery of carbon.

These studies also found that initial emissions from fuels treatments could be recovered within a decade or more of growth due to the increase in growth of residual trees. Burning was found to be a large source of emissions, as compared to only mechanical treatment, but was still small compared to high severity wildfire which converted most live carbon stores into decomposing carbon sources (North and Hurteau 2011). Treatments which reduce densities of small diameter trees as well as some intermediate, fire-sensitive trees were found to be most effective in reducing losses during burning and enabling rapid carbon recovery (Millar et al. 2007, Hurteau and North 2010).

Indirect effects of treatments would be beneficial to the landscape in terms of emissions and resilience to climate change impacts. Reduced stand densities would increase residual tree vigor and growth, reducing mortality and increasing carbon storage rates of residual trees. Development of larger trees (critical to long-term carbon storage in forests) would be enhanced, decreasing risk of mortality due to drought, insects, disease, or wildfire. Restoration treatments increase landscape resilience to disturbances and help maintain forested conditions which are essential to the ecosystem carbon cycle. Retention of preferred fire-resistant pine species would increase diversity within stands currently dominated by fire-sensitive fir species. Pine species would be better adapted for expected changes in environmental conditions (warmer and drier) and would help maintain productivity while maladapted species would suffer from increased drought stress, insect outbreaks, disease infestations, and sensitivity to fire (Rehfeldt et al. 2014).

- b) No Impact. Project construction activities would be temporary and minor, and therefore have minimal effects on AB 32 greenhouse gas emission reduction goals. For Project operations, long-term maintenance activities would require minimal vehicle miles traveled, since the proposed Project maintenance would be incorporated into the existing UMRWA maintenance schedule, and as mentioned above, the Project would reduce long-term GHGs from catastrophic wildfire.

Therefore, the Project would not hinder or delay California’s ability to meet the reduction targets contained in AB 32.

Mitigation Measures

- No mitigation is required or warranted.

	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 type="checkbox"/>	<input checked="" type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanations

- a) No Impact. All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. Forest restoration and fuels reduction treatments would reduce fuel loading, reduce vegetation density, and create effective fuel breaks. This would improve the safety of forest visitors, nearby communities, and fire fighters by reducing the severity and intensity of future fires. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance.

- b) No Impact. See discussion above.
- c) No Impact. There are no schools within a quarter mile of the Project.

- d) No Impact. The Project site is not included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.
- e) No Impact. There is no airport located in the Project vicinity.
- f) No Impact. There are not airstrips located in the Project vicinity.
- g) No Impact. The Project would not interfere with an adopted emergency response plan or emergency evacuation plan.
- h) No Impact. The project is designed to reduce the threat of wildland fires.

Mitigation Measures

- No mitigation measures are required or warranted.

	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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structure to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The watershed analysis for the Hemlock Landscape Restoration project focuses on four HUC 7 subwatersheds where most project activities would occur: Upper Blue Creek, Hells Kitchen, Solinsky Crossing-Upper Middle Fork Mokelumne River, and Ganns-Middle North Fork Stanislaus River HUC 7 subwatersheds. Given the small proportion (2% and 0.4% of their area, respectively) of treatment acreage and the relatively low impact of proposed

project treatments (e.g., forest thinning, prescribed fire) in the Headwaters Upper South Fork Mokelumne River and East Forest Creek HUC7 watersheds, these watersheds were not included in detailed effects analysis.

Data indicate that stream conditions within the watershed are generally good overall. Overall hillslope conditions on NFS land in the watershed are stable, have high soil ground cover, and do not show evidence of widespread surface erosion. Hillslopes within logged areas on private land were not examined although it is assumed that BMPs were implemented as required by the California's Forest Practice Rules and offsite erosion and sediment movement was mitigated. Widespread hillslope sources of sediment from private land were not evidenced in the stream survey. Road densities in these watersheds are high but evidence of adverse cumulative effects resulting from the road system was not apparent in the field surveys. Special aquatic features vary widely in conditions, but conifer encroachment, altered meadow hydrology, and recreation and livestock disturbance exist at many sites.

Explanations

a) No Impact. Direct and Indirect Effects

Erosion/Sedimentation Potential

Several proposed actions have the potential to increase erosion and sedimentation. The use of mechanized equipment (e.g., feller-buncher, rubber tire skidder) for vegetation management activities has the potential to cause short-term (i.e., 1 to 2 years) increases in accelerated erosion and stream sedimentation that could adversely affect water quality.

Vegetation pile burning has the potential to result in localized increases of erosion and sedimentation. However, piles are generally small and dispersed throughout the project area. Given the relatively small, discontinuous areas of pile burning and the implementation of BMPs, this activity is not expected to result in any significant increases in erosion and sedimentation.

Broadcast burning is designed to burn at low-intensities to retain adequate residual ground cover (i.e., duff and litter) in order to protect mineral soil from erosion. Elliot et al. (2010) presented results of numerous studies where measured erosion rates after low-intensity prescribed fire were shown to be very low compared with moderate and high severity wildfires. Although prescribed fire is intended to produce low-intensity and low-severity burns, the potential exists to reduce soil ground cover below intended levels which would cause soil erosion and sediment delivery to streams.

Road treatments include maintenance, reconstruction, closure, decommissioning, and new construction. Four large culverts would be replaced to improve AOP. In addition, barriers may be placed along roads to prevent unauthorized motorized travel and route pioneering. Other related activities include reconstruction and improvement of an existing campground, construction of a new OHV staging parking area, reconstruction of motorized and non-motorized trails and construction of new ones. These activities involve ground disturbance and have the potential for

producing short-term, localized increases in accelerated erosion and sediment delivery to streams. Reconstruction of stream crossings has the potential to result in short-term increases in sedimentation and turbidity in those creeks due to the necessity of equipment operating within and near the channel along with the removal and replacement of large amounts of fill material. Sediment eroded from the road prism is highest during the first 1 to 2 years following construction activities, after which time erosion rates sharply decrease (Megahan 1974, Ketcheson and Megahan 1996).

Channel restoration using mechanized equipment may occur in up to four meadows (IDs 539, 541, 547, 548). Mechanized equipment use for these restorations has the potential to increase stream sedimentation and turbidity and potentially impact water quality at the stream-reach scale in the short-term. It is expected that sedimentation may increase the first several years after project implementation as the channel adjusts to a stable form and then subsequently decrease as vegetation becomes established. In addition to implementing BMPs, the project would comply with all other applicable state and federal permitting requirements (e.g., 404 U.S. Army Corps of Engineers Dredge and Fill permit; 401 State Water Quality Certification).

The repair of headcuts in meadows and small gullies in plantation areas has limited potential to result in increased erosion and sedimentation due to the minimal amount of ground disturbance that would result. Structures (e.g., check dams /energy dissipaters) would be constructed to stabilize and prevent each headcut from continuing to migrate upstream. Most structures would be built by hand using small boulders; however, mechanized equipment may be used where needed for headcuts or gullies that are too large to repair by hand.

A comprehensive suite of BMPs (Chapter 2.05) would be implemented during project activities to ensure that any potential adverse impacts to water quality would be avoided or minimized to minor and/or short-term levels. Monitoring performed on the Stanislaus National Forest and throughout the region indicates that BMPs are implemented at high rates and are highly effective in preventing increased erosion and sedimentation from vegetation management, prescribed fire, road, and restoration activities when implemented. It is expected that these treatments would result in only minor and/or short-term, localized increases in erosion and sedimentation and would not adversely affect beneficial uses. In addition, the Forest has adaptive mechanisms in place to identify and mitigate threats to water quality that may arise from inadequate BMP implementation or other factors.

Water Quality and Stream Temperature

The use of mechanized equipment during the project implementation has the potential to increase the risk of spills and leaks of petroleum products (e.g., fuel, oil, hydraulic fluid) into water courses. BMPs would be implemented during the project to minimize the risk of contamination to water.

Stream water temperatures have the potential to increase slightly due to reductions in overstory canopy as a result of vegetation management prescriptions; this effect

would decrease over time as the canopy increases due to tree and shrub growth. For small forested streams, research has shown that elevated water temperatures resulting from a reduction in shade generally decrease to pre-disturbance water temperature within 500 feet downstream of the affected reach (Zweiniecki and Newton 1999); therefore, beneficial uses would not be adversely affected.

Streams and Special Aquatic Features

Stream flows could potentially be increased for several years after the project due to vegetation removal resulting in decreased evapotranspiration potential, increase in snow accumulation, and delay in melting within forest gaps (Stednick 1996). This effect would be expected to diminish over time as vegetation grows.

Decommissioning roads within meadows would improve infiltration, reduce erosion, and result in an overall improvement in meadow hydrologic function. Channel restoration and headcut/gully stabilization would result in a reduction in erosion and sedimentation over the long-term. In meadows with channel restoration, an increase in the quantity and duration of dry season base flows is expected as the water table rises in response to the higher base level of the restored channel. The presence and extent of obligate riparian meadow vegetation would likely increase. All of these factors would contribute to an overall improvement in water quality and watershed function.

Removal of conifers around SAFs would create wetter conditions and a subsequent increase in extent and vigor of wet meadow vegetation. Placement of barriers around SAFs would result in less disturbance (e.g., pocking/trailing, streambank disturbance, rutting) to these features as livestock and motor vehicle use would be excluded. Placement of new water troughs for livestock is expected to result in less disturbance to unfenced SAFs and streams. Overall improvement in SAF condition and function is expected.

Cumulative Effects

Cumulative watershed effects (CWE) analysis consists of two steps: (1) an office evaluation to determine the risk of cumulative effects using a predictive model and watershed history data, and (2) field evaluation of stream-course cumulative effects indicators. The CWE accounts for constant features (e.g., roads and buildings) and past, ongoing, and future land management actions in the four watersheds within the project area. CWE analysis converts constant features and actions into a numerical rating referred to as equivalent roaded area (ERA). The CWE also identifies an ERA threshold that, if exceeded or closely approached, would predict the risk of future negative impacts to water quality and watershed condition by management activities. Activities evaluated included land use (e.g., roads and other infrastructure, residential development, logging, construction) and disturbance events (e.g., wildland fires). The temporal scale of the CWE analysis is a 10 year period.

The following assumptions were used to estimate Hemlock project implementation: Mechanical vegetation treatments would be implemented between 2016 and 2021, and divided into three timber sale areas. Prescribed fire treatments (pile burning,

underburning) would occur in between 2019–2025. Road closure and decommissioning would occur after vegetation treatments are completed.

Table 6. Annual percent equivalent roaded acreage (ERA) within watersheds for the proposed action

Watershed	Annual % ERA									
	Threshold	2016	2017	2018	2019	2020	2021	2022	2023	2024
Hell's Kitchen	10-12									
Alternative 1 (Proposed Action)		3.00	3.81	4.49	4.11	3.82	3.52	3.25	2.97	2.72
Ganns Middle North Fork Stanislaus River	10-12									
Alternative 1 (Proposed Action)		2.31	2.32	2.28	2.61	2.92	3.11	2.85	2.60	2.43
Upper Blue Creek	12-14									
Alternative 1 (Proposed Action)		3.76	4.06	4.22	4.87	5.40	4.85	4.40	3.97	3.47
Solinsky Crossing-Upper Middle Fork Mokelumne River	12-14									
Alternative 1 (Proposed Action)		2.43	3.19	3.73	3.51	3.93	4.28	4.55	4.19	3.79

Cumulative effects estimated by the ERA modeling indicate that estimated CWE for Alternative 1 (Proposed Action) are well below the threshold of concern for all project watersheds (Table 6). Field evaluation validated the ERA model prediction that the proposed action, considered along with past, present and reasonably foreseeable future actions in the project watersheds, was not expected to result in adverse cumulative watershed effects.

Alternative 1 would achieve all watershed goals and objectives; water quality, beneficial uses, and watershed condition would be maintained. BMPs to protect water quality would be utilized, and long-term watershed stability would be improved. Alternative 1 is consistent with all RCOs and would help to further the goals of the Aquatic Management Strategy.

- b) No Impact. The Project does not involve withdrawals or additions to groundwater.
- c) No Impact. Project activities would not substantially alter a stream course.
- d) No Impact. Refer to sections a) above.
- e) No Impact. Refer to sections a) above.
- f) No Impact. Refer to sections a) above.
- g) No Impact. Refer to sections a) above.
- h) No Impact. The project would not place within a 100-year flood hazard area structures which would impede or redirect flood flows.

- i) No Impact. The Project would not increase the exposure of people or structures to flooding as a result of the failure of a levee or dam.
- j) No Impact. The Project does not impact any water bodies that could result in seiche, tsunami, or mudflow events.

Mitigation Measures

- No mitigation measures are required or warranted.

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

Environmental Setting

The Stanislaus National Forest “Forest Plan Direction” (USDA 2010) presents the current Forest Plan management direction, based on the original Forest Plan as amended. The Forest Plan Direction includes forest wide standards and guidelines (p. 33-64) and applicable management area direction for General Forest (p. 161-164) and Wildlife (p. 123-127), Developed Recreation or Administration Site (p. 165-182), Near Natural (p. 119-122), and Scenic Corridor (Retention and Partial Retention) (p. 155-160).

Sierra Nevada Framework Land Allocations as defined in the Forest Plan occurring in the project area include: General Forest, Old Forest Emphasis Areas, California Spotted Owl

Protected Activity Centers (PAC), Northern Goshawk PAC, California Spotted Owl Home Range Core Areas (HRCA), Wildland Urban Intermix (WUI): Defense and Threat Zones, and Riparian Conservation Areas (RCA). The Forest Plan Direction includes desired conditions, management intents, and management objectives for each land allocation (p. 183-196).

Explanations

- a) No Impact. The Project activities would not divide a community.
- b) No Impact. The Project would not require a change in zoning of the Project site, and would therefore not conflict with the Calaveras County General Plan (CCGP 1996).
- c) No Impact. The Project would not interfere or conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Mitigation Measures

- No mitigation measures are required or warranted.

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

Environmental Setting

The project does not involve any mineral resource extraction.

Explanations

- a) No Impact. Because mineral resources are not known to exist on or immediately adjacent to the Project site, the Project would not affect known mineral resources that could be of value to the region and the residents of the state.
- b) No Impact. Because mineral resources are not known to exist on or immediately adjacent to the Project site, the Project would not result in the loss of availability of a locally important mineral resource recovery site.

Mitigation Measures

- No mitigation measures are required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Project area is characterized as a rural and natural environment on the Stanislaus National Forest with open space and forested environments. The noise environment of the Project area is defined primarily by motor vehicles (e.g., automobiles, buses, trucks, and motorcycles) utilizing Highway 4 and nearby level 3 Forest Service roads which are both main arterial roadways.

Noise-sensitive land uses, or sensitive receptors, are generally defined as locations where people reside or locations where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, libraries, and certain types of recreational uses. Motor vehicle noise from nearby roads is the primary influence for noise levels. There are no sensitive receptors, such as residences, in the project vicinity.

In addition, proposed activities are routine in nature, have been implemented in the past in similar forest conditions, employ standard practices and protection measures, and their effects are known. The effect on the human environment from the proposed actions is not uncertain and does not involve unique or unknown risks. The proposed activities have all been previously implemented with known effects.

Explanations

- a) No Impact. Project generated noise impacts would occur in rural and natural areas.
- b) No Impact. Power tools and equipment would be utilized during Project activities. These activities would be temporary, and primarily occur during daylight.

- c) No Impact. The Project activities are temporary and would not cause permanent increases in ambient noise levels in the Project vicinity.
- d) No Impact. Project activities would occur near Highway 4 and level 3 Forest Service roads and would not result in substantial increases in ambient noise levels. During restoration activities, there would be temporary noise increases from the use of power tools, equipment, and other non-powered hand-tools. The UMRWA would require the contractor to comply with all applicable noise and occupational safety standards as defined in the contract specifications, and to protect workers and other persons from the health effects of increased noise levels from the use of equipment. Compliance with contract specifications would reduce potential noise-related concerns at the construction site, and therefore would have no impact.
- e) No Impact. There are no public airports within two miles of the Project.
- f) No Impact. There are no private airstrips in the vicinity of the Project.

Mitigation Measures

- No mitigation measures are required or warranted.

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

Environmental Setting

No portions of the Project area include residential property. The Project would not alter the number or type of residential units that exist, nor would it introduce land use or changes that would attract new residents creating a need for additional housing. No change to sewer capacity would result from implementation of the Project.

Chapter 3.05 (Economics) of the Hemlock EA describes and evaluates economic growth inducing impacts. No population growth inducing impacts are expected since NFS lands are not available for urbanization. Chapter 3.05 also describes employment and income opportunities related to the alternatives considered in detail.

Explanations

- a) No Impact. The Project would not directly or indirectly induce substantial population growth in the area.
- b) No Impact. The Project would not result in displacing or replacing existing housing.
- c) No Impact. The Project would not result in the displacement of any people, necessitating the construction or replacement of housing anywhere.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

The Project site is located within an unincorporated area of Calaveras County, and is within the jurisdiction of the Calaveras County’s Sheriff’s Department and Fire Protection District. The Project site is located on Stanislaus National Forest and no residential homes and therefore school district boundaries are associated with National Forest System lands.

Explanations

Fire Protection: No Impact. The Project would not contribute to any change in population, traffic circulation, or other land use modifications that would impact local fire protection.

Police Protection: No Impact. The Project would not impact police protection, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact local police protection.

Schools: No Impact. The Project would not impact existing school facilities, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact the local school districts.

Parks: No Impact. The Project would not impact existing parks, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact local parks.

Other Public Facilities: No Impact. The Project would not impact other public facilities, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact the local public facilities.

Mitigation Measures:

- No mitigation is required or warranted.

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

Environmental Setting

There will be no expansion or construction of recreation facilities during project activities. Proposed campsite improvements at Big Meadow Campground would better define areas where people can recreate without inadvertently impacting heritage resources. These actions promote responsible heritage resource management and stewardship. The same is true for trail reconstruction and the establishment of designated parking areas where no heritage resources would be impacted by these recreational uses. However, the actions would not impact the recreation facility.

Dispersed recreation occurs throughout the project area. The Big Meadow Campground improvements are limited to conifer removal. Vegetation thinning near dispersed campsites could encourage users to increase the footprint of existing campsites by parking vehicles farther off road or by other means. Thinning near campsites could also lead to decreased privacy and a temporary reduction in scenic quality (see Hemlock Landscape Restoration EA, Section 3.10 Recreation).

Explanations

- a) No Impact. The Project would not affect the use of nearby parks or other recreation facilities.
- b) No Impact. No public recreational facilities are warranted or proposed.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, and other applicable laws and guidance.

Explanations

- a) No Impact. Project activities would generate temporary restoration activity-related traffic, including: 1) passenger vehicles transporting field and inspection workers to and from the site, and 2) heavy trucks/haulers accessing the site to deliver materials and to remove debris. Additionally, Project equipment would be staged at the Project site reducing the number of equipment accessing the site on a daily basis.
- b) No Impact. As discussed in section a) above, restoration-related generated traffic would be temporary in nature. No intersections are expected to operate at an unacceptable LOS as a result of this Project. Project operations would not increase traffic on local roadways.

- c) No Impact. The Project would not affect air traffic patterns.
- d) No Impact. The Project would not alter existing roadways, and therefore would not increase hazards due to a design feature or incompatible use.
- e) No Impact. The Project would not result in inadequate emergency access.
- f) No Impact. The Project would not conflict with adopted policies, plans, or programs supporting alternative transportation.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Project activities would not require power service to be terminated at any time.

Explanations

- a) No Impact. The Project would not involve wastewater treatment requirements.
- b) No Impact. The Project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.
- c) No Impact. The Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities.
- d) No Impact. The Project would not increase water supply demand or require new or expanded water supply entitlements.
- e) No Impact. The Project would not affect wastewater treatment.
- f) No Impact. The Project would not increase solid waste disposal needs.
- g) No Impact. The Project would comply with federal, state, and local statutes and regulations related to solid waste.

Mitigation Measures

- No mitigation is required or warranted.

	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 degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 type="checkbox"/>	<input checked="" type="checkbox"/>
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The UMRWA is proposing to implement the Pumpkin Hollow Restoration Project (Project). The Project is located in Calaveras County, on the boundary between the foothills and the western slopes of the central Sierra Nevada mountain range and at the eastern edge of the Sacramento Valley, at an elevation ranging from approximately 6,100 feet to 7,300 feet.

Explanations

- a) No Impact. The Project will not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.
- b) No Impact. The Project does not have impacts that are individually limited, but cumulatively considerable.
- c) No Impact. The Project has no environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

The National Environmental Policy Act (NEPA) requires agencies to assess the environmental effects of a proposed agency action and any reasonable alternatives before making a decision on whether, and if so, how to proceed. The California Environmental Quality Act (CEQA) applies to projects of all California state, regional or local agencies, but not to Federal agencies. Its purposes are similar to NEPA. They include ensuring informed governmental decisions, identifying ways to avoid or reduce environmental damage through feasible mitigation or project alternatives, and providing for public disclosure (CEQA Guidelines, 15002, subd. (a)(1)-(4)).

The CEQ regulations for implementing NEPA encourage cooperation with state and local agencies in an effort to reduce duplication in the NEPA process (40 CFR 1506.2). The CEQ regulations further provide agencies with the ability to combine documents, by stating that “any environmental document in compliance with NEPA may be combined with any other agency document to reduce duplication and paperwork” (40 CFR 1506.4). Furthermore, if an existing document cannot be utilized, portions may be incorporated by reference. Like NEPA, CEQA encourages cooperation with Federal agencies to reduce duplication in the CEQA process. In fact, CEQA recommends that lead agencies rely on a Federal NEPA document “whenever possible,” so long as it satisfies the requirements of CEQA (Cal. Pub. Resources Code, 21083.7).

The following NEPA Finding of No Significant Impact summarizes the environmental impacts of the Hemlock EA and the proposed project is a subset of this larger Hemlock project. The proposed Project would include BMPs and management requirements designed to reduce all environmental effects to less than significant and no impact. For the factors of aesthetics, biological resources, cultural resources, geology and soils, hydrology and water quality, and hazardous materials, all impacts would be reduced to below a level of significance.

NEPA Finding of No Significant Impact

Hemlock Landscape Restoration Project, 2016

Context

The Hemlock project is a site specific action that that by itself does not have international, national, regional, or statewide importance. The Stanislaus National Forest includes 898,000 acres of NFS lands. This project, located on the Calaveras Ranger District, proposes treatment on approximately 9,756 acres within the 14,118 acre project planning area.

Intensity

The following ten elements of impact intensity address the potential significance of project effects.

1. Impacts that may be both beneficial and adverse.

Direct, indirect and cumulative effects were analyzed for the action alternatives and the no action alternative. The project was designed to avoid or minimize environmental harm. The effects of implementing either action alternative were very similar, and are summarized as follows:

- The project may affect, and is likely to adversely affect, the Sierra Nevada yellow-legged frog and the Yosemite toad, but is not likely to jeopardize the continued existence of these species (3.02 Aquatics).
- Project implementation would reduce a long-term carbon store by removing or burning trees and other vegetation; however, the stability of remaining carbon stored in trees would be increased by reducing the risk of large wildfire (3.03 Climate Change).
- The project would have negligible or beneficial effects on heritage resources (3.04 Cultural Resources).
- The project would have a positive effect on the overall economic activity in the local area. This project would help provide stability and revenue to the manufacturing industry, forest products industry, transportation, and indirect industries (housing, food, education, etc.) (3.05 Economics).
- The project would reduce the risks of catastrophic wildfire and provide areas needed for safe fire suppression (3.06 Fuels).
- Through the implementation of project management requirements, there is a low risk of establishment and expansion of noxious weeds by the project (3.07 Invasive Species).
- The project may increase the need for range allotment administration through increased rangeland infrastructure. Overall the project is expected to increase the ecological health of forest and rangelands in the project area (3.09 Range).
- Project activities could cause short-term, minor disruption to recreational activities within the project area, but are expected to result in the long-term sustainable, accessible, safe, and functional recreational opportunities (3.10 Recreation).
- The project would reduce tree density in key locations resulting in increased resilience to insects, disease, wildfire, and drought (3.13 Vegetation).
- The project would enhance the scenic quality associated with the Highway 4, National Scenic Byway (3.14 Visual Resources).
- The project may result in short-term increases in erosion and sedimentation; however the project would implement a comprehensive suite of Best Management Practices (BMPs) that would greatly reduce this risk. The project is expected to result in long-term reduced erosion and sedimentation, improved special aquatic feature condition and function, and overall improvement in water quality (3.12 Soils; 3.15 Watershed).
- The project may affect individuals and/or habitat, but would not result in a loss of viability or a trend towards federal listing for the Forest Service Sensitive terrestrial and aquatic wildlife species, and sensitive plants (3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife). Likewise, the project would not alter the existing trend for Management Indicator Species or habitats across the Sierra Nevada Bioregion (3.08 Management Indicator Species).

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

All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. Forest restoration and fuels reduction treatments would reduce fuel loading, reduce vegetation density, and create effective fuel breaks. This would improve the safety of forest visitors, nearby communities, and fire fighters by reducing the severity and intensity of future fires. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Heritage resources of interest are located within or adjacent to proposed treatment areas. Proposed activities would result in negligible or beneficial effects on these resources (3.04 Cultural Resources). No other unique characteristics or ecologically critical areas such as park lands, prime farmlands, wetlands, exist within the project area. Ecologically critical areas in or near the project area include California spotted owl and northern goshawk PACs, and areas inhabited by sensitive plant and animal species. Project design features will protect these critical habitats from disturbance.

All action alternatives would: enhance the ecological health of forests, aspen stands and meadows, special aquatic features and streams, and rangelands by reducing susceptibility to insect, diseases, and drought-related mortality; reduce future fire intensity and severity; improve watershed condition by reducing sediment from the road system and reducing stressors to aquatic systems; and, maintain and enhance important wildlife habitat in California Spotted Owl PACs and HRCAs.

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

There is not substantial scientific dispute as to the size, nature, or effects of action alternatives.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

Proposed activities are routine in nature, have been implemented in the past in similar forest conditions, employ standard practices and protection measures, and their effects are known. The effect on the human environment from the proposed actions is not uncertain and does not involve unique or unknown risks. The proposed activities have all been previously implemented with known effects.

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

Neither action alternative would establish a precedent for any future actions with significant effects. The proposed treatments are not new or unique in type, size, or intensity and are consistent with all laws, regulations, and policies including the Forest Plan, as amended (USDA

2010). This decision only applies to the project area and does not represent a decision in principle about a future consideration. Any future action not analyzed in this EA would be analyzed separately and on its own merits at the time it is proposed in the future.

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

A cumulative effects analysis was completed separately for each resource area and is discussed within the respective specialist reports. Specialists considered the effects of the proposed action along with the effects of past, present and reasonably foreseeable future actions (both private and public) to determine if any cumulatively significant effects may exist. The spatial and temporal boundaries for the cumulative effects analyses varied among resources. Each of the specialist's cumulative effects analyses determined that implementation of the action alternatives would not result in significant adverse cumulative effects (Chapters 3.02 - 3.17).

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

The project would not affect any scientific resources. Potential effects to heritage resources are discussed in Chapter 3.04 (Cultural Resources) and in the Heritage Resource Report. The Forest informed 5 federal and state recognized tribes regarding the scope of this project. The Miwok and Washoe still actively use Stanislaus National Forest for gathering traditional food and medicine plants, hunting, and conducting ceremonies. In addition to public scoping efforts made to the general public, the scoping package for this project was mailed to the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe Chicken Ranch Tribal Council, and the Tuolumne Band of Me-Wuk Indians with cover letters dated June 16, 2015. This project was presented at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015. Presentations were made to describe and solicit information regarding the actions being considered at each of these meetings and Forest Service contact information was provided. Copies of a public scoping package were provided to all tribal participants at the 2015 meeting. Representatives from Tuolumne Band of Me-Wuk Indian cultural resources group attended a site visit on July 29, 2015 to discuss the Hemlock project and other projects from the June 1, 2015 meeting. A site visit on August 10, 2015 with the Tribal Historic Preservation Officer for the Washoe Tribe of Nevada and California discussed proposed actions associated with the Hemlock project. Consultation site visits included trips to campgrounds, meadow habitats, and significant viewsheds within the proposed area. Heritage site preservation and traditional gathering areas were discussed, especially in regards to proposed recreation site enhancements, trail construction, and interpretive exhibits. No written comments have been received but project discussions during meetings, site visits, and phone calls have been documented and incorporated into project management requirements. Due to project design and management requirements, no direct, indirect, or cumulative effect on heritage resource sites are anticipated (Cultural Resource Management Report 05-16-2278, Aug 2015).

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

As a result of the effects analysis detailed in the Aquatic Species Biological Assessment and consultation with the Fish and Wildlife Service completed through batch consultation under a programmatic biological opinion (USFWS 2014), it was determined that that actions in Alternatives 1 and 3 may affect, and are likely to adversely affect the Yosemite toad (Threatened) and the Sierra Nevada yellow-legged frog (Endangered). The US Fish and Wildlife Service has

concluded that projects consistent with the Forest Plan and that fully implement appropriate conservation measures were not likely to jeopardize the continued existence of these species (3.02 Aquatics). The proposed action would not affect any other Federally listed species or critical habitat (3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife).

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

The proposed action complies with Federal, State and local laws or requirements imposed for the protection of the environment (i.e., National Forest Management Act, Endangered Species Act, National Historic Preservation Act, Federal Clean Water Act, Executive Order 11988 for Floodplain Management, and the Clean Air Act). The Forest Service obtained concurrence with SHPO and would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.

III. 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 proposed Project have been made by or agreed to by the proposed 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

Karen Quidachay, Environmental Review Analyst
UMRWA, Environmental Consultant

Signature

Date

Rob Alcott, Executive Officer
UMRWA

Signature

Date

Greg Gillott, Legal Council
UMRWA

IV. REFERENCES

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V. ACRONYMS

AQMD	Air Quality Management District
BA	Biological Assessment
BE	Biological Evaluation
BMP	Best Management Practices
CARB	California Air Resources Board
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CO	carbon monoxide
CY	cubic yards
EA	Environmental Assessment
FONSI	Finding of No Significant Impact
IS	Initial Study
LOS	level of service
MND	Mitigated Negative Declaration
OSHA	Occupational Safety and Health Administration
PM ₁₀	particulate matter less than 10 micrometers in diameter
PM _{2.5}	particulate matter less than 2.5 micrometers in diameter
ROG	reactive organic gases
SC	special concern
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

APPENDIX A

MANAGEMENT REQUIREMENTS, MONITORING, AND REPORTING PROGRAM

Based on review of the actions proposed, resource specialists identified the following management requirements that would be implemented for all activities proposed as part of the Hemlock EA. Management Requirements are designed to implement the Forest Plan and to minimize or avoid potential adverse impacts. Management Requirements are mandatory components of the action alternatives and would be implemented as part of the proposed activities. Most Management Requirements were utilized in other past project activities and, through monitoring, have shown to be very effective in protecting or enhancing resources. The following table identifies the management requirements for this project.

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-AES-1	Topsoil would be side cast during temporary road construction to be used for future decommissioning and recontouring.	Prior to and during Project activities	UMRWA/FS
MR-AES-2	Intersect temporary roads and skid trails at a right angle, and where feasible, curve after the junction to minimize the length of route seen from the primary travel route.	Implementation	UMRWA/FS
MR-AES-3	<p>Within scenic corridor treatment areas and areas with a VQO of Retention:</p> <ul style="list-style-type: none"> ▪ Log landings and skid trails would be minimized. ▪ Slash would be abated near landing by scattering, chipping, or other techniques. ▪ Slash and other debris would be removed, burned, masticated, or lopped to a height of 12 inches or less. ▪ Cut trees (as opposed to leave trees) would be marked and species designation would be utilized where appropriate to minimize the amount of marking. 	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-1:	The construction of roads and trails will be minimized within the Riparian Conservation Area.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-2:	Low velocity water pumps and screening devices for pumps will be utilized during drafting to prevent mortality of eggs, tadpoles and adults.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-3:	Fuels and other toxic chemicals will be stored outside of RCA, to limit exposure of amphibians to toxic material.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-4:	Disturbance will be limited to 20 percent or less of streambanks to reduce the impacts to cover in aquatic habitats.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-5:	Temporary dry crossings on drainages with defined channels will be constructed and removed when the channels are dry and will be installed such that water flow and fish passage will not be obstructed. Wet stream crossings improvement/re-construction should be constructed in the fall, when the channel is not flowing or at low flow. A water diversion plan may be developed for these crossings.	Prior to and during Project activities	UMRWA/FS

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-BIO(Aq)-6:	Relevant project implementation BMPs provided in the Mountain yellow-legged frog, and Yosemite toad Programmatic BO (December 19, 2014) are incorporated into Table 2.05-of the Hemlock EA. A crosswalk of where each programmatic conservation measure is addressed in the Hemlock project is provided in the Aquatics BA/BE.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Bot)-1:	Standard contract provisions for equipment cleaning will be applied to timber and construction activities, including washing of vehicle prior to arrival at the work site and following completion of work in an area. For all other activities, all equipment that leaves roads or works with soil must be free of soil, mud (wet or dried), seeds, vegetative matter or other debris that could contain seeds. Dust or very light dirt that would not contain weed seed is not a concern.	During Project construction activities	UMRWA/FS
MR-BIO(Bot)-2:	Slash may be used in lieu of straw for protection of areas susceptible to erosion. If straw is the only option then it must be certified weed free straw.	During Project construction activities	Contractor, and Environmental Specialist
MR-BIO(Bot)-3:	During the reroute of Road 6N58Y ensure that all equipment is thoroughly washed to remove Klamath weed propagules after use. Continue hand pulling efforts after reroute is complete to reduce the negative impact of Klamath weed on native species.	Prior to and during Project construction activities	Contractor, and Environmental Specialist
RBIO(Bot)-4:	No mechanical operations (e.g. mastication, fuel-break construction/maintenance, driving, temporary roads, skid trails), prescribed burning, or piling and burning would occur on lava caps.	Prior to and during Project construction activities	Contractor, Project Engineer and Environmental Analyst
MR-BIO(Bot)-5:	Surveys to detect the presence of Forest Service sensitive plants would occur prior to any water source development. Surveys would be conducted between April and August. If sensitive plant populations are present, activities would be adapted to minimize mortality or disturbance, or, if possible, transplanting would be conducted.	During Project construction activities	UMRWA/FS
MR-BIO(Bot)-6:	Project adherence to the Forest Plan direction for RCAs would be followed for special aquatic features.	During Project construction activities	UMRWA/FS

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-BIO(W)-1:	A limited operating period would be applied to vegetation and fuels treatments, and road reconstruction activities within 0.25 miles of a known spotted owl activity center (or PAC boundary if activity center is unknown) from March 1 through August 15. LOPs may be lifted by the FS if surveys conducted to protocol confirm non-presence or non-breeding.	Prior to Project construction activities	Environmental Specialist
MR-BIO(W)-2:	A limited operating period would be applied to vegetation and fuels treatments, and road reconstruction within 0.25 miles of a known goshawk activity center (or PAC boundary if activity center is unknown), from February 15-September 15. LOPs may be lifted by the FS if surveys conducted to protocol confirm non-presence or non-breeding.	During Project construction activities	UMRWA/FS
MR-BIO(W)-3:	A District Wildlife Biologist would be notified if any Federally Threatened, Endangered, Candidate species or any Region 5 Forest Service Sensitive species are discovered during project implementation.	At All Times	UMRWA/FS/Contractor
MR-BIO(W)-4:	Large diameter cull logs located at landings would be returned to units where coarse woody debris in decay classes 1 and 2 are deficient, as determined by the Forest Service.	During Project construction activities	UMRWA/FS
MR-CR-1:	All heritage resource sites would be avoided or treated according to Programmatic Agreements with the California State Historic Preservation Office, Tribal Historic Preservation Offices, and Cooperative Agreements between the USDA Forest Service and federally and/or state recognized tribes.	At All Times	UMRWA/FS/Contractor
MR-CR-2:	Restoration actions within selected heritage resource sites would be monitored by Forest or District Archeologist.	As Needed	UMRWA/FS/Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-CR-3:	Soil erosion control devices (fiber matting, weed free straw, geotextiles, silt fencing, erosion control logs, woody debris, etc.) may be used within and/or around archaeological site boundaries to protect heritage resources.	As Needed	UMRWA/FS/Contractor
MR-CR-4:	If new heritage resources are discovered during implementation, all work in the vicinity would cease until a Forest or District Archeologist examines and assesses the resource. Appropriate measures would be undertaken to protect the new resource as activities resume.	At All Times	UMRWA/FS/Contractor
MR-CR-5:	No barriers would be installed within 25 feet of the boundaries of heritage resource area without specific approval and an archaeological monitor for installation.	At All Times	UMRWA/FS/Contractor
MR-CR-6:	Heavy equipment, tilling compacted soil, and constructing drainage structures (e.g. mastication, root ripping, water bars, rolling dips) are prohibited within heritage resource sites.	At All Times	UMRWA/FS/Contractor
MR-CR-7:	Slash piling would not be located within the boundaries of known heritage resources unless Forest or District Archeologist approves the location and the work is monitored by heritage resource staff. Understory vegetation and adjacent felled trees may be piled outside of heritage site boundaries for burning.	At All Times	UMRWA/FS/Contractor
MR-CR-8:	Burn piles would be placed greater than 25 feet from known historic isolates and sites (e.g. arborglyphs, historic inscriptions or cabin sites).	At All Times	UMRWA/FS/ Contractor
MR-CR-9:	Dendroglyphs/arborglyphs (culturally inscribed trees) will not be felled and will be avoided during prescribed fire.	At All Times	UMRWA/FS/ Contractor
MR-CR-10:	Trees would be felled away from heritage sites unless authorized by the District or Forest Archaeologist.	As Needed	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-CR-11:	Pre-burn site preparation may include removing duff and/or filling bedrock milling feature cups with sterile soil to protect them from rapid heat fluctuations, or the use of temporary protection materials.	As Needed	UMRWA/FS/ Contractor
MR-CR-12:	Any heritage resources that may be negatively impacted by the proposed actions would be flagged for hand treatment or avoidance. If flagged for hand treatment, monitoring by Forest or District Archeologist would be required on-site for implementation.	As Needed	UMRWA/FS/ Contractor
MR-CR-13:	No ground disturbance or dragging of material would occur within the known boundaries of archaeological features, heritage sites, or historic properties unless authorized by District or Forest Archeologist.	At All Times	UMRWA/FS/ Contractor
MR-GEO(S)-1:	On slopes less than 25%, maintain well-distributed organic soil cover of 50% after thinning treatment, prescribed fire, or site preparation in gaps. Maintain 60% cover on steeper slopes, and 70% in RCAs. Soil cover consists of basal live plant cover, litter, fine woody debris, and downed logs.	At All Times	UMRWA/FS/ Contractor
MR-GEO(S)-2:	Retain a minimum of 5 downed logs per acre for soil cover and nutrient cycling as long as this requirement does not exceed fuel management objectives. Desired logs are greater than 20 inch diameter and >10ft long in a variety of decomposition classes.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-3:	Monitor ground-based operations occurring between November 1 and June 1 (test for soil moisture and trafficability) to prevent soil compaction. Ground-based equipment would operate on relatively dry soils of high soil strength, or bearing capacity.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-4:	Subsoil all temporary roads, landings, and main skid trails except where high rock content, slope, moisture content, depth to restricting layer, or erosion hazard would limit subsoiling feasibility. Coordinate with the soil scientist during project implementation to determine final subsoiling needs.	Implementation	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-GEO(S)-5:	Subsoiling Provision- Include winged ripper tool design specifications and maximum subsoiling acres in the contract or operating plan. Subsoiling depth requirements: Landings and temp roads, 24 inches; main skid trails, 18 inches. Maximum furrow depth, 8 inches. CoMRon furrows deeper than eight inches on subsoiled terrain would be backbladed to reduce rill and gully erosion potential.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-6:	When excessive soil displacement occurs, the Contracting Officer's Representative (COR) or soil scientist may require replacing or recontouring soil.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-7:	Limit skidding with rubber-tired or fixed track equipment to slopes less than 35%; dozer piling would be limited to less than 25%; and low ground pressure tracked equipment (i.e. masticator/feller-buncher) would be limited to less than 45% slope.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-8:	When the depth of masticated fuels exceeds 4 inches across greater than 25% of the burn area, ensure adequate soil moisture is present (greater than 15% by volume soil water) in the upper 6 inches of the soil profile when burning.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-9:	Dozer piling would be performed with a machine equipped with a brush rake on slopes less than 25%. The blade should be kept about 6 inches above ground level to prevent soil, litter, and duff material from being piled. Piles should be relatively free of soil (less than 10% soil material), or operator may be required to rebuild piles and re-spread soil.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-10:	Machine piling locations within gaps may need to be reviewed by the soil scientist or sale administrator, if thin soils (less than 25 inches deep) are present.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-11:	In all aspen meadows and special aquatic features with planned mechanical thinning operations, the boundary of the exclusion zone would be reviewed by the soil scientist or hydrologist and mapped with a global positioning system (GPS).	Implementation	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-GEO(S)-12:	Tree removal from or around aspen meadows and SAFs would be done with low ground pressure tracked equipment (less than 13 psi) to adequately protect soil and water resources (i.e. equipment that is light on the land, rubber-tired equipment, equipment that operates on a bed of slash, or other innovative technologies that reduce impacts to soils). Operations should occur on dry soil, or by end-lining of trees <100 ft. out of the meadow. Other mechanical removal methods should be approved by soil scientist or hydrologist.	Implementation	UMRWA/FS/ Contractor
MR-GEO(W)-1:	Mechanized equipment within RCAs would follow guidelines displayed in Table 2.05-1 of the Hemlock EA (adapted from Frazier 2006)	Implementation	UMRWA/FS/ Contractor
MR-GEO(W)-2:	Operations would follow additional management requirements derived from Regional and National Best Management Practices (BMPs) (USDA 2011, USDA 2012) and Riparian Conservation Objectives (RCOs) (USDA 2004) as displayed in Table 2.05-2 of the Hemlock EA.	Implementation	UMRWA/FS/ Contractor
MR-GEO(W)-3:	BMPs applicable to this project are listed in Table 2.05-2 of the Hemlock EA with site-specific requirements and comments. Project planners and administrators (e.g., layout, Sale Administrator, Contracting Officer Representative) are responsible for consulting with a hydrologist and/or soil scientist prior to or during project implementation for interpretation, clarification, or adjustment of watershed management requirements.	Implementation	UMRWA/FS/ Contractor
MR-REC-1:	Treatment timing would be coordinated to minimize conflicts with recreation use.	Pre-Project and Implementation	UMRWA/FS/ Contractor
MR-REC-2:	Temporary road and/or skid trail crossings across designated forest trails would be kept to a minimum. Any crossings would be perpendicular to designated forest trails.	Implementation	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-REC-3:	Minimize overlaying skid trails/haul roads on non-motorized system trails.	Implementation	UMRWA/FS/ Contractor
MR-REC-4:	If trails are used as skid trails/haul roads, trail cleanup/rehabilitation (including returning the trails to pretreatment standard) would be included in the contract.	Post-Project	UMRWA/FS/ Contractor
MR-REC-5:	Character trees and trees that define the trail corridor (as identified by timber or recreation staff) should be retained where ever feasible.	Implementation	UMRWA/FS/ Contractor
MR-REC-6:	Warning signs would be placed on all trail access points and along the trail where activities are occurring.	Pre-Project and Implementation	UMRWA/FS/ Contractor
MR-REC-7:	When activities are occurring along open trails, slash would be treated within 100' of the corridor within specified timeframes (check with recreation specialist).	Implementation	UMRWA/FS/ Contractor
MR-TRAN-1:	Preserve sufficient road width for the critical vehicle when installing gates or cattle guards.	Implementation	UMRWA/FS/ Contractor