

**SIERRA NEVADA CONSERVANCY PROPOSITION 84
CATEGORY 1 - SITE IMPROVEMENT**

PROJECT NAME Amador Calaveras Consensus Group - Bailey Plantation Health Improvement, Riparian Restoration	
APPLICANT NAME <i>(Legal name, address, and zip code)</i> USDA/USFS Stanislaus National Forest – Calaveras Ranger District, P.O. Box 500 / 5519 Highway 4, Hathaway Pines, CA 95233	
PERSON WITH FISCAL MANAGEMENT RESPONSIBILITY FOR GRANT CONTRACT/INVOICING	
<i>Name and title – type or print</i>	
<i>Phone</i>	
<i>Email Address</i>	
Jim Junette, Resources Manager (209) 532-3671 ext.333 jjunette@fs.fed.us	
<input checked="" type="checkbox"/> Site Improvement/Conservation Easement Acquisition Project area: <u>1.7 Acres</u>	Select <u>one</u> primary Site Improvement/Conservation Easement Acquisition deliverable <input checked="" type="checkbox"/> Restoration

AMADOR CALAVERAS CONSENSUS GROUP - BAILEY PLANTATION HEALTH IMPROVEMENT, RIPARIAN RESTORATION

1) DETAILED PROJECT DESCRIPTION

a) Project Description Narrative

The Bailey Plantation Health Improvement project is a SNC Category 1 site improvement project to restore approximately 1.7 acres of riparian habitat, which is consistent with principles of the Amador Calaveras Consensus Group (ACCG) collaborative partnership's All Lands - Triple Bottom Line strategy. This project is also specifically described in the ACCG Cornerstone Project for ecosystem restoration and watershed protection.

Riparian rehabilitation work would be performed in approximately 1.7 acres where a culvert on a short spur of 6N03G has initiated a headcut in an intermittent channel, creating a gully up to 8 feet deep that ranges from 6 feet to 30 feet wide. The gully is approximately 900-1,000 feet long. Approximately 10% of the obligate riparian vegetation remains along the stream. Gravel or larger substrate is absent along the stream bed, with current substrates consisting primarily of sand and silt. The existing condition makes this stream vulnerable to further degradation from erosion and down-cutting.

The culvert on the 6N03G spur would be removed from the stream channel. The stream banks and channel would be reshaped to a more stable and lower gradient alignment and held in place through the installation of rock grade control structures. Riparian vegetation would be planted to hold the new stream bank.

Road 6N03G would be decommissioned through a combination of techniques including subsoiling the road bed, pulling fill where it is slumping into the channel and re-contouring the slope, adding slash for erosion control, planting with native species, and installing waterbars. Implementation of these restoration measures should stabilize the stream channel, improve the functionality of the floodplain, improve riparian habitat, and eliminate a considerable source of current and potential future sediment, thereby moving the stream channel toward the desired condition.

b) Workplan and Schedule Narrative

Project implementation is expected to begin in October 2014 (assumes grant authorization in June 2014). The necessary pre-implementation site preparation work is to be accomplished during summer 2014. A final report outlining project work, deliverables, and performance measures is to be submitted by December 2015.

Project Deliverables	Timeline
Pre-Implementation Site Prep (Contract establishment)	Aug 2014
1 st Field Season - Stream channel reshaping	Oct 2014
Progress Report (includes estimated product removed & performance measures)	Nov 2014
2 nd Field Season – Road Decommissioning/ Vegetation Planting	May 2015
Progress Report (includes estimated product removed & performance measures)	May 2015
Final Report (including performance measures)	Dec 2015

c) Restrictions, Technical/Environmental Documents and Agreements Narrative

There are no restrictions for this project. The project will be implemented consistent with the NEPA Decision Notice / Finding of No Significant Impact and the CEQA compliance. The project was developed in accordance with and does not threaten to violate any Federal, State, or local laws or requirements imposed for the protection of the environment (i.e. Endangered Species Act, National Historic Preservation Act, Federal Clean Water Act, Executive Order 11988 for Floodplain Management, or the Clean Air Act). The Forest Service would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.

d) Organizational Capacity Narrative

Project implementation would be done in collaboration between the US Forest Service and ACCG collaborative members. The Calaveras Ranger District, Stanislaus National Forest, would provide project administration and management, contracting, and field work oversight. ACCG would provide field oversight and design and implementation of applicable monitoring metrics.

e) Cooperation and Community Support Narrative

This project is supported by ACCG (see letters of support). ACCG fosters partnerships among private, nonprofit, state, and federal entities with a common interest in the health and well-being of the landscape and communities in the Mokelumne and Calaveras watersheds. The group is advancing an All-Lands strategy to create a heightened degree of environmental stewardship, local jobs, greater local economic stability, healthy forests and communities. ACCG principles reflect the group's emphases on balancing environmental, social and economic goals. SNC is an active member in ACCG.

f) Long-Term Management and Sustainability Narrative

Stanislaus National Forest Land and Resource Management Plan (LRMP) was completed on October 28, 1991. All amendments to the LRMP were compiled into the Stanislaus National Forest "Forest Plan Direction" in 2010. The Forest Plan Direction includes goals and objectives and standards and guidelines for fuel management activities that would enhance natural ecosystem processes while minimizing fire threats to life, property, and resources. The Forest Plan Direction also addresses the management of forests at risk to pathogens, to provide for insect and disease resistant and resilient forest communities, and provides guidance on watershed maintenance and improvements that would enhance stewardship of water and soil resources. The Forest Plan Direction includes forestwide standards and guidelines and wildlife and long-term management direction. The project was designed to be consistent with the Forest Plan Direction.

2) SUPPLEMENTAL AND SUPPORTING DOCUMENTS

a) Cooperation and Community Letters of Support

Coordination with ACCG and Private landowner, indicate that these projects have broad community support. During public scoping, the project only received letters of support. Letters of support are attached.

b) Long-Term Management and Sustainability

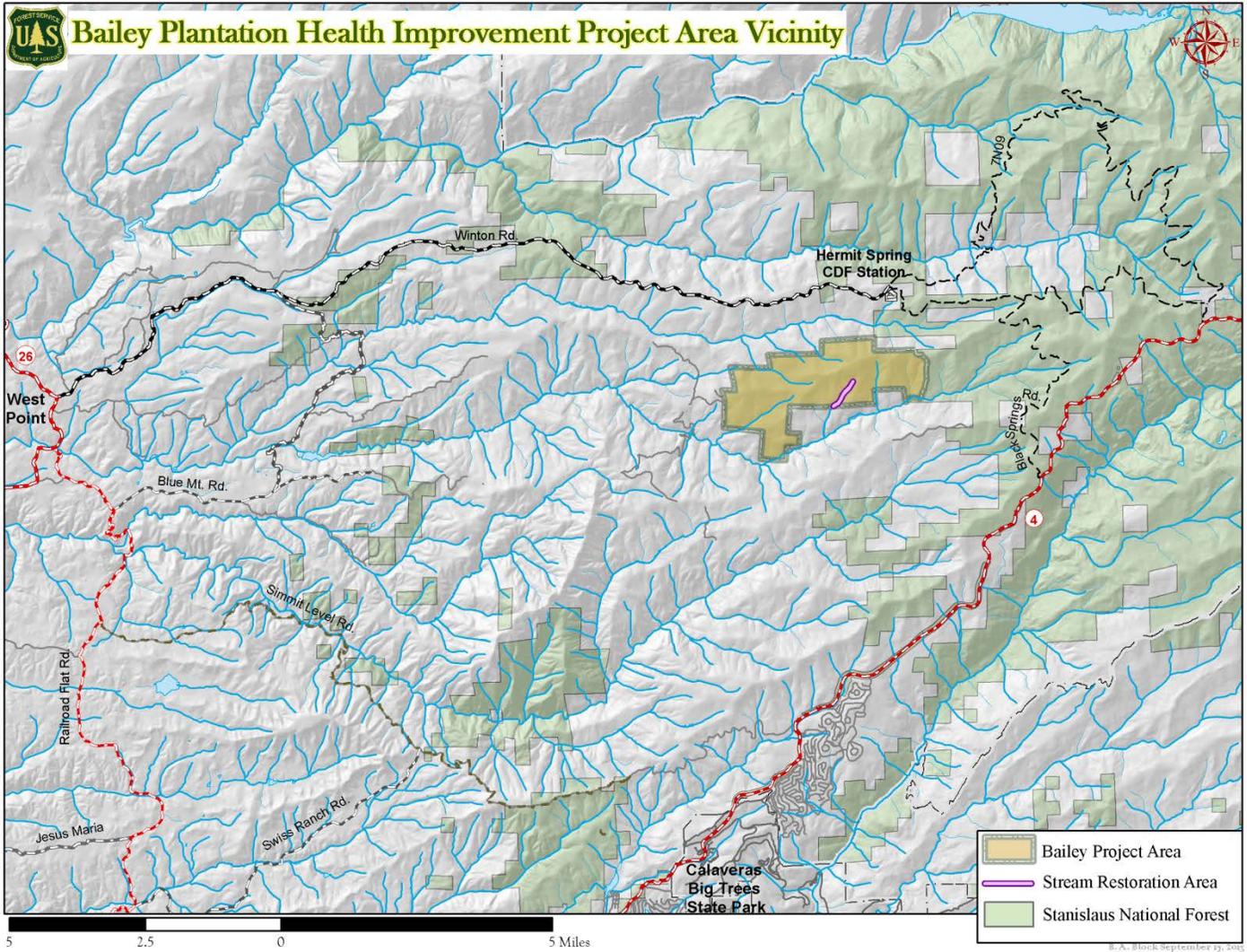
Long term management and sustainability of project site is directed by the Stanislaus National Forest Plan Direction

(http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5154788.pdf).

c) Maps and Photos

Project Location Map

Vicinity map for the Bailey riparian restoration project.

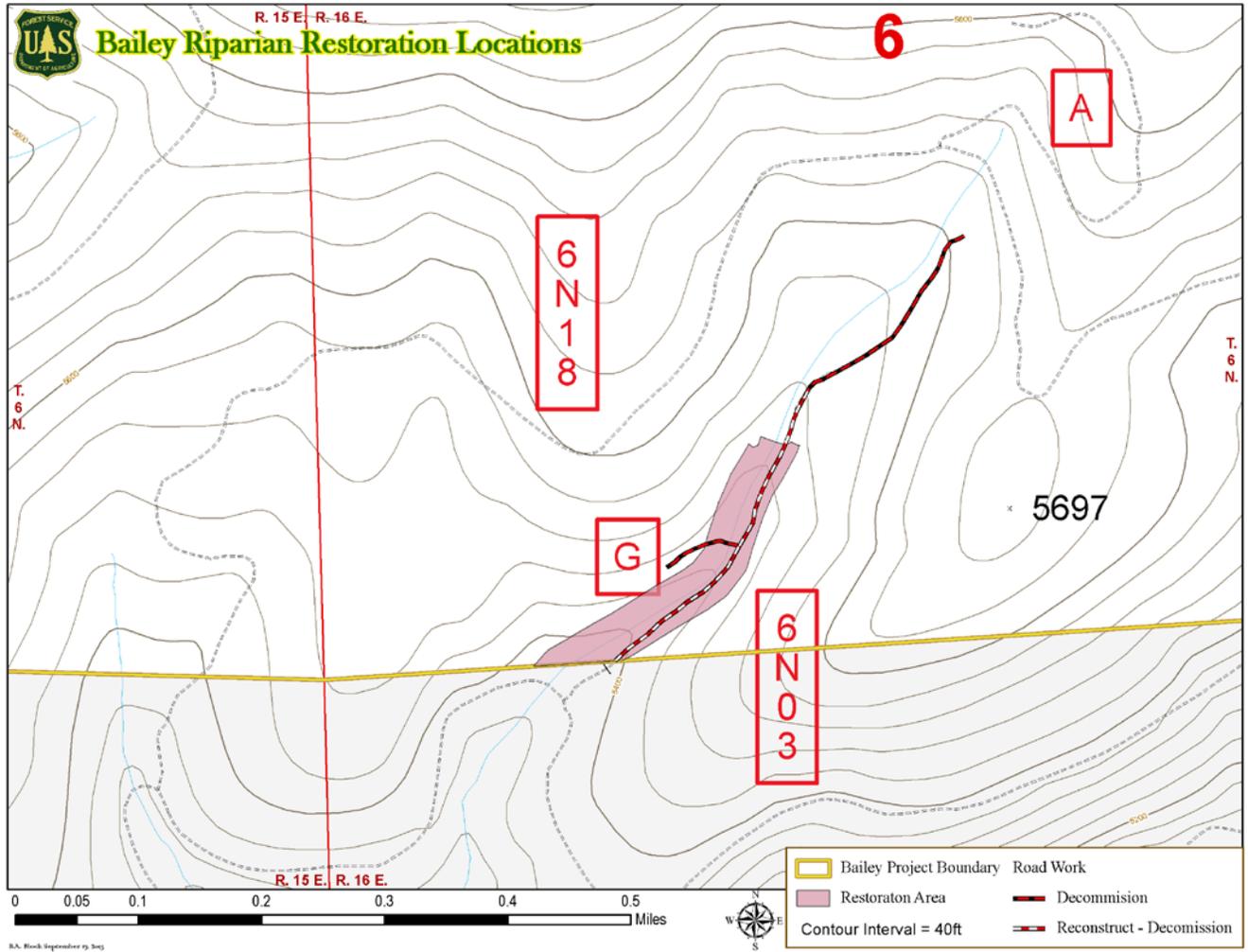


Parcel Map with County Assessor's Parcel Number(s)

This project is on National Forest Land. As such, the County Assessor's parcel number does not apply to this project.

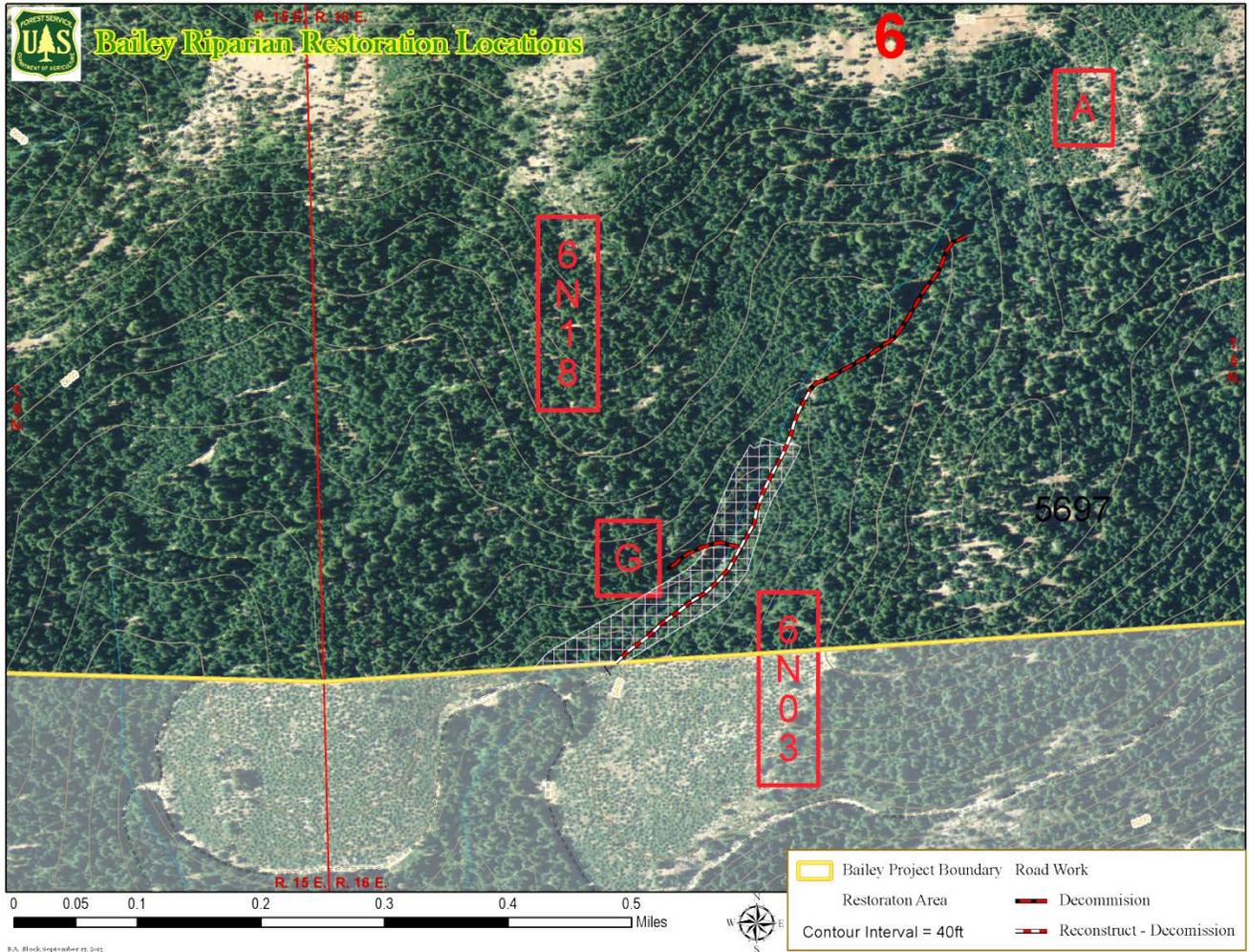
Topographic Map

Restoration project site, Township 6N, Range 16E, Section 6



Photos of the Project Site

Aerial photo of restoration project site.



d) Additional Submission Requirements

Site Plan

The topographic map and aerial photo indicates the riparian restoration site plan. Additional treatments adjacent to the restoration site (not included in this funding proposal) include plantation thinning and road work. The attached Environmental Assessment contains treatment plans (Proposed Action) for this project, including riparian and aquatic feature mitigation measures

e) Performance Measures

Performance measures are used to track progress towards project goals and desired outcomes. Three project-specific performance measures were selected:

- Approximately 1.7 Acres of Land Improved or Restored
- Approximately 2,600 Linear Feet of Stream Bank Protected or Restored

f) Regulatory Requirements/Permits

Permitting Agency	Type of Requirement	Applicable/ Reason
Local		
City / County Planning Department	Planning Permits (use, subdivisions, lot line adjustments, etc.) Discretionary permits subject to CEQA Ministerial Permits Remediation/Reclamation Plan	Not Applicable: The project would be implemented on Forest Service lands.
City / County Building	Building Permits	Not Applicable: No building construction is planned.
City / County Public Works	Grading Permits	Not Applicable: No grading of county roads or public works facilities is planned.
City / County Environmental Health Department	Hazardous materials, Septic systems, Water quality	Not Applicable: The project does not contain hazardous materials.
Flood Control Districts	Floodway and Hydrological (stream permits, easement, etc.)	Not Applicable: The project is not in a Flood Control District.
State		
CA Department of Fish and Wildlife	Streambed Alteration Agreement (Sec. 1600) Incidental Take Permit (State listed threatened and endangered species – CESA)	Not Applicable: The project will not affect State listed threatened or endangered species.
Caltrans	Encroachment Permit	Not Applicable: The project is not in close proximity to State highways.
CA Regional Water Quality Control Board	401 Water Quality Certification or Waste Discharge Requirement (Check with Army Corps of Engineers first)	Applicable: 401 Certification would be obtained prior to project implementation.
State Water Resources Control Board	Water Rights Permit General Industrial Storm Water Permit	Not Applicable: The project is does not require a water rights or storm water permit.
State Lands Commission	Permit required if using State owned property	Not Applicable: The project would be implemented on Federal land.
State Office of Historic Preservation	Cultural Resources- Submission of Findings to State Historic Preservation Officer (National Historic Preservation Act. Section 106)	Not Applicable: Consultation requirements under Section 106 of the National Historic Preservation Act have been fulfilled.
Federal		
U.S. Fish and Wildlife Service (USFWS)	Incidental take - Endangered Species Act, Section 7 consultation if federal nexus (see ACOE), or Section 10 Permit	Not Applicable: The project will not affect Federally listed threatened or endangered species.
Army Corps of Engineers (ACOE)	Wetlands & Water bodies Clean Water Act, Section 404 Permit, will consult w/ USFWS & NMFS Section 7 Rivers and Harbors Act, Section 10 Permit	Applicable: A 404 Certification would be obtained prior to project implementation.
U.S. National Resources Conservation Service	Voluntary Consultation (assistance with agriculture owner permitting)	Not Applicable: The project would only be implemented on Federal land.

3) FINANCIAL FORMS

a) Detailed Budget Form

**SIERRA NEVADA CONSERVANCY
PROPOSITION 84 - DETAILED BUDGET FORM**

Project Name: **Amador Calaveras Consensus Group - Bailey Plantation Health Improvement, Riparian Restoration**

Applicant: **Stanislaus National Forest, Calaveras Ranger District**

SECTION ONE						
DIRECT COSTS	Year One	Year Two	Year Three	Year Four	Year Five	Total
Project Management Costs	\$11,017.00	\$4,861.00				\$15,878.00
Site Restoration Work Costs	\$45,000.00	\$15,000.00				\$60,000.00
DIRECT COSTS SUBTOTAL:	\$56,017.00	\$19,861.00	\$0.00	\$0.00	\$0.00	\$75,878.00

SECTION TWO						
INDIRECT COSTS	Year One	Year Two	Year Three	Year Four	Year Five	Total
	\$0.00	\$0.00				\$0.00
INDIRECT COSTS SUBTOTAL:	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PROJECT TOTAL:	\$56,017.00	\$19,861.00	\$0.00	\$0.00	\$0.00	\$75,878.00

SECTION THREE						
Administrative Costs (Costs may not to exceed 15% of total Project Cost) :						Total
<i>*Organization operating/overhead costs</i>	\$0.00	\$0.00				\$0.00
						\$0.00
ADMINISTRATIVE TOTAL:	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SNC TOTAL GRANT REQUEST:	\$56,017.00	\$19,861.00	\$0.00	\$0.00	\$0.00	\$75,878.00

SECTION FOUR						
OTHER PROJECT CONTRIBUTIONS	Year One	Year Two	Year Three	Year Four	Year Five	Total
Project Administration and Oversight	\$ 8,251.00	\$ 7,071.00				\$15,322.00
USFS Vehicle /Transportation	\$1,000.00	\$1,000.00				\$2,000.00
Misc expenses and Consumables	\$300.00					\$300.00
Total Other Contributions:	\$9,551.00	\$8,071.00	\$0.00	\$0.00	\$0.00	\$17,622.00

NOTE: The categories listed on this form are examples and may or may not be an expense related to the project. Rows may be added or deleted on the form as needed. Applicants should contact the SNC if questions arise.

* Operating Costs should be allocated to the percentage that is applicable to the grant based on your cost allocation methodology and cannot exceed 15% of your total project costs.

b) Cost Allocation Plan

Costs associated with riparian restoration would be paid by this SNC grant. Additional funding (Section 4 on Budget Form) from the Stanislaus National Forest would provide additional oversight for project implementation.

4) AUTHORIZATION OF RESOLUTION TO APPLY

An authorization to apply letter is attached.

5) ENVIRONMENTAL DOCUMENTATION

CEQA/NEPA Compliance form is attached.

a) California Environmental Quality Act (CEQA) Documentation

CEQA has not been documented for this project. However, the small footprint (1.7 acres) of riparian restoration work should be categorically exempted using Class 7 “actions to assure the maintenance, restoration, or enhancement of a natural resource.” The Forest Service would consult with SNC to determine the appropriate Categorical Exemption.

b) National Environmental Policy Act (NEPA) Form and Supplemental Documentation.

The Calaveras Ranger District, Stanislaus National Forest, completed an Environmental Assessment (EA) and Findings of No Significant Impact (FONSI) on May 27, 2011 (see attached documents). In addition, the Forest Service conducted a supplemental analysis for Greenhouse Gasses and Recreation use in the project area in March 2012 (see attached documents).



United States
Department of
Agriculture

Forest Service

Stanislaus
National Forest



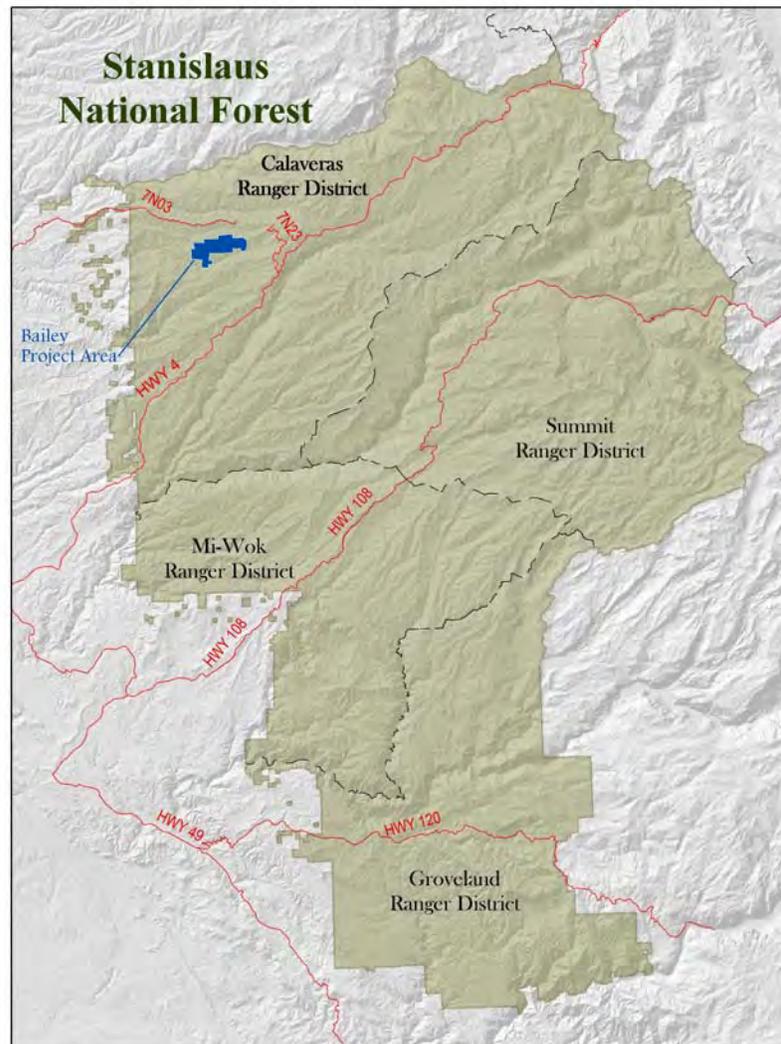
March 2011

Bailey Plantation Health Improvement (30017)

Environmental Assessment

Stanislaus National Forest
Calaveras Ranger District
Calaveras County, CA

Township 6N, Range 15E, Sections 1, 2, 11, and 12;
Township 6N, Range 16E, Sections 5 and 6; and
Township 7N, Range 16E, Section 31



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Bailey Plantation Health Improvement (30017) Environmental Assessment

Stanislaus National Forest
Calaveras Ranger District
Calaveras County, California

1. INTRODUCTION

The Forest Service prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Calaveras Ranger District Office in Hathaway Pines, California.

Background

The Forest Service is proposing to implement a forest thinning project and road improvement activities designed to improve stand health and vigor in the plantations and improve watershed conditions. The Calaveras Ranger District conducted a landscape analysis of the Middle Fork and South Fork Mokelumne River and the North Fork Stanislaus River, referred to as the Two Forks Landscape Analysis. This analysis evaluated resource conditions (as of 1999) and established desired conditions. The Bailey project area was included in the Two Forks Landscape Analysis project area. The Two Forks Landscape Analysis noted that portions of the Middle and South Fork Mokelumne River drainages and the North Fork Stanislaus River drainages did not meet desired conditions in terms of ecological diversity, forest health, riparian and unique habitat condition, and cumulative watershed effects (USDA, Forest Service 2000). This project would move plantations and watershed conditions in the Bailey project area towards desired resource conditions. Plantations in the project area are approximately 20 to 50 years old, and are overstocked. Roads in the project area are hydrologically connected with drainage, runoff, and erosion contributing to sediment loading.

Project Location

The project is located in Calaveras County, California, within the Stanislaus National Forest, Calaveras Ranger District in Township 6N, Range 15E, Sections 1, 2, 11, and 12; Township 6N, Range 16E, Sections 5 and 6; and Township 7N, Range 16E, Section 31. The 2,680 acre project area is bounded by private lands on the north, south and west. The east boundary is delineated along a north-south ridgeline in the east half of section 5, T6N, R16E. The project area falls within the Forest Creek and Middle Fork Mokelumne River drainages. The area is accessed via roads 7N91 from Hermit Springs on Winton Road (7N03) and 6N03 from Black Springs Road (7N23).

Forest Plan Direction

The Forest Service completed the Stanislaus National Forest Land and Resource Management Plan (Forest Plan) on October 28, 1991. The Stanislaus National Forest "Forest Plan Direction" (USDA, Forest Service 2010) presents the current Forest Plan management direction, based on the original Forest Plan as amended. The Forest Plan Direction includes forestwide standards and guidelines (p. 33-64) and wildlife and general forest management area direction (p. 123-127, and 161-164) that apply to this project. All proposed actions are designed consistent with the applicable Forest Plan Direction.

Purpose and Need for Action

There are approximately 302 acres of plantations in the Bailey Plantation Health Improvement project area; approximately 91 acres of 45-50 year age class trees and 211 acres of 20-25 year age class trees. There are approximately 85 acres of 45-50 year-old plantation that fall within a California spotted owl Home Range Core Area (HRCA).

The 45-50 year age class plantations were planted with ponderosa pine (*Pinus ponderosa*). The current species composition is approximately 67% ponderosa pine, 24% incense cedar (*Calocedrus decurrens*), 9% white fir (*Abies concolor*), and an incidental amount of sugar pine (*Pinus lambertiana*). Current basal area (BA) for these plantations is approximately 198 ft² with stand density indexes (SDI) near 315. The quadratic mean diameter (QMD) for these stands is approximately 14 inches dbh with an average canopy closure at 80%. These older plantations are considered a 4D classification (12-24 inch dbh with > 60% canopy cover) under the California Wildlife Habitat Relationship System (CWHR) (CDFG 2008).

The 20-25 year-old plantations have a wider degree of variability. Most were planted to either ponderosa pine or a mixture of ponderosa, sugar pine, white fir, and incense cedar. Approximately half of the plantations received precommercial thinning. Survival rates are variable within and between stands. Current basal area (BA) for these plantations is approximately 168 ft², with a range between 76 and 339 ft². The average SDI is approximately 328, ranging from a maximum of 694 to a minimum of 164. Trees per acre average 446, with a range between 271 and 1,300 trees per acre. The QMD ranges from 6-12 inches, with an average of approximately 9 inches. Most of the twenty year old plantations are in the 3P and 3M CWHR classifications (6-11 inch dbh with 10-59% canopy cover).

The high stocking levels in the plantations in the project area are contributing to increased tree stress due to inter tree competition for moisture and nutrients, resulting in conditions that increase the susceptibility of bark beetle infestations and other pathogens. There has been sporadic insect activity or disease occurrence in the plantations proposed for thinning, including evidence of western pine beetle (*Dendroctonus brevicomis*). In addition, there are known western pine beetle activity centers in the vicinity of the Bailey project area which indicates a heightened level of susceptibility for beetle infestation in the Bailey plantations under their current condition.

A survey of roads in the Bailey Plantation Health Improvement project area was conducted in the fall of 2008 to assess hydrologic functionality and connectivity and cross drain stability using the Stanislaus NF Hydrologically Connected Segment (HCS) inventory protocol (Frazier and Grant 2006). Hydrologically connected segments are portions of road that drain water and sediment directly into the stream system. Hydrologically connected segments were identified and assessed to be of high, moderate, or low hydrologic concern based on sediment delivery and the probability of long-term failure. Approximately 3.07 miles of road were identified that have a high hydrologic concern within the project area (see Hydrology Report).

Several wet spring fed meadows occur in the project area. These meadows are dominated by plant species that are dependent upon a steady water supply. Conifer encroachment into meadow and hardwood environments may reduce the available water and influence the sustainability of riparian and hardwood dependent species.

The purpose of this initiative is to:

- Enhance the general health of plantations by reducing susceptibility to insect, diseases, and drought-related mortality by improving and promoting stand and individual tree growth and vigor.

- Improve watershed conditions, water quality, and riparian habitat by reducing the amount of sediment from the road system delivered into streams and special aquatic features, and by maintaining or restoring the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, and meadows), and hardwoods.

This action is needed in the project area to improve plantation stand health and vigor and improve watershed conditions. This action responds to the goals and objectives (air quality, cultural resources, diversity, fish and wildlife, forest pests, riparian, timber, transportation, and water) outlined in the Stanislaus National Forest Land and Resource Management Plan, as amended (Forest Plan) (USDA, Forest Service 2010, p. 5-9) and helps move the project area towards desired conditions for wildlife (p 183-189), old forest emphasis and general forest (p. 190-191), and riparian areas (p. 191-195) described in the Forest Plan Direction(USDA, Forest Service 2010).

Proposed Action

The Forest Service proposes plantation thinning treatments on approximately 302 acres in the Bailey Plantation Health Improvement project area. Proposed thinning treatments include 91 acres of mechanical thinning of 45-50 year-old plantations to a Basal Area (BA) of 110, and 211 acres of biomass/mastication on 20-25 year-old plantations to 20 x 20 ft tree spacing. Prescribed fire treatments are proposed to remove old landing log decks and to remove slash piles generated during the project.

Approximately 7.8 acres of riparian, meadow, and hardwood rehabilitation work would be performed to reduce erosion and sedimentation and increase sustainability of meadows and hardwoods. The proposed action would include approximately 40.6 miles of closure, decommissioning, maintenance, reconstruction, and new road construction of existing National Forest System roads, private, and unauthorized roads as needed to facilitate traffic during the project, improve road drainage, and better protect the riparian and hydrologic systems.

Implementation of the project may occur during the summer of 2011 or 2012. Expected duration of project activities is one year for mechanic thinning and rehabilitation activities. Prescribed fire treatments (if needed) would occur two years after thinning activities. See Alternative 1 (Proposed Action) for a detailed description of the Proposed Action.

Decision Framework

The Forest Supervisor is the Responsible Official for this project. Given the purpose and need, the Responsible Official reviews the proposed action and the other alternatives in order to make the following decisions: 1) whether to proceed with an action alternative, or the “No Action” alternative, and 2) whether the decision that is selected would have a significant impact on the quality of the human environment or not. If a determination is made that the impact is not significant, then a “Finding of No Significant Impact” (FONSI) would be prepared, and the decision of the Forest Supervisor would be documented in a Decision Notice (FSH, 1909.15, 43.2). Significant impacts on the quality of the human environment would require the preparation of an Environmental Impact Statement (40 CFR 1501.4).

Public Involvement

The Forest Service first listed the Bailey Plantation Health Improvement project (formerly the Bailey Plantation Thin) in the October 2009 issue of the Stanislaus National Forest Schedule of Proposed Actions (SOPA). The Forest distributes the SOPA to about 160 parties and it is available on the internet [<http://fs.usda.gov/goto/stanislaus/projects>].

The local Native American tribes received notification of the Bailey Plantation Health Improvement project during the annual consultation meeting held on 17 April 2009. The following area groups

were presented with information and updates on the Bailey project by Calaveras Ranger District staff on the following dates:

- Calaveras Consensus Group: September 9, 2009; November 18, 2009; and February 24, 2010
- Ebbetts Pass Property Owner's Council: November 4, 2009.

On January 22, 2010 the Forest Service sent a scoping letter to 57 individuals, organizations, agencies, and Tribes interested in this project. The letter requested comments on the Proposed Action before March 1, 2010. The Forest Service received comments from two organizations, Central Sierra Environmental Resource Center and Sierra Forest Legacy. The scoping content analysis summarizes comments received along with reasons for screening relevant issues. Copies of comments and summaries of comments can be found in the project record.

Issues

The Forest Service separated the issues into two groups: relevant and non-relevant issues. Relevant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-relevant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..."

No relevant issues were identified during scoping. Comments regarding the Bailey Plantation Health Improvement proposed actions primarily related to the amount and treatment of roads in the project area. As a result, the Forest Service carefully evaluated which roads were not essential and considered closing and/or decommissioning additional miles of roads. The amount of total road mileage originally proposed for closure and decommissioning was increased from approximately 1.6 to 3.0 miles. A list of non-relevant issues and reasons regarding their categorization as non-relevant may be found at the Calaveras Ranger District in the project record.

2. ALTERNATIVES

This section describes and compares the alternatives considered for the Bailey Plantation Health Improvement project. It includes a detailed description of each alternative considered. Maps of Alternative 1 (Proposed Action) are provided in the Appendix. Additional maps are located in the project record.

Alternative 1 (Proposed Action)

The Forest Service proposes plantation thinning treatments on approximately 302 acres in the Bailey Plantation Health Improvement project area (Map 1). Plantations in the project area are comprised up of approximately 91 acres of approximately 45-50 year age class trees and 211 acres of approximately 20-25 year age class trees. In addition, approximately 7.8 acres of riparian, meadow, and hardwood rehabilitation activities are proposed; 3.4 acres in plantations, and 4.4 acres adjacent to plantations. Plantation prescription and specifications are provided in Table 1. Specific treatments include:

1. Mechanical Thinning of Plantations

- 45-50 year-old plantations (thin to BA of 110):
 - 6 acres of merchantable timber (10.0-29.9 inch dbh) and biomass removal outside of California spotted owl HRCAs.
 - 85 acres of merchantable timber and biomass removal in HRCAs.
- 20-25 year-old plantations (thin to an average tree spacing of 20 feet):
 - 211 acres of biomass/mastication.

All treatments would be ground based mechanical. Units that require aerial methods would not be treated. Merchantable timber and biomass removal would be accomplished through the use of mechanized harvesters and rubber tired skidders, or utilizing low ground pressure equipment. Biomass products include: green conifers (3.0-10.0 inch dbh) and dead conifers (3.0-15.9 dbh). Conifers less than 8 in dbh and brush may be masticated (shredded). All dead trees 16 inch dbh and larger that do not present a hazard would be left to meet wildlife and soils purposes.

Table 1 Plantation prescription and specifications.

	Present Condition	After Thinning Condition
45-50 year age class plantations		
Basal Area ¹ (BA) (sq. ft./acre)	198	110
Stand Density Index ² (SDI)	315	164
Canopy Closure (%)	80	61
Trees Per Acre (TPA)	175	71
20-25 year age class plantations		
Tree Spacing (distance between trees) (ft)	Variable	20
Basal Area (BA) (sq. ft./acre)	168	65
Stand Density Index (SDI)	328	50
Trees Per Acre (TPA)	446	120

¹ Basal Area is the cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area.

² Stand Density Index is a measure of relative stand density in terms of the relationship of a number of trees to stand quadratic mean diameter.

The order of priority for trees to be retained in plantations is: Douglas-fir, sugar pine (free of white pine blister rust), white fir, incense cedar, and ponderosa pine. Small scattered clumps of conifers (less than 10 trees) would be left to create stand diversity. All black oaks and other hardwoods would be retained and conifers cleared around them to allow their release to increase growth and size.

Mechanical thinning in spotted owl HRCAs would, at a minimum, adhere to requirements and guidelines stated in the Forest Plan Direction (USDA, Forest Service 2010; pg 36). A summary of mechanical thinning guidelines in spotted owl HRCAs are as follows:

- Retain at least 50% canopy cover averaged within the treatment unit (60% average canopy cover is proposed).
- In areas where reentry should be minimized, retain at least 40% canopy cover averaged within the treatment unit.

Trees with existing nest structures would be retained. In addition, at least three live trees per acre that may be important for wildlife (nest trees, broken tops, trees with large cavities in the bowl, snags, or trees with deformed branches) would be retained where possible.

Limited Operating Periods

The following limited operating periods (LOP) would be established for restoration activities (plantation thinning, prescribed fire, danger trees, riparian, meadow, and hardwood rehabilitation activities, and road construction activities, other than maintenance):

- All treatment units except Units 1 and 25: from March 1 through August 15 for California spotted owls.
- Treatment units 5, 6, 7, 43 and 44: from February 15-September 15 for northern goshawk.
- In mature forest stands (CWHR classes 4M, 4D, 5M, 5D, and 6): from May 1 through July 31 for American marten.

Spotted owl and goshawk LOPs may be waived by the Forest Service if surveys confirm that these species are not nesting.

Riparian Conservation Areas

Although the project area does not contain perennial water sources, there are 1.64 miles of intermittent and 3.24 miles of ephemeral headwater stream reaches in the project area. The Forest Plan Direction for Riparian Conservation Areas (RCAs) would be followed (USDA, Forest Service 2010; pg 191). A 300-foot RCA buffer exists around perennial streams and special aquatic features (lakes, bogs, fens and wet meadows), and 150-foot buffer around intermittent and ephemeral streams. The buffer begins at the edge of riparian obligate vegetation, or in absence of riparian vegetation, the RCA begins at the edge of the stream bank. A minimum of 60% canopy cover would be maintained in all perennial RCA buffers. RCA buffer widths can be adjusted if site-specific Riparian Conservation Objective analyses demonstrate a need for different widths. RCA buffers consist of an exclusion zone, mechanical transition zone, rubber tire transition zone, and an outer zone (Table 2).

Mechanical entry is not allowed in the exclusion zone. Hand treatments are allowed in the exclusion zone, but trees may be felled away from the stream and removed by cable. Mechanical treatments are allowed in the mechanical transition zone only when using tracked vehicles that exhibit low ground pressure. Operations in this zone are allowed only when 90% ground cover can be maintained within the tracked area, and 90% of the total tracked area would have ruts no deeper than 4 inches caused by mechanical equipment.

Table 2 Management requirements for mechanized equipment operations in Riparian Conservation Area (RCAs).

Stream Type	Zone	Width (feet)	Equipment Requirements ^{1,2}	Element	Operating Requirements
Perennial/SAF ³ /Intermittent	Exclusion	0 - 15	Mechanical Harvesting/Shredding: Prohibited		
		0 - 50	Skidding: Prohibited		
	Transition	15 - 50	Mechanical Harvesting/Shredding: Allowed	Soil Strength	Operate only when 90% of total tracked area is rutted less than 4 inches deep
				Soil cover	Operate only when continuous ground cover is retained in 90% of the total tracked area
				Streamcourse Debris	Remove operation-created debris from stream channels
				Vegetation	Retain obligate riparian shrubs and trees (e.g. willows, alder, aspen)
		50 - 100	Skidding: Allowed	Soil cover	Retain a minimum of 50% evenly distributed ground cover in the area traveled by tires or tracks
				Skid Trails	Use existing skid trails except where unacceptable impact would result. Do not construct new skid trails within 100 feet of the stream
				Stream Crossings	The number of crossings should not exceed an average of 2 per mile
	Outer (Perennial/SAF)	100 - 300	Mechanical & Skidding: Allowed	Skid Trails	Density and intensity of skid trails will gradually increase as distance increases from the Transition Zone
Outer (Intermittent)	100 - 150	Mechanical & Skidding: Allowed	Skid Trails	Density and intensity of skid trails will gradually increase as distance increases from the Transition Zone	
Ephemeral	Exclusion	0 - 15	Mechanical Harvesting/Shredding: Prohibited		
		0 - 25	Skidding: Prohibited		
	Transition	15 - 25	Mechanical Harvesting/Shredding: Allowed		
		25 - 50	Mechanical & Skidding: Allowed	Soil cover	Retain a minimum of 50% evenly distributed ground cover in the area traveled by tires or tracks
Stream Crossings	The number of crossings should not exceed an average of 3 per mile				

¹ Skidding equipment (e.g., rubber-tired skidders and track-laying tractors)

² Mechanical harvesting and shredding equipment (i.e., track-laying machines with an articulating arm that have an operational radius of at least 20 feet, such as feller-bunchers and masticators)

³ Special Aquatic Features (SAF): includes lakes, meadows, bogs, fens, wetlands, vernal pools, and springs

Mechanical treatments utilizing rubber tired skidders are allowed in the rubber tire transition zone. Approximately 50% evenly distributed ground cover needs to be maintained in the area traveled by tires or tracks within this zone. The outer zone is a transition area to normal operations. All trees that

have their root system incorporated into the integrity of the stream bank would be retained. Overall ground cover within RCAs should be evenly distributed and maintained across 75% of the area (see Soils Evaluation Report). Greater discussion of RCAs is provided in the Bailey Plantation Health Improvement Hydrology Report (project record).

Stream-crossings would occur only at pre-determined locations identified and approved by a resource advisor (Fisheries Biologist or Hydrologist). Best Management Practices (BMPs) for watershed protection are included in Appendix A. These practices comply with the provisions and requirements of the Clean Water Act and ensure that beneficial uses of the project watersheds are protected. Greater information is contained in the Hydrology Report and the Aquatics Biological Assessment/Evaluation.

Soil Disturbance

The R-5 Soil Quality Analysis Standards (USDA, Forest Service 1995b), and the Stanislaus National Forest Plan Direction (USDA, Forest Service 2010) provide standards that guide soil management, and are the basis for recommending soil management practices (SMPs) to minimize potential impacts. The following soil management practices are to be applied project-wide:

Maintain Soil Organic Matter and Cover for erosion control and nutrient cycling. Our objective is that levels of organic matter on the soil surface and within the soil are sufficient for nutrient cycling and maintaining soil organisms. Soil cover consists of litter, fine woody debris, and downed logs (LWD). Soil cover should be in place prior to seasonal precipitation to avoid a high EHR condition (R-5 Erosion Hazard Rating method). Litter about an inch thick would provide effective cover (would remain intact through the winter storm season). Maintain the following cover: 50% on slopes <35%; 60% on slopes >35%; and 75% cover in RCAs.

Retain downed logs in the range of 3 to 6 tons per acre (16 to 20 plus inch diameter, retain the largest log) outside of defense zones and fuelbreaks to meet Large Woody Material (LWM) requirements.

Determine Soil Compaction Hazard for Ground-based Equipment in order to adjust treatment measures to prevent detrimental compaction. This is a preventive practice to maintain soil porosity above 90% of its natural condition on at least 85% of the treatment unit, including RCAs. A loss of 10% porosity is considered significant and detrimental.

Ground based equipment would operate on relatively dry soils of high soil strength or bearing capacity. Dry soil conditions would be determined by use of a modified Froehlich equation that predicts soil compaction on skidtrails (Heath and Alexander 1982) or other reliable field techniques. This requirement is particularly important in plantations where it is very difficult to subsoil to reduce overall levels of compaction. Areas would be monitored on a sample basis by soil type, to assure favorable soil moisture and operating conditions for ground based thinning equipment. A soil scientist would assist the Sale Administrator or COR in monitoring operations.

Subsoil Detrimentially Compacted Areas (landings, main skidtrails, and temporary roads) to ameliorate compaction resulting from ground-based equipment operations. Soil porosity is maintained on at least 85% of the treatment area. This is a corrective treatment that limits the cumulative amount of ground compacted. Ground-based operations would be mitigated by a combination of managing the timing of operations and subsoiling of compacted areas. Identify soils with low and high compaction hazard and adjust the amount of subsoiling accordingly.

Tractor units, inappropriate to subsoil are units dominated by thin or rocky soils, or thinned plantations (high frequency of larger stumps in skidtrail). A soil scientist experienced with subsoiling may advise the Sale Administrator on soil-site conditions (i.e. rock content, slope gradient, moisture conditions, depth to restricting layer, erosion hazard). This is particularly important on trail gradients approaching 15-20%. Contract specifications or operating plan would include: the required depth of

subsoiling, the maximum depth of furrowing, a requirement for backblading when the depth of furrowing is exceeded, and winged ripper tool design specifications. Acres or miles of subsoiling would be provided. Coordinate with soil scientist during project implementation to determine final subsoiling needs.

Determine Soil Disturbance Hazard and Slope Limitations for Ground-based Equipment in order to adjust treatment measures to prevent excessive soil displacement. This is a preventative practice designed to avoid excessive soil displacement during tractor harvest or shredding operations. Several factors are considered when accessing potential for soil disturbance. Soil, slope, and type of equipment are key factors. The presence of “legacy” disturbance and “thin” soils are also considered. Generally the soil disturbance hazard is high for equipment operating on steep slopes (i.e., tractor skidding on slopes steeper than 35%, tracked shredding equipment on 40%, feller-bunchers on 40-45%). Soil displacement can occur on flatter ground on sensitive soils or where adverse skidding is necessary. Table 3 provides options for treatments that would prevent or reduce disturbance. Units with specific disturbance hazards include: Units with areas of slope >35% are 1, 4, 6, 21-22, 24-26, 34-35, 41- 42; units with thin soils include 30 and 33.

Table 3 Soil conditions or hazards that would require the implementation of one or more treatment options.

Soil Conditions or Hazards				Treatment Option
Lava Caps	Thin Soils	Steep slopes (> 35%), High Displacement	Long Skid Distances	
		X		1) Keep rubber tired skidders on slopes < 35%, end-line short steep pitches (> 35% and less than 100 feet).
	X	X	X	2) Exclude from treatment difficult to reach areas that would require skid trails on slopes > 35%.
		X		3) Use a feller buncher to pack trees to slopes < 35%. This option may not work well for larger trees. Operational limit of feller buncher varies from 40 to 45% slope, depending on soil type and rock. Re-contour displaced soil (may require special equipment, i.e., excavator).
	X	X	X	4) Aerial harvest where topography is favorable and a considerable portion of unit is steep (> 35% slope).
		X		5) Use fixed track grapple skidders on steep pitches (approximately 35% slope) Re-contour displaced soil (may require special equipment, i.e., excavator).
	X	X	X	6) Flexible track (low ground disturbance) skidders may be used to yard biomass or sawlogs on 35 to 45% slope (< 35% slope on thin soils), or where adverse skidding is necessary.
	X	X	X	7) Use cut-to length equipment where long skidding distances are necessary; where thin soils or low nutrient soils are present over considerable acreage; or in plantations where soil quality is a concern.
		X	X	8) Use a hybrid ground based/aerial system. The harvester or feller buncher cut trees to be removed by aerial yarding. Operational limit of feller buncher varies from 40 to 45% slope, depending on soil type and rock.
X	X	X	X	9) Log over snow operations.
X				10) No ground disturbance.
	X	X		11) Coordinate with soil scientist on layout for Treatment options 2, 3, 5, and 8.

Noxious Weeds

To prevent the introduction of noxious weeds into the project area from implementation of the proposed action, all off-road equipment used in the project areas would be required to be cleaned and inspected by the Forest Service prior to entering the project area. This would be accomplished through use of contract provisions incorporated into all timber sale, any procurement or service contracts.

If any populations of noxious weeds are identified prior or during operations, they would be identified and designated as noxious weed areas. To reduce the risk that noxious weeds are transported elsewhere, all timber sale, procurement or service contracts will contain provisions prohibiting activities (timber felling into, skidding, mastication, shredding, worker entry, etc.) into any identified and designated noxious weed areas. To reduce the risk that workers and equipment could transport seed from unidentified or un-surveyed areas to other project sites and off site, provisions for off-road equipment cleaning would be included in all contracts. Noxious weed awareness would be discussed with contractors and their representatives at all pre-work meetings.

2. Prescribed Fire

Old landing log decks would be burned, if feasible, or removed or rearranged by mechanical means, prior to the proposed plantation thinning treatments, to facilitate landing operations during the project. Slash piles generated during the project would be removed (biomass material), masticated, or burned (two years after material is piled).

Any hand or machine piles created through the proposed action would meet certain criteria: 1) all piles would be placed to minimize holding and resource concerns, tree scorch, and mortality to remaining trees in the surrounding area; 2) fire line would be constructed around all piles created down to bare mineral soil, utilizing hand tools or machinery. If machinery is utilized, it would be done with minimal ground disturbance; and 3) piles created would utilize Best Management Practices and Mitigation Measures (BMP: 6-2 and 6-3.) All burning would comply with all applicable Calaveras County Air Pollution Control District (APCD), state and federal regulations.

3. Hazard and Danger Trees

Dead or unstable trees that present a hazard to Forest Service roads or landing operations during the project would be felled and removed [FSH 7709.59, sec. 41.7(2)]. Trees determined to be dangerous to the harvesting operation will be evaluated and maybe felled to alleviate hazards under an agreement between the Forest Service and purchaser/operator.

4. Riparian, Meadow and Hardwood Rehabilitation Activities

Riparian rehabilitation work would be performed in approximately 1.7 acres near Unit 34 (T6N, R16E, Sec 6, SW ¼ of the SE ¼)(Map 1). A culvert on a short spur of 6N03G has initiated a headcut in an intermittent channel, creating a gully up to 8 feet deep that ranges from 6 feet to 30 feet wide. The gully is approximately 900-1,000 feet long. Approximately 10% of the obligate riparian vegetation remains along the stream. Gravel or larger substrate is absent along the stream bed, with current substrates consisting primarily of sand and silt. The existing condition makes this stream vulnerable to further degradation from erosion and down-cutting.

After project completion, the culvert on the 6N03G spur would be removed from the stream channel. The stream channel would be reshaped to a low gradient (2-5%) through the installation of grade stabilization structures. Riparian vegetation would be planted to hold the new stream bank. The toe of the banks would be stabilized by using a vegetative technique known as “live siltation”. Live siltation uses a system of willow (*Salix* spp.) stalks installed where it is desirable to encourage deposition and siltation. The willow branches provide a roughness which slows the water on the streambank and encourages sedimentation and reduces lateral movement of the channel (Hoyer 2002).

Willow stalks would be harvested from live plants nearby, both upstream and downstream of the project area. Vertical bundles (e.g., long unrooted cuttings of riparian plant species that are bound together) are planted vertically in a shallow trench on the streambank. The bases of the bundles are in contact with the water table and the tops sticking out above the top of the bank (Hoag 2009). The bundles are staked into the bank to eliminate removal during high flows. The remaining bank area would be seeded using native plant species and mulched to prevent excessive evaporation (Goodwin et al. 1997).

Surveys to detect the presence of Forest Service Region 5 sensitive plants would occur prior to stream restoration activities along road 6N03G. Plant 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. Additional information on the proposed restoration work is available in the Aquatics Biological Assessment/Evaluation and Hydrology Report in the project file.

Road 6N03G would be decommissioned at the completion of the project (see Transportation Activities). Implementation of these restoration measures should stabilize the stream channel, improve the functionality of the floodplain and eliminate a considerable source of current and potential future sediment, thereby moving the stream channel toward the desired condition.

Meadow rehabilitation work (1.3 acres) would be performed in Unit 4 (T6N, R15E, Sec11; between roads 6N03 and 7N47) (Map 1). Trees in the meadow portion of Unit 4 would be hand felled and the material and slash lopped and scattered or removed as biomass.

A seep area between roads 7N47 and 7N47C, west of an un-named intermittent stream, contains springs, and a meadow (0.4 acre). This area is located in Unit 22 (T6N, R15E, Sec1, NE ¼ and T6N, R16E, Sec 6, NW ¼). A small spring fed meadow also occurs to the south of road 7N47 (T6N, R16E, Sec 6, NW ¼). Conifers around these wet meadows would be removed to release the riparian vegetation and move the meadows toward the desired conditions. Trees would be hand felled and the material lopped and scattered or removed as biomass. A soil scientist would coordinate with the Sale Administrator and flag or GPS the seep area boundary in Unit 22 and assess equipment use at the time of harvest.

Black oak rehabilitation would occur in Unit 20 (4.4 acres). This unit occurs in a California spotted owl HRCA. Encroaching conifers under 10 inch dbh would be removed by hand to enhance hardwood sustainability. No mechanized equipment would be used in Unit 20. Trees and biomass would be removed, or hand piled and burned. Road work on 6N03E is needed to access treatment units on this road. The road prism in Unit 20 would be covered with geotextile material or filter fabric. The geotextile material would be covered with a 6-12 inch layer of sterile soil using rubber tire equipment. No blading or turning around on the road would occur in Unit 20. The landing area in Unit 39 would be utilized, but not expanded. At the completion of the project, the sterile soil and geotextile material placed on the road would be removed. The road segment that traverses Unit 20 would be allowed to degrade naturally.

A Pacific yew (*Taxus brevifolia*) was located between Units 15 and 21, along 7N47. This population would be avoided during road and plantation thinning activities to ensure survival.

5. Transportation

A travel analysis of the Bailey Plantation Health Improvement project, as described in FSM 7712, was conducted to inform decisions about changes in motor vehicle use or routes or areas and where there may be adverse environmental effect (FSM 7712.3.3), or construction of a new road (FSM 7712.4.2) or reconstruction, decommissioning, or converting a road to new uses (FSM 7712.4.3) (see Transportation Management Report).

Motor vehicle use and opportunities for motorized recreation experiences on the Stanislaus National Forest was analyzed pursuant to 36 CFR 212 Subpart B, the Motorized Travel Management Environmental Impact Statement (USDA, Forest Service 2009). The Stanislaus National Forest has not completed analysis to determine the minimum road system needed for safe and efficient travel and for administration, utilization and protection of National Forest System lands, and identification of unneeded roads that should be decommissioned, as indicated by 36 CFR 212 Subpart A. However, the Transportation Management Report identified opportunities to decommission roads that are not needed or are designated as open in the Motorized Travel Management Environmental Impact Statement. Those opportunities have been included in the proposed action.

The proposed action would include approximately 40.6 miles of closure, decommissioning, maintenance, reconstruction, and new road construction of existing National Forest System roads (39.8 miles), private (0.2 miles), and unauthorized roads (0.91 miles) as needed to facilitate traffic during the project, improve road drainage, and better protect the riparian and hydrologic systems (Table 4, Map 2). Transportation activities proposed are consistent with the Forest Plan Direction (USDA, Forest Service 2010; pg 62). Proposed rock or gravel locations and development criteria are provided in Appendix B. Surveys to detect the presence of Forest Service Region 5 sensitive plants would occur prior to rock or gravel development. Plant 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.

Table 4 Approximate miles of roads proposed for closure, decommissioning, maintenance, reconstruction, restoration or new construction to safely and efficiently carry out the proposed action.

Proposed Road Actions	Approximate Miles of Road			Total Miles
	National Forest System Road	Private Road	Unauthorized Road	
Closure.....	0.55			0.77
Reopen/Close.....	0.88	0.06		0.94
Decommission.....	0.24		0.8	1.10
Reopen/ Decommission.....	0.38			0.38
Maintain.....	22.50			22.50
New Construction.....	0.13			
Reconstruction.....	14.85		0.05	14.90
Watershed Rehabilitation ¹	0.23			0.23
Total Treated Roads (including new construction).....	39.76	0.06	0.91	40.61
No Treatments Proposed.....	21.06		2.94	23.99
Total Approximate Miles (including new construction).....	60.82	0.06	3.85	64.60

¹ Approximately 3.07 miles of road have been identified as hydrologically connected and in need of watershed rehabilitation (see Hydrology Report in project record). Approximately 2.84 miles of these areas would be treated by closing, decommissioning, or reconstructing the road system.

Closures

Roads being closed would remain on the National Forest Transportation System but would be physically closed to all motor vehicle travel by means such as native material boulders, berms, cull logs, and stumps. These roads are expected to be used intermittently when needed for project access, but kept closed for periods of years between uses. During the closure process, actions such as removing culverts and fills from stream channels and construction of durable drainage features such as water bars would be performed to stabilize the road and minimize hydrologic connectivity. The

first 300 feet (or more) from the road entrance would be camouflaged with brush or slash piles. Closed system roads are categorized as being in Maintenance Level 1.

Reopen/Close

This action describes reconstructing roads that are currently closed and overgrown and closing them after the project.

Decommission

Roads proposed for decommission would be closed and stabilized. However decommissioned roads are not intended to be reopened and used again in the future. In addition to blocking with barriers, removing culverts and constructing water bars, other actions may be taken to further reduce hydrological impacts, such as subsoiling, outsloping, recontouring, and mulching. The barriers may be augmented with techniques such as camouflaging the first 300 feet or more of the road entrance with brush or slash and recontouring the visible segment from its entrance.

Reopen/Decommission

This action describes reconstructing roads that are currently closed and overgrown and decommissioning them after the project.

Maintenance

Roads being used for the project that are in good condition or are not expected to be used by large hauling vehicles may be maintained during the project. Maintenance activities restore roads to their original condition and function but generally do not include improvements or construction of new features. Maintenance activities generally occur in the existing road prism, and include blading, brushing, and repair of road surfaces.

New Construction

This action describes constructing a new road that would result in the addition of a forest classified road. Approximately 0.13 miles of a new road would be constructed to tie in 7N47 to 6N45 for allow for material to be hauled to Black Springs Road (7N23). Travel cost analysis is provided in the Transportation Management Report. Surveys to detect the presence of Forest Service Region 5 sensitive plants would occur prior to new road construction activities. Plant 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.

Reconstruction

Reconstruction generally includes work to restore roads to serviceability for project haul vehicles. Actions can include both maintenance and construction of drainage dips, culverts, riprap fills, or other drainage or stabilization features, and widening of curves as needed for chip van passage. An existing unauthorized road segment (0.05 miles) connects 7N71Y to 7N47. This connection has been used to haul material to the north (in place of a wide curve). This connection is poorly drained, but stable, and would be added to the National Forest Transportation System.

Temporary Roads

Some road segments may be designated as temporary roads. Temporary roads are not intended to be a permanent part of the road system and would be decommissioned after use. New or existing road segments may be identified as needed for temporary use during the operation of the project. Construction and use of a temporary road can be requested by the contractor and authorized by agreement by the Forest Service. Temporary roads are generally short, around 250 feet or less, and would be expected to total less than 0.25 mile in the project area.

Watershed Rehabilitation

Watershed rehabilitation improves drainage and reduces or eliminates watershed damage on a road that is not expected to be needed for project traffic. The actions generally include constructing or improving dips, water bars, culverts and other drainage features, repairing road surfaces, and similar means of correcting erosion and sedimentation problems. Watersheds for the project are delineated using the HUC (hydrologic unit code) system, a nested hierarchical system for classifying and naming watersheds based on size and location. The Hydrology Report shows the hierarchy of the watersheds (name and number) that encompass the project area. Table 5 provides hydrologically connected segments in each HUC 8 watershed.

Table 5 Hydrologically connected segments.

HUC 8 Name	Hydrologically Connected Length (mi)	Roads with High Hydrologic Concern
Upper East Forest Creek	0.15	None
Middle East Forest Creek	0.92	7N47, 7N47C, 7N46,
River Mile 24 Solinsky Crossing	1.40	6N03E, 6N03G, 6N18
Bailey Ridge Solinsky Crossing	0.48	6N18
River Mile 20 Solinsky Crossing	0.13	None

Roads with High Hydrologic Concern

7N47: Two sections of 7N47 are of high hydrologic concern and would be treated for watershed rehabilitation purposes. The eastern section of the road is located near a perennial spring. Flow from the spring has destabilized the road, causing a slump in the road. A culvert in this section of road has also failed. The western segment of this road is actively eroding and deeply rutted. An intermittent channel is flowing down the road. Road work to improve watershed condition of both segments would include repair of the failed culvert, slumps, wet areas, and road surface drainage.

7N47C: Most of 7N47C is wet into the summer months; however most of the road remains relatively stable. There is a failed culvert from a perennial spring that has created a deep gully adjacent to the road. This segment would be improved by repairing the culvert and gully, and installing gravel in wet areas of the road.

7N46: This road is wet in the summer months, with a 10% grade, and is deeply rutted. The segment is located adjacent to an intermittent stream and would be improved by installing dips and draining the spring off of the road.

7N46A: A plugged culvert has diverted flow from the channel onto the road surface. The culvert would be cleaned and improved to prevent future failure.

6N03E: The road, currently closed with large water bars, is located adjacent to an intermittent stream and a perennial spring. Several of these waterbars are delivering water and sediment directly to the intermittent channel. This spur would be reopened to treat several plantations in the project area and to address erosion concerns. At the end of project activities, the road north of the private boundary would be permanently decommissioned and the lower section closed. Decommissioning and closure techniques would include subsoiling and installing waterbars to reduce sediment delivery into the intermittent channel and perennial spring. The entrance into 6N03E would be blocked and camouflaged to prohibit traffic.

6N03G: The road is located adjacent to an intermittent channel and is currently closed with large waterbars. Most of the road is hydrologically connected and is delivering water and sediment directly to the intermittent channel. The road would be reopened in its current alignment and used to haul material from adjacent treatment units. At the end of project activities, 6N03G would be permanently

decommissioned. Decommissioning would be achieved through a combination of techniques including subsoiling the road bed, pulling fill where it is slumping into the channel and re-contouring the slope, adding slash for erosion control, planting with native species, and installing waterbars. The first 300 feet or more (if needed) of the road entrance would be camouflaged with brush or slash or other material.

6N18: This road has isolated sections that are of high hydrologic concern that would be addressed through reconstruction of the road to restore proper drainage.

Table 6 Proposed water source site-specific criteria.

Location	Site Description	Development
MF Mokelumne at 6N03 T6N, R16E, Sec 2	Intermittent stream, perennial in wet years; 6N03 road culvert crossing; low/no flows may preclude direct drafting in dry season	1. Portable Tank -- Plan and design out-of-channel development, most likely a portable tank; lack of large, flat areas near stream may limit opportunities for an out-of-channel pond. 2. Direct Draft -- Improve site - minimize in-channel and streambank excavation; dispose of spoils away from channel; add rock base course to drafting area; fix gully draining through drafting site caused by runoff from old upslope skid trail.
MF Mokelumne spur off 6N03; Private Land T6N, R16E, Sec 5	Perennial stream; spur road from 6N03 accesses dispersed camp site adjacent stream; on SPI land; hydrologically connected road segments (HCS) from 6N03 and spur contributing sediment to channel	1. Direct Draft via Portable Pump (“Indirect”) -- Use this option if no improvements to site can be made due to private ownership constraints- locate water tender on spur as far from channel as possible and use portable pump to fill tender; maintain vegetation adjacent to channel to act as buffer strip 2. Direct Draft -- Improve site- minimize HCS by eliminating drainage from 6N03 onto spur road; add rock base course to surface of spur road; place brow log or other barrier to restrict vehicle access to streambank, floodplain and channel; maintain vegetation adjacent to channel to act as buffer strip.
MF Mokelumne spur off 6N22; Private Land T6N, R15E, Sec 12	Perennial stream; spur road from 6N22 accesses dispersed camp site adjacent stream; on SPI land	1. Direct Draft -- Improve site, if allowable- minimize HCS from road and spur by adding dips or other measures; add rock base course to surface of spur road; place brow log or other barrier to restrict vehicle access to streambank, floodplain and channel; maintain vegetation adjacent to channel to act as buffer strip
Forest Creek spur off 7N48 T7N, R16E, Sec 32	Perennial stream; spur road adjacent to 7N48 culvert road crossing; HCS from 7N48 runs down spur and deposits sediment in channel; flows could be limited during dry season of low precipitation years and would preclude use.	1. Direct Draft -- Improve site- Install dip on 7N48 to minimize road drainage down spur; Add rock base course to surface of spur road; place brow log or other barrier to restrict vehicle access to streambank, floodplain and channel; Avoid in-channel and streambank excavation.
Forest Creek At 7N71Y; Private Land T7N, R15E, Sec 34	Perennial stream; spur road from 7N71Y.	1. Direct Draft -- Improve site, if necessary and allowable- minimize HCS from road and spur by adding dips or other measures; add rock base course to surface of spur road; place brow log or other barrier to restrict vehicle access to streambank, floodplain and channel; maintain vegetation adjacent to channel to act as buffer strip.

Water Sources

Five potential water sources in or near the project area have been identified for dust abatement. Site specific requirements are provided in (Table 6). Management requirements are provided in Appendix A. Surveys to detect the presence of Forest Service sensitive plants would occur prior to any water source development and 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.

Alternative 2 (No Action)

Under Alternative 2 (No Action), current management plans would continue to guide management of the project area. No activities would be implemented to accomplish project goals. The 302 acres of plantations would not be thinned.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 7 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 7 Summary of effects of implementing each alternative.

	Alternative 1 Proposed Action	Alternative 2 No Action
Plantations		
45-50 Year Age (acres thinned)	91	0
Canopy Closure (%) – (2010 / 2050)	80 / 77	80 / 86
Quadratic Mean Diameter ¹ (QMD) (inch) – (2010 / 2050)	14.0 / 25.4	14.0 / 22.4
CWHR Classification ² – (2010 / 2050)	4D / 5D	4D / 4D
20-25 Year Age (acres thinned)	211	0
Acres of Riparian, Meadow, and Hardwood Rehabilitation	7.8	0
Miles of Road Work Treated	40.6	0
Miles of Hydrologically Connected Segments	0	3.07
Cumulative watershed effects (CWE) using the Equivalent Roaded Acreage (ERA)		
Middle East Forest Creek (2011 / 2020)	4.81 / 2.80	4.12 / 2.73
Upper MF Mokelumne River	2.65 / 2.38	2.14 / 2.33

¹ Quadratic mean diameter is the diameter corresponding to the mean [basal area](#).

² See Table 9 for CWHR definitions.

3. ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in Table 7. More detailed discussions of these issues are contained in the project record:

- Silvicultural/Vegetation Management Report
- Forest Health Report
- Terrestrial Plant and Wildlife Biological Assessment/Evaluation,
- Aquatics Biological Assessment/Evaluation,
- Management Indicator Species Report,
- Hydrology Report
- Soils Evaluation
- Cultural Resource Management Report
- Fire/Fuels Report
- Transportation Management Report

Effects Relative to Relevant Issues

No relevant issues or alternatives emerged from the public scoping or internal review process.

Effects Relative to Significance Factors

This section describes the context and intensity factors which provide a basis for determining if an action would have significant effects to the human environment (40 CFR 1508.27). It provides sufficient evidence and analysis for the responsible official to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

Context

Context is a site specific action that by itself does not have international, national, regional, or statewide importance. The Bailey Plantation Health Improvement project is located in the northern end of the Stanislaus National Forest and proposes to treat 307 acres out of approximately 900,000 acres in the Stanislaus National Forest. The project area has no urban communities in close proximity, and is surrounded by private lands managed for forest products.

Intensity

Intensity means the degree to which the Alternatives would involve one or more of the following 10 factors.

1. Beneficial and adverse impacts.

Vegetation Management

Affected Environment

Descriptions of the structure and composition of the plantations in the project area are provided in the Purpose and Need section of this EA. The 45-50 and the 20-25 year age class plantations in the project area have hazardous stand conditions conducive to bark beetle-caused tree mortality

(see Forest Health Report). Stand conditions that can contribute to bark beetle hazard ratings include high stand densities, high levels of host species composition, and large tree diameters (Chojnacky et al. 2000). Stands are overstocked with conifer and, in some locations, brush species. Overstocking reduces inter-tree growing space, resulting in competition for limited soil moisture and other commodities (Oliver and Larson 1990). This can lead to low oleoresin exudation pressure, which increases ponderosa pine susceptibility to western pine beetle caused mortality when attacked (Vite and Wood 1962). Ponderosa pines in young and old plantations exceed minimum diameter thresholds (6-inch dbh) for western pine beetle attack (*Dendroctonus brevicomis*) (Cochran and Barrett 1998).

Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

The thinning treatments described in the proposed action (mechanical thin, biomass and mastication) focus on removing or chipping small, intermediate, and suppressed trees while leaving large trees. This would increase the availability of water and sunlight to the residual trees, improving their health and vigor, thus making them less susceptible to environmental stressors such as drought, insect attack, mistletoe and other pathogens (Fettig et al. 2007). Favored retention of Douglas-fir, sugar pine, white fir, incense cedar, and ponderosa pine within the stands would shift species compositions more towards a mix appropriate for the site under drought conditions and natural fire regimes (North et al. 2007, Zald et al. 2008).

Individual tree growth is inversely related to the density of trees (Dunning and Reineke 1933, Oliver 1972, Barrett 1983, Cochran and Barrett 1995, Oliver 1997). In order to reach average tree sizes of 30 inch diameter, well-stocked mixed conifer stands in the Sierra Nevada on sites similar to this project have stocking levels of approximately 50 to 70 trees per acre (Dunning and Reineke 1933, Lutz 2009).

Forest Vegetation Simulator analysis was computed for the thinning to a BA of 110 (Alternative 1 – Proposed Action) within the 45-50 year-old plantations. Simulations were conducted using a thin from below harvesting method and a species take preference of ponderosa pine and white fir. All hardwoods were modeled to be retained. The harvesting was scheduled to take place in 2012, with projections until the year 2060. The volume of timber product removed was estimated to be 593 thousand board feet (MBF) of primary product and 333 green tons of secondary products.

Thinning to a BA of 110 in these older plantations yields an increased growth rate related to SDI, BA, and QMD, with a near stable trend in trees per acre (Table 8, Figure 1 and 2). Canopy closure increases through the year 2060, with a decline in rate of closure near 2040. The stand also drops to a 4M CWHR classification immediately post harvest, but returns to a 4D CWHR classification by the year 2015 (see Table 9 for CWHR definitions). By the year 2050, trees have grown into a 5D CWHR classification under this scenario.

The proposed treatments in the 45-50 year-old plantations would reduce the potential for beetle infestation by reducing the SDI to below the “zone of imminent bark beetle mortality,” defined near 230 (Oliver 1995, Long and Shaw 2005) and above the full site occupancy at 150 SDI (Long and Shaw 2005). Lowering the stocking to below full site occupancy encourages the establishment of competitive brush and seedlings. The proposed silvicultural prescriptions would also leave higher tree densities/canopy closures than described in standards in the Forest Plan Direction (USDA, Forest Service 2010; p. 36), to allow for natural mortality, structural diversity, and to maintain canopy covers at the 60% levels. Kolb et al. (2007) has shown that removing small trees around large, older trees causes a positive growth response in the large, older trees. Trees of this size are desirable for many sensitive wildlife species and resistant to low and moderate intensity fire.

Table 8 Contrast of plantation structure between the no action and proposed action alternatives for the 45-50 year-old plantations.

Attribute	Alternatives	Year			
		2010	2012	2035	2055
Stand Density Index (SDI)	Alt 1 - Proposed Action	315	164	230	255
	Alt 2 - No Action	315	320	349	347
Basal Area (BA) (sq. ft./acre)	Alt 1 - Proposed Action	198	110	170	201
	Alt 2 - No Action	198	204	245	261
Quadratic Mean Diameter (QMD) (inch)	Alt 1 - Proposed Action	14.0	16.9	21.6	25.4
	Alt 2 - No Action	14.0	14.8	19.0	22.4
Canopy Closure (%)	Alt 1 - Proposed Action	80	61	74	77
	Alt 2 - No Action	80	82	86	86
Trees per Acre (TPA)	Alt 1 - Proposed Action	175	171	67	57
	Alt 2 - No Action	175	171	125	95
California Wildlife Habitat Relationships (CWHR) Classification	Alt 1 - Proposed Action	4D	4M	4D	5D
	Alt 2 - No Action	4D	4D	4D	4D

Table 9 Definitions of the California Wildlife Habitat Relationships System (CWHR) size and density.

CWHR Size and Density Class	DBH (inches)	Canopy Cover for CWHR (%)
1X	Seedlings	
2X	Saplings	
3X	6-11	
3P	6-11	10-39
3M	6-11	40-59
4S	12-24	<10
4P	12-24	10-39
4M	12-24	40-59
4D	12-24	>60
5S	>24	<10
5P	>24	10-39
5M	>24	40-59
5D	>24	>60

Trend from 2008-2050 for Stand Density Index, Basal Area, and Trees per Acre Estimated for the Proposed Action and No Action Alternative

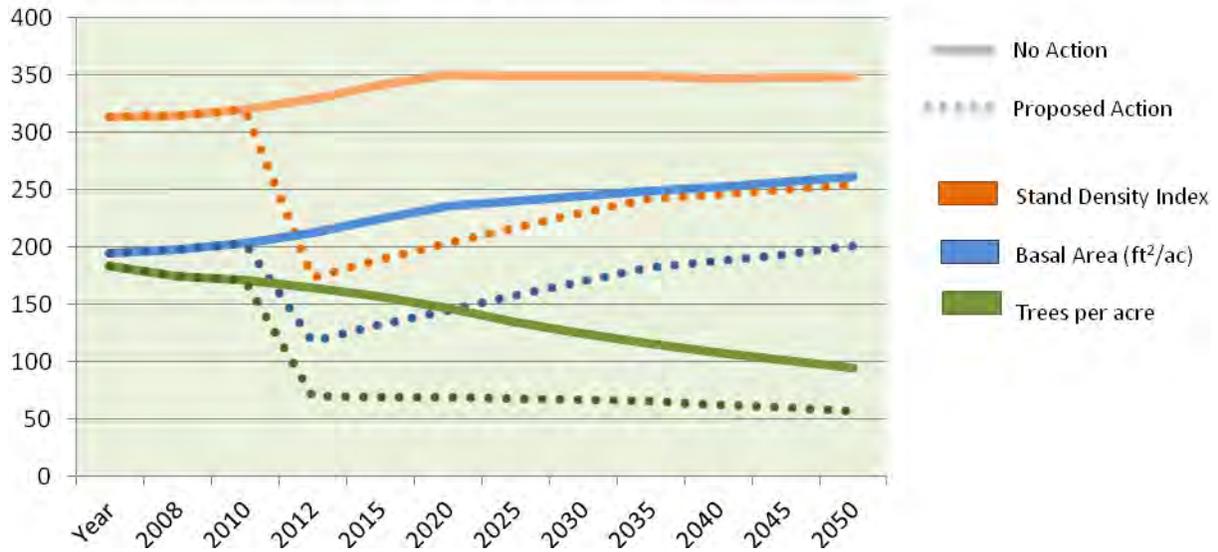


Figure 1 Stand Density Index, Basal Area, and Trees per Acre comparison between the Proposed Action and the No Action Alternative for the 45-50 year-old plantations.

Trend from 2008-2050 for the Quadratic Mean Diameter Estimated for the Proposed Action and No Action Alternative

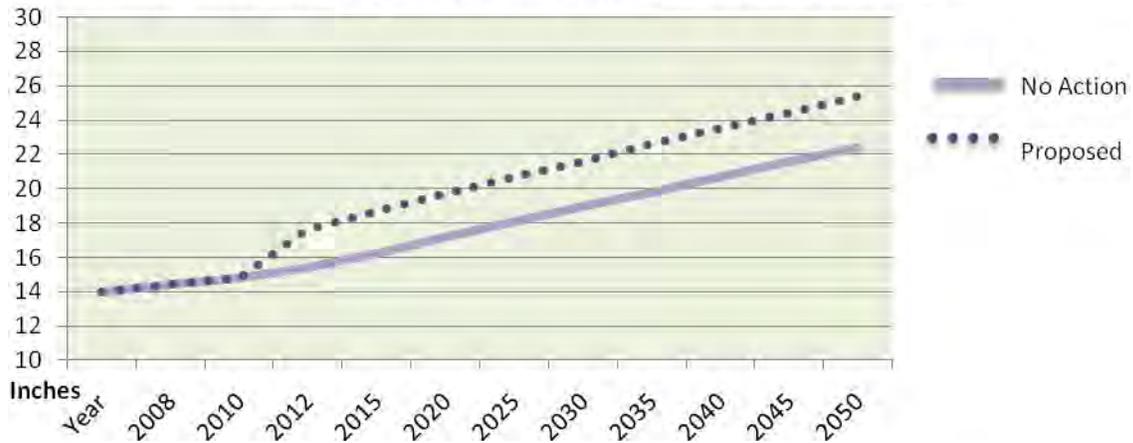


Figure 2 Quadratic Mean Diameter comparison between the Proposed Action and the No Action Alternative for the 45-50 year-old plantations.

By thinning the 20-25 year-old stands to 20 x 20 foot spacing (Alternative 1, Proposed Action), competition for light, water, and soil resources would be reduced; resulting in increased tree vigor and tree growth rate. Trees of high vigor are less susceptible to insect and pathogen attack. High growth rates would also allow the stands to reach a 4M or 4D CWHR classification and become suitable habitat for late successional dependant wildlife species.

Several meadow and spring complexes have been identified within the project. Removal of trees within, and immediately surrounding, the aquatic features would bring them closer to their natural condition. The presence of vegetation in proximity to a special aquatic feature has been shown to reduce available water (Stednick 1996, Keppeler 1998). Removing brush and timber within and near a special aquatic feature will make available water and sunlight to grasses and forbs naturally occupying the area.

Alternative 2 (No Action)

With no treatments in the 45-50 year-old plantations, the SDI increases until approximately 2025 where mortality within the stands begins to surpass accretion (Table 8). Canopy closure also plateaus near the year 2025 at approximately 86%. Basal Area and QMD continue to increase throughout the simulated time frame suggesting that the model favors mortality in the smaller tree diameters due to suppression, insects, and pathogens.

Without treatment, the plantation stands retain a 4D CWHR classification (12-24 inch dbh with > 60% canopy cover) throughout the modeling period. The 45-50 year-old plantations have a high hazardous stand condition regarding potential western pine beetle caused mortality. Forest Creek plantations (approximately 2 miles away) had similar hazardous stand characteristics as the older plantations in the project area. Recent western pine beetle caused tree mortality in the Forest Creek area provide a site-specific case study to illustrate how high levels of bark beetle-caused tree mortality can occur in unmanaged stands with high hazard ratings.

With the No Action Alternative, the 20-25 year-old plantations would continue to fill in the remaining openings, becoming increasingly dense and competition stressed. Vigor would be diminished and growth rates reduced. Forest stands would reach high densities at a diameter range where they are most susceptible to western bark beetle attack. Mortality would exceed accretion. Plantations that received previous thinning have reached a high density and deteriorating state. Dense stands have resulted in stagnated growth, limited regeneration, and increasing mortality. Competition for soil, sunlight, and water resources would increase, further reducing the stand vigor and resistance to beetle or pathogen attacks and drought conditions. Increased tree mortality is likely and successful beetle infestations would increase the risk of pathogens to healthier stands nearby.

Watershed, riparian, meadow and hardwood rehabilitation activities would not be conducted. Degraded riparian areas and hydrologically connected segments would continue to deliver sediment into streams. Conifer encroachment may continue into meadow environments, reducing the extent of these special aquatic habitats.

Wildlife (Terrestrial and Aquatic) and Sensitive Plants

A Biological Assessment was prepared for species listed under the Federal Endangered Species Act, and a Biological Evaluation was prepared for Forest Service sensitive terrestrial and aquatic wildlife and plant species. In addition, a Management Indicator Species (MIS) Report was prepared. These reports evaluate the beneficial and adverse impacts of the alternatives to wildlife and sensitive plants. They are incorporated by reference.

Table 10 Endangered, threatened, proposed, candidate terrestrial and aquatic species that were considered outside the geographic or elevation range.

Species Name	Status	Species Present	Habitat Present	Direct/Indirect Effects
Valley Elderberry Longhorn Beetle (<i>Desmocerus californicus dimorphus</i>)	Threatened	No	No	No/No
California red-legged frog (<i>Rana draytonii</i>)	Threatened	No	No	No/No
Lahontan cutthroat trout (<i>Oncorhynchus clarki henshawi</i>)	Threatened	No	No	No/No
Delta smelt (<i>Hypomesus transpacificus</i>)	Threatened	No	No	No/No
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	Threatened	No	No	No/No

Table 11 Forest Service sensitive terrestrial and aquatic species that were considered outside the geographic or elevation range of the project area, or suitable habitat was not present.

Species	Distribution Range	Elevation Range	Habitat In or Around Project	Direct/Indirect Effects
Terrestrial Wildlife Species				
Swainson's hawk (<i>Buteo swainsoni</i>)	No	No	No	No/No
Willow flycatcher (<i>Empidonax traillii</i>)	Yes	Yes	No	No/No
Great gray owl (<i>Strix nebulosa</i>)	Yes	Yes	No	No/No
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Yes	Yes	No	No/No
Peregrine falcon (<i>Falco peregrinus</i>)	Yes	Yes	No	No/No
California wolverine (<i>Gulo gulo luteus</i>)	Yes	No	No	No/No
Western red bat (<i>Lasiurus blossevillii</i>)	No	No	No	No/No
Aquatic Species				
Relictual slender salamander (<i>Batrachoseps relictus</i>)	Yes	No	No	No/No
Limestone salamander (<i>Hydromantes brunus</i>)	No	No	No	No/No
Foothill yellow-legged frog (<i>Rana boylei</i>)	Yes	No	No	No/No
Western pond turtle (<i>Clemmys marmorata</i>)	Yes	No	No	No/No
Hardhead (<i>Mylopharodon conocephalus</i>)	Yes	No	No	No/No
Yosemite toad (<i>Bufo canorus</i>)	Yes	Yes	No	No/No
Plant Species				
Nissenan Manzanita (<i>Arctostaphylos nissenana</i>)	No	No	No	No/No
Big-scale balsamroot (<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>)	Yes	No	No	No/No
Common moonwort (<i>Botrychium lunaria</i>)	No	No	No	No/No
Lake Tahoe draba (<i>Draba asterophora</i> var. <i>asterophora</i>)	No	No	No	No/No
Blandow's bog moss (<i>Helodium blandowii</i>)	No	No	No	No/No
Parry's horkelia (<i>Horkelia parryi</i>)	No	No	No	No/No
Slender lupine (<i>Lupinus gracilentus</i>)	No	No	No	No/No
Elongate copper moss (<i>Mielichhoferia elongate</i>)	No	No	No	No/No

Table 12 Estimated direct, indirect, and cumulative effects and determination for Forest Service sensitive terrestrial and aquatic species that were considered to be inside the geographic or elevation range of the project area and has suitable habitat.

Species	Effects			Determination
	Direct	Indirect	Cumulative	
Terrestrial Wildlife Species				
Northern goshawk (<i>Accipiter gentilis</i>)	No	Yes	No	MA / NI, ¹
California spotted owl (<i>Strix occidentalis occidentalis</i>)	No	Yes	No	MA / NL
Pallid Bat (<i>Antrosous pallidus</i>)	No	Yes	No	MA / NL
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	No	Yes	No	MA / NL
American marten (<i>Martes americana</i>)	No	Yes	No	MA / NL
Pacific fisher (<i>Martes pennanti pacifica</i>)	No	Yes	No	MA / NL
Sierra Nevada red fox (<i>Vulpes vulpes</i>)	No	Yes	No	MA / NL
Aquatic Species				
Mountain yellow-legged frog (<i>Rana</i>)	No	Yes	No	MA / NL
Plant Species				
Jepson's onion (<i>Allium jepsonii</i>)	No	No	No	No Effect
Three-bracted onion (<i>Allium tribracteatum</i>)	No	No	No	No Effect
Upswept moonwort (<i>Botrychium ascendens</i>)	No	No	No	No Effect
Scalloped moonwort (<i>B. crenulatum</i>)	No	No	No	No Effect
Mingan moonwort (<i>B. minganense</i>)	No	No	No	No Effect
Mountain moonwort (<i>B. montanum</i>)	No	No	No	No Effect
Bolander's bruchia (<i>Bruchia bolanderi</i>)	No	No	No	No Effect
Clubhair mariposa lily (<i>Calochortus clavatus</i> var. <i>avius</i>)	No	No	No	No Effect
Mountain lady's slipper (<i>Cypripedium montanum</i>)	No	No	No	No Effect
Sub-alpine fireweed (<i>Epilobium howellii</i>)	No	No	No	No Effect
Tuolumne fawn lily (<i>Erythronium</i>)	No	No	No	No Effect
Brook pocket moss (<i>Fissidens aphelotaxifolius</i>)	No	No	No	No Effect
Short leaved hulsea (<i>Hulsea brevifolia</i>)	No	No	No	No Effect
Veined water lichen (<i>Hydrothyria venosa</i>)	No	No	No	No Effect
Tuolumne iris (<i>Iris hartwegii</i> ssp.)	No	No	No	No Effect
Kellogg's lewisia (<i>Lewisia kelloggii</i> ssp. <i>kelloggii</i>)	No	No	No	No Effect
Stebbin's lomatium (<i>Lomatium stebbinsii</i>)	No	No	No	No Effect
Three ranked hump moss (<i>Meesia triquetra</i>)	No	No	No	No Effect
Broad nerved hump moss (<i>M. uliginosa</i>)	No	No	No	No Effect
Pansy monkeyflower (<i>Mimulus pulchellus</i>)	No	No	No	No Effect

¹ May affect individuals, but is not likely to contribute to the need for federal listing or result in loss of viability in the planning area.

There were no federally listed Threatened or Endangered terrestrial or aquatic wildlife species that occurred in the Bailey Plantation Health Improvement project area (Table 10). Seven Forest Service sensitive terrestrial wildlife species, six sensitive aquatic species, and eight sensitive plant species were outside the geographic or elevation range of the project area or there was no suitable habitat present in or near the project area (Table 11). Seven sensitive terrestrial wildlife species, one aquatic species, and 20 sensitive plant species were considered within the geographic or elevation range, and suitable habitat for these species was present in or near the project area (Table 12). Direct, indirect, and cumulative effects related to species listed in Table 12 are summarized below.

Terrestrial Wildlife - Affected Environment

California spotted owls (*Strix occidentalis occidentalis*) and northern goshawks (*Accipiter gentilis*) were detected during surveys conducted in 2006-2007. Four California spotted owl and two northern goshawk Protected Activity Centers (PACs) occur within the Bailey Plantation Health Improvement project area, with an additional two spotted owl and two goshawk PACs in the cumulative analysis area. Goshawk PACs in the project area are 200 acres each. The four spotted owl PACs comprise 300 acres each. There are four HRCAs associated with these four spotted owl PACs; however, due to the constrained juxtaposition of owl PACs and the extensive, surrounding private timber land, there is not sufficient acres to allocate 700 acres of HRCA to each PAC.

California spotted owls require tall, dense, mature mixed conifer forests. Per the 2004 Sierra Nevada Forest Plan Amendment Record of Decision, desired conditions for California spotted owls include: (1) at least two tree canopy layers; (2) dominant and co-dominant trees with average diameters of at least 24 inches dbh; (3) at least 60-70% canopy cover; (4) some very large snags (greater than 45 inches dbh); and (5) snag and down woody material levels that are higher than average (USDA, Forest Service 2004). Goshawks typically use mature forest or larger trees for nesting habitat, but nesting habitats are typically within a mosaic of varying forest types and ages that meet its life history requirements. Goshawks have been described as forest generalists but do show a tendency to select nest locations in stands of large trees with relatively high canopy closure.

Surveys were not conducted for American marten (*Martes americana*), Pacific fisher (*Martes pennanti pacifica*), Sierra Nevada red fox (*Vulpes vulpes necator*), pallid bat (*Antrosous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Suitable habitat occurs for these species in the Bailey Plantation Health Improvement cumulative analysis area; and therefore, presence was assumed for these species for effects analyses.

An incidental sighting of an American marten occurred in 2010 near the project area. A small population of Sierra Nevada red fox has recently been detected (September 2010) on the Stanislaus National Forest approximately 30 aerial miles southeast of the project area. No sightings have been reported in the Highway 4 corridor for over 20 years.

American marten are associated with mature coniferous [lodgepole pine (*Pinus contorta*), Douglas fir (*Pseudotsuga menziesii*), spruce (*Picea* spp.), and mixed hardwood] forests with canopy closure >60%. American marten den in hollow trees, crevices, or ground burrows. Likewise, Pacific fisher den in hollow trees in mature, mixed coniferous and hardwood forests with >80% canopy cover. The Sierran Nevada red fox utilizes mixed habitats of brushland with clearings, forest edges, marshes and woodland. The pallid bat roosts in rocky outcrops, associated with grassland, shrubland, woodland, and mixed conifer forests, whereas the Townsend's big-eared bat utilizes exposed, cavity forming rock and/or historic mining areas in coniferous habitats.

Terrestrial Wildlife -- Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

Direct, indirect, and cumulative effects from Bailey Plantations Health Improvement project are expected to be minimal for sensitive wildlife species (Table 12). Wildlife species (i.e., spotted owl, goshawk, marten, fisher, and Sierra Nevada red fox) associated with mixed conifer forest stands may benefit in the long term (approximately 20 years) from opening and diversifying dense stands of even aged trees in plantations proposed for thinning. The majority of stand reduction would be concentrated in ponderosa pine and to a lesser extent, incense cedar and other species. The 40-45 year-old plantations (91 acres) are classified as a CWHR 4D class (CDFG 2008) (Table 9). Approximately 85 acres occur in HRCAs. Less than 10 inch diameter trees are proposed for thinning in an additional four acres of HRCA to enhance black oak populations. Removal of size class 4-trees to 60% would result in reclassification to 4M. Post-treatment stands would return to 4D in 20-30 years and eventually to 5D, in approximately 40 years. No large snags would be removed (only less than 16 inch dbh), therefore, species associated with large snags (i.e., spotted owl, goshawk, marten) would not be affected negatively. Habitat for pallid bat and Townsend's big-eared bat may be altered but there are no known rocky outcrops, and therefore, the chance of occupancy is minimal. Sierra Nevada red fox is not known in this area, but might benefit from forest openings in small acreages which may provide more habitat for prey species. Habitat for Pacific fisher is marginal in the project area, due to the severity of habitat fragmentation and lack of dispersal corridors. Therefore, the short-term reduction in canopy cover to 60% would have negligible negative effects for fisher.

The high number of mature forest associated species (i.e., spotted owl and goshawk) in the Bailey project area is likely associated with the adjacent land management practices that have resulted in highly fragmented surrounding landscape. The insufficient acres to allocate 700 acres of HRCA to each PAC may increase the likelihood of intraspecific (spotted owls) and interspecific (owls and goshawks) competition for habitat. This competition may reduce species' fitness and contribute to unstable populations. As such, increasing the habitat suitability of plantations in the project area will help in population stability. The proposed activities in the project area would not substantially increase habitat fragmentation or reduce dispersal corridors.

Alternative 2 (No Action)

Direct and indirect effects associated with this Alternative include increased stand densities, and plateaus in canopy closure and tree growth. Without treatment, the plantation stands would retain a 4D CWHR classification with smaller trees than the proposed action and would be more susceptible to insects and pathogens resulting in potential loss of forest stands from forest health threats. Forest health threats could lead to substantial fragmentation to these mature forest habitats. Epidemic perturbations on the landscape would have a greater long-term risk to the survival of the PACs/HRCA's and species associated with them, than would the short-term habitat loss and potential species' fitness decline from forest thinning.

Aquatic Species - Affected Environment

The project area contains no perennial water sources; however, there are 1.64 miles of intermittent and 3.24 miles of ephemeral headwater stream reaches. Habitat is highly fragmented with up to 1.50 miles of dry channel between patches of suitable habitat. There is no deep water habitat (>13 feet deep) within the project area. As such, mountain yellow-legged frog (*Rana muscosa*) dispersal habitat in the project area is considered to be low quality.

Mountain yellow-legged frogs are highly aquatic and reportedly never found >10 feet from water (Mathews and Pope 1999). Suitable mountain yellow-legged frog breeding and rearing habitat exists downstream of the project area (within two miles) in Forest Creek and Middle Fork

Mokelumne River. The Middle Fork Mokelumne River has little evidence of active down cutting or accelerated incision of the stream channel. Residual pool depth is high (0.66-1.71 ft), and pool tail fine sediment percentage is below the optimum sediment tolerance for the foothill yellow-legged frog at 11% (Bryce et al. 2010), indicating that this project should not produce sediment in amounts of concern for the mountain yellow-legged frog.

There is sufficient quantity of large woody debris to armor banks, form pools and provide quality aquatic habitat diversity. Stream banks are stable and support riparian vegetation that provides adequate shading and that results in cool water temperatures ranging from 11-18°C. Obligate riparian vegetation is dominated by alder (*Alnus* spp.) and willow with a subdominant component of azalea (*Rhododendron* spp.) and dogwood (*Cornus* spp.). Stream characteristics indicate that the Middle Fork Mokelumne River has the physical structure to withstand large storm events and effectively transport water and sediment downstream (see Hydrology Report).

Forest Creek also has little evidence of downcutting or stream channel incision. Stream banks are stable with adequate shading which keeps water temperatures low (10-12°C). Obligate riparian vegetation is dominated by willow and alder. Pools have a low percentage of pool bed fine sediment (2-4%) and pool tail fine sediment (3-7%). Pool percentage is low suggesting a deficiency in pool habitat, but this could be explained by the higher gradients in Forest Creek. Physical and biological data indicate that the stream is in fair to good condition (see Hydrology Report).

Aquatic Species - Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

Direct, indirect, and cumulative effects from Bailey Plantations Health Improvement project are expected to be minimal for sensitive aquatic species (Table 12). Approximately 211 acres of 20-25 year-old plantations are proposed for biomass/mastication thinning using tracked vehicles that have a low ground disturbance. The low ground disturbance vehicles and the small area being treated (8% of the project area) should minimize the impacts on habitat. The thinning of plantations may have a minor addition in sedimentation to the watershed. Approximately 91 acres of plantations are proposed for thinning of merchantable timber and biomass/mastication. Rubber tired skidders would be utilized and may produce more sedimentation than thinning, however, the total area being treated is very small (3.6% of project area). The treatment of these plantations should create a moderate increase in sedimentation for the short term, but within two years of project completion, it is thought that the sediment created by this project would be negligible (see Hydrology Report).

The proposed road activities should have no long term negative impacts to amphibian habitat downstream of the project. The proposed action should have beneficial effects on sedimentation due to repairs performed on the road system and the replacement of inoperable culverts. The removal of the culvert on road 6N03G, and the restoration of the riparian vegetation could cause a short-term minor increase in sedimentation during project implementation. Rehabilitation of the stream channel should reduce sedimentation to the watershed in the long-term. Planting of riparian vegetation should help stabilize the stream bank and hold the soil in place, which should reduce sedimentation in the watershed. After project completion the road would be closed at the forest boundary and decommissioned from the forest boundary to the end of the road, which should remove the hydrologic connectivity of the road and result in a beneficial effect on the watershed for the long-term.

The removal of encroaching conifers in the meadow habitat could increase volume and duration of available water in special aquatic features (i.e. meadows, springs, seeps). The releasing of the

hardwoods should allow the stand to increase in size and vigor by reducing competition from the conifers. This action would be beneficial for the watershed for the long term.

Alternative 2 (No Action)

Direct and indirect effects associated with this Alternative include increased risk to insects and pathogens resulting in potential loss and increased fragmentation of forest stands. Increased stand densities may reduce available water supplies, reducing dispersal habitat for the mountain yellow legged frog. Sedimentation from the roads and problem culverts would continue to degrade the watershed and reduce aquatic habitats.

Sensitive Plants - Affected Environment

Sensitive plant surveys occurred in 2007, 2008, and 2009 in the project area and cumulative effects analysis area. Two populations of *Lomatium stebbinsii* were located, with over 20 individuals recorded. Highly suitable habitat for *L. stebbinsii* and *Allium tribracteatum* also occurs in the northwestern portion of the project area. Suitable habitat for sensitive species is present among even aged mixed conifer forests, riparian areas and volcanic bluffs within the project area, but negative survey results were found for other potential species.

Sensitive Plants - Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

Direct, indirect, and cumulative effects from Bailey Plantations Health Improvement project are expected to be minimal for sensitive plant species (Table 12). *Lomatium stebbinsii* was the only sensitive plant occurrence located in suitable habitats in the cumulative analysis area. Further, the population of *L. stebbinsii* was located outside of the project boundary, and thus, would not be affected from the proposed treatments. Lava caps would not be impacted in the project boundary, and therefore, sensitive species such as *Allium* spp. and *L. stebbinsii* would be protected from project effects. Sensitive plant species associated with wetland habitats (i.e., Special Aquatic Features) would be protected through the use of a 50 foot buffer around perennial and intermittent wetland features. This buffer would prohibit mechanized ground disturbance in and around areas with ground or surface water and suitable sensitive plant habitat. A plant survey and necessary protection measures would occur before riparian rehabilitation work near 6N03G, thus sensitive plants would not be adversely impacted. A single population of Pacific yew was located in the vicinity of proposed treatment in the project area. This population would be avoided in road and plantation thinning activities. In general, habitat alteration through thinning conifer stands may have a minimal effect on shade-loving plant species.

Alternative 2 (No Action)

Direct and indirect effects associated with this Alternative are related to current limitations in suitable habitat conditions in the project area. Sensitive plant wetland habitats would not benefit from hydrological rehabilitation activities. Further, there would not be an opportunity for plant communities to diversify through openings of the forest canopy. In contrast, there would be less chance of direct mortality to undetected plant populations in the Bailey project area. Overall, the existing plant communities in the Bailey project area would continue to exhibit low plant species richness due to the density of conifer stands in the plantations.

Management Indicator Species

The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA, Forest Service 2010a), which is hereby incorporated by reference. The MIS and habitat affected by the Bailey Plantation Health Improvement project are listed in the Table 13. Cumulative effects at the bioregional scale are detailed in the SNF

Bioregional MIS Report (USDA, Forest Service 2010a). See the Bailey Plantation Health Improvement MIS Report for more details.

Table 13 Habitat types and their associated Management Indicator Species potentially affected.

Habitat or Ecosystem Component	Sierra Nevada Forests Management Indicator Species
Riverine / Lacustrine	Aquatic macroinvertebrates
Oak-associated Hardwood and Hardwood/conifer	mule deer (<i>Odocoileus hemionus</i>)
Riparian	Yellow warbler (<i>Dendroica petechia</i>)
Wet Meadow	Pacific tree (chorus) frog (<i>Pseudacris regilla</i>)
Early Seral Coniferous Forest	Mountain quail (<i>Oreortyx pictus</i>)
Mid Seral Coniferous Forest	California spotted owl (<i>Strix occidentalis</i>)
Late Seral Closed Canopy Coniferous Forest	American marten (<i>Martes Americana</i>)
	Northern flying squirrel (<i>Glaucomys sabrinus</i>)

Lacustrine/Riverine Habitat (Aquatic Macroinvertebrates)

Alternative 1 (Proposed Action)

There is no lacustrine habitat in the project area. The direct and indirect effects to riverine habitat and aquatic macroinvertebrates pertain to flow, sedimentation, temperature, and water quality. Project activities would yield a short-term increase in sedimentation (1-2 years), but would decrease the overall sediment added to the watershed in the long-term (> 2 years). A slight increase in late summer stream flow (volume and duration) is expected following removal of conifers. Average temperature in adjacent streams could increase from vegetation removal associated with riparian areas. This would be minimized by following equipment and canopy closure guidelines for Riparian Conservation Areas (RCA).

From an equivalent roaded acreage (ERA) perspective, the cumulative effects analysis indicated that the implementation of the project would not result in ERA metrics near the threshold of concern (see Hydrology Report and expanded discussion in Hydrology section below). Grazing in the Lower Blue Allotment was considered as a cumulative action. Cumulative changes in water flow, sedimentation, temperature, and water quality would be too small to be measurable. As such, the proposed actions in the Bailey Plantation Health Improvement project would not alter the existing trend in the habitat or aquatic macroinvertebrates across the Sierra Nevada bioregion.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), the plantations would continue to be overstocked, which may reduce the amount of available water, lower stream flows, and increase water temperatures. In addition, the road system would continue to be a source of sediment into the watershed.

Oak-Associated Hardwood and Hardwood/Conifer (Mule deer)

The 20-25 year-old plantations are predominately ponderosa pine, with a mixture of sugar pine, white fir, and incense cedar. Most of the 20-25 year-old plantations are in the 3P and 3M CWHR classifications. Oak associated hardwoods occur in the vicinity of proposed plantation thinning. Detailed descriptions of the structure and composition of the plantations in the project area are provided in the Purpose and Need section of this EA. Encroaching conifers (< 10 inch dbh) would be thinned on approximately 4.4 acres of hardwoods in the project area.

Alternative 1 (Proposed Action)

The direct, indirect, and cumulative effects to oak-associated habitats and mule deer associated with the proposed action pertain to changes in potential acres of this habitat type. Indirect effects to habitat would be positive related to increased acres of oak associated habitats. Thinning of encroaching conifers in oak habitats (4.4 acres) and biomass/mastication actions in plantations (211 acres) may result in improved conditions for oak associated hardwood habitats for mule deer. Current CWHR types of 3P and 3M would be converted to openings; thus, potentially improving the existing trend in oak-associated habitat and hardwood species retention and colonization.

Potential adverse cumulative effects to oak-associated habitat impacts include type conversion from hardwood stands to primarily coniferous forest stands in the cumulative effects analysis area. Therefore, the implementation of the proposed action may increase of available oak-associated hardwood and hardwood/conifer habitats in the Bailey Plantation Health Improvement project area, slightly improving the existing trend in the habitat and potentially leading to a small change in the distribution of mule deer across the Sierra Nevada bioregion.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), indirect effects to habitat would be a continued loss of oak and hardwood recruitment and colonization resulting from lack of forest openings. Forest health concerns, such as beetle infestation, may naturally create openings over time but potentially not soon enough to maintain existing oak and hardwood stands. Activities contributing to the cumulative effects associated with oak habitat include type conversion from hardwood stands to primarily coniferous forest stands in the surrounding area.

Riparian Habitat (Yellow warbler)

The Bailey Plantation Health Improvement Project area contains approximately 5.4 acres of riparian habitat. The canopy closure is dense for both the deciduous and overall canopy cover.

Alternative 1 (Proposed Action)

The direct, indirect, and cumulative effects to the riparian habitats and the yellow warbler pertain to changes in canopy cover. RCA buffers guidelines would limit adverse effects to the riparian habitats. Deciduous trees and riparian obligate vegetation would be retained throughout the project area. The rehabilitation of the stream channel near Forest Service road 6N03G would increase the riparian vegetation along this channel. Canopy closure in the treated older plantations is expected to be reduced to approximately 60% after implementation of the project, and recover to 74% by the year 2035. There would be no change in the acres or canopy closure of riparian habitat in the project area.

The cumulative effects analysis indicated that the implementation of the project would not result in ERA metrics near the threshold of concern (see Hydrology Report and expanded discussion in Hydrology section below). Therefore, the implementation of the proposed action would not alter the existing trend in the habitat, nor would it lead to a change in the distribution of yellow warblers across the Sierra Nevada bioregion.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), riparian canopy closure would remain dense and continue to shade out the deciduous riparian plant species. High shade percentages in the riparian areas would reduce the deciduous species' ability to re-establish on the stream banks. This could reduce the acres of deciduous canopy. Likewise, structural diversity would be reduced in the riparian habitats. In addition, the road system would continue to be a source of sediment into the watershed.

Wet Meadow Habitat (Pacific tree frog)

Approximately 6.1 acres of wet meadows habitat were identified during field review of the project area. The meadows are dominated by plant species that are dependent upon a steady water supply (i.e., alder, willow, sedges, and rush). Some of these meadows have conifers that are encroaching on the meadow vegetation which may reduce the available water supply, lower the water table, and convert the habitat type from a wet meadow to a dry meadow system.

Alternative 1 (Proposed Action)

The direct and indirect effects to the wet meadow habitats and the Pacific tree frog pertain to conifer encroachment and the loss of available water and/or the lowering of the water table. The removal of encroaching conifers would improve meadow hydrology, which would increase the available water supply. The removal of encroaching conifers would also release riparian vegetation in the meadow and increase the overall acreage of wet meadow habitat. The overall wet meadow habitat (6.1 acres) consists of less than 1% of the project area, but the removal of encroaching conifers could result in the increase the acres of new wet meadow habitat in the project area.

There are no past, present or reasonably foreseeable future actions that would affect wet meadow habitat in the project area. Therefore, the implementation of the proposed action would not alter the existing trend in the habitat, nor would it lead to a change in the distribution of Pacific tree frogs across the Sierra Nevada bioregion.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), conifer encroachment would continue to occur in these wet meadow habitats, which may alter species composition of these special aquatic features. The loss of water may result in a type conversion towards a dry meadow species association, resulting in as much as 6.1 acres of wet meadow habitat loss in the project area.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

The 20-25 year-old plantations provide early and mid seral coniferous forest habitat for mountain quail. Most of the 20-25 year-old plantations are in the 3P and 3M CWHR classes (see Table 9 for CWHR class descriptions). Oak associated hardwoods occur in the vicinity of proposed plantations. Detailed descriptions of the structure and composition of the plantations in the project area are provided in the Purpose and Need section of this EA.

Alternative 1 (Proposed Action)

The direct, indirect, and cumulative effects related to early and mid seral coniferous forest habitat and mountain quail associated with the proposed action pertain to the change in understory shrub canopy closure within these plantations. Indirect effects to habitat would be beneficial as a variety of CWHR types would be created. Biomass and mastication actions would expand approximately 211 acres of CWHR 3P and 3M to other habitats with size class stands 1 and 2. Microhabitats would be available for foraging, nesting, and brooding in adjacent forest stands.

Cumulative effects contributing to loss of early and mid-seral coniferous forest habitats include timber projects managing for larger size class trees in the project area and surrounding private lands. However, removal of large size class coniferous forest stands in adjacent private land management areas has contributed increased acres of early and mid seral coniferous forest habitats. Therefore, the implementation of the proposed action resulting in a change in understory shrub canopy closure of early to mid seral coniferous forest habitat in the project area would not alter the existing trend in the habitat, nor would it lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), indirect effects to habitat would be negative as acres of early to mid-seral coniferous forest habitats would not be managed to meet the foraging, brooding, and nesting requirements of mountain quail. CWHR 3P habitat types would remain and potentially convert to larger size classes and greater canopy closures.

Cumulative effects contributing to loss of early and mid-seral coniferous forest habitats include timber projects managed for larger size class trees in the project and surrounding area. Removal of large size class coniferous forest stands in adjacent private land management areas may contribute to an increase in acres of early and mid seral coniferous forest habitats.

Late Seral Closed Canopy Coniferous Forest Habitat (California spotted owl, American marten, and northern flying squirrel)

The 91 acres of 45-50 year age class plantations represent late seral closed canopy coniferous forest habitat for the California spotted owl, American marten, and northern flying squirrel. These older plantations are considered a 4D classification under the CWHR system. Four California spotted owl Protected Activity Centers (PACs) occur within the Bailey Plantation Health Improvement project area, with an additional two spotted owl PACs in the cumulative analysis area. The four spotted owl PACs comprise 300 acres each. There are four HRCA associated with these four spotted owl PACs; however, due to the constrained juxtaposition of owl PACs and the extensive, surrounding private timber land, there is insufficient acres to allocate 700 acres of HRCA to each PAC.

Alternative 1 (Proposed Action)

The direct, indirect, and cumulative effects related to late seral closed canopy coniferous forest habitat and their associated species with the proposed action pertain to the change in canopy closure and structure within the treated plantations. Direct and indirect effects from project implementation are expected to be minimal for habitats in late seral closed canopy coniferous forests. This habitat may benefit in the long term (approximately 20 years) from thinning and diversifying dense stands of even aged trees in plantations. The majority of stand reduction would be concentrated in ponderosa pine and to a lesser extent, incense cedar and other species. Therefore, with the removal of size class 4 trees to 60% canopy cover, the stand would reclassify this habitat as 4M; thus, changing the habitat characteristics and quality. Large diameter class trees could be removed if they are hazardous to operations or if they display beetle infestation.

The implementation of the proposed action contributes minimally to the overall effects in the cumulative analysis area. Therefore, the implementation of the proposed action resulting in a change in CWHR habitat classification from 4D to 4M (and eventually 5D) of late seral closed canopy coniferous forest habitat in the Bailey Plantation Health Improvement project area would not alter the existing trend in the habitat, nor would it lead to a change in the distribution of the California spotted owl, American marten, and northern flying squirrel across the Sierra Nevada bioregion.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), direct, indirect, and cumulative effects include an increased SDI, until approximately 2035 where tree mortality within the stands may begin to surpass accretion. Canopy closure would also plateau near the year 2035 at approximately 86%. This habitat would be more susceptible to insects and pathogens resulting in potential loss of forest stands from forest health threats. Without treatment, the plantation stands would retain a 4D CWHR classification.

Hydrology

Affected Environment

The project is located in the Mokelumne River drainage, one of the four major rivers on the Stanislaus National Forest. Within the Mokelumne River drainage, the project is located in the Middle Fork of the Mokelumne River and Forest Creek subwatersheds. Geology on hillslopes and riparian areas is dominated by granitic rocks. Ridge tops are dominated by mud and lava flows, andesitic sediment, and lava caps. Lava caps have shallow soils and high runoff potential.

Roads were surveyed in the Bailey area in the fall of 2008 to assess hydrologic functionality and connectivity and cross drain stability. Hydrologically connected segments were classified as high, moderate, or low hydrologic concern based on sediment delivery and the probability of long-term failure. Roads on private land were not surveyed. Approximately 3.07 miles of road were identified that have a hydrologic concern within the project area (see Hydrology Report).

The beneficial uses applicable to the project area include freshwater habitat for cold and warm water fisheries, wildlife uses of water that support terrestrial or wetland ecosystems and wildlife habitat for amphibian and aquatic reptile species. The Forest is also responsible for ensuring that water would be drinkable after normal treatment (USDA, Forest Service 2010). Water quality parameters that could be affected by this project are water temperature, dissolved oxygen, and sediment-related measures, including sediment, total suspended solids, and turbidity. Ground disturbing activities can increase erosion and sedimentation, and removal of vegetation along stream courses can raise water temperature.

Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

Direct and indirect effects of the proposed action are summarized in Table 14. Cumulative watershed effects (CWE) were evaluated using the Forest Service equivalent roaded acreage (ERA) methodology (USDA, Forest Service 1988). The ERA model is intended to predict the risk of cumulative effects, not actual effects. As such, it is intended to be an initial screen for focusing field evaluation priorities and can successfully be used to compare effects between alternatives. Greater information on the ERA model and input parameters is located in the Hydrology Report (project file).

Based on field evaluation, the low erosion hazard of the project treatments (thinning, biomass/mastication), and the small area proposed for treatment in each watershed, CWE were not modeled for the Headwaters Schaads Reservoir, Upper East Forest Creek, Bailey Ridge Solinsky Crossing, and River Mile 20 Solinsky Crossing HUC8 watersheds. The potential for cumulative watershed effects from the Bailey project is extremely low in these watersheds.

Results of the ERA modeling indicate that estimated cumulative watershed effects are well below the threshold of concern for all of the project watersheds (Table 15). Field evaluation validated the ERA model prediction that the proposed action, in conjunction with constant features, past activities, and other reasonably foreseeable future activities in the project watersheds were not expected to result in adverse cumulative watershed effects. Throughout the 10 year period analyzed, the estimated ERA percentages remained well below the threshold of concern of 10 - 12% for these watersheds.

Over the long-term, the project would improve watershed condition. Road maintenance, reconstruction, decommissioning, and watershed rehabilitation projects would improve long term-stability on sediment producing roads. The streambank and bed rehabilitation work and removal of conifers from meadows and special aquatic features would also improve hydrologic condition. This project 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.

Table 14 Estimated direct and indirect hydrologic effects of the proposed action.

	Water/Stream flow	Erosion and Sedimentation (Mechanized Equipment)	Erosion and Sedimentation (Roads)
Direct	Beneficial uses of water would continue to be met through the implementation of Region 5 Water Quality BMPs and project design criteria.	There would be the potential for an increase in erosion and sedimentation into streams for 1-2 years following project implementation, as a result of ground disturbance by mechanized equipment. BMPs and management requirements would minimize these effects.	Road condition would be improved through reconstruction and repair of drainage features and road surfaces. This would reduce the threat of erosion and sedimentation into streams from hydrologically connected roads.
Indirect	<p>A slight increase in the volume and duration of late summer stream flow is expected following removal of vegetation, resulting from a decrease in plant transpiration.</p> <p>Average temperature in adjacent streams could increase from removal of vegetation in or near riparian areas. Guidelines for Riparian Conservation Areas would minimize this effect.</p> <p>Volume and duration of flow could increase in special aquatic features through removal of encroaching conifers.</p>	Project activities including road and culvert stabilization, road decommissioning, and stream bank rehabilitation work would decrease long-term effects of erosion and sedimentation.	

Table 15 Cumulative watershed effects estimating the equivalent roaded acreage (ERA) of the alternatives.

Year	Annual % ERA per Alternative ¹			
	Middle East Forest Creek		River Mile 24 Solinsky Crossing (Upper MF Mokelumne River)	
	No Action	Proposed Action	No Action	Proposed Action
2011	4.12	4.81	2.14	2.65
2012	5.04	5.66	2.89	3.36
2013	6.22	6.77	3.54	3.95
2014	5.71	6.19	3.30	3.66
2015	5.20	5.61	3.14	3.45
2016	4.69	5.03	2.98	3.23
2017	4.18	4.45	2.81	3.02
2018	3.67	3.88	2.65	2.81
2019	3.17	3.31	2.49	2.59
2020	2.73	2.80	2.33	2.38

¹ The increase in annual percent ERA from 2012 to 2013 under the No Action Alternative is a result of planned timber harvest on private land.

Alternative 2 (No Action)

Since mechanized equipment operations would not occur with this Alternative, there would be no increase in direct or indirect effects related to erosion and sedimentation from mechanized equipment. Hydrologically connected road segments would not be treated and would continue to be a chronic source of excess runoff and sediment delivered to streams. Although beneficial uses of water would continue to be met at present, late summer streamflows would continue to be suppressed due to the high transpiration of dense vegetation that currently exists within the project area. Likewise, flow would remain suppressed at Special Aquatic Features and the potential extent of riparian vegetation would be limited due to encroaching, densely-growing conifers surrounding these features. Stream temperature would not increase since riparian canopy would not be altered.

Modeled ERA percentages did not increase as a result of Forest Service activities under the No Action Alternative and remained well below the threshold of concern of 10 - 12% for these watersheds (Table 15). Therefore, the risk of cumulative effects would not increase.

Soils

Affected Environment

Soils within the project area are weathered from volcanic and granitic rock. Residual granitic soils are predominantly found below 5,200 feet elevation with volcanic soils and some glacial granitic soils (glacial till & debris) found mostly above 5,400 feet elevation. Slopes are variable with some areas greater than 35% slope. Soil depth and productivity are also variable. The soils in treatment units are generally coarse loamy, or sandy loam texture. Soils are described in the Stanislaus Order 3 Soil Survey (USDA, Forest Service 1995a). A map of thin soils and areas with steep slopes can be found in the Soils Evaluation Report.

Factors such as soil type, slope, presence of drainages and wet areas, and presence of legacy disturbance can be limiting factors that determine erosion, soil compaction, or soil displacement hazard (USDA, Forest Service 1999). Limiting factors also determine mitigations or design elements. Specific concerns identified in the treatment areas are listed in the categories below.

Soil and Slope

Most of the soils in the project area are coarser textured soils and do not have a high compaction hazard. Treatment units 1, 3, 4, 5, 6 and 7 are exceptions; the proposed actions in these units are biomass and mastication treatments. Coarser textured soils are prone to excessive displacement on steep pitches (approaching 35%). Units where biomass/mastication and merchantable timber are proposed that have steep pitches are: 1, 24-26, and parts of 4, 6, 34, and 41. The granitic soils are prone to gully erosion.

Legacy Disturbance

The Bailey plantations were harvested in the early 60's and late 80's with ground based equipment. Logging slash was tractor piled and burned. The steeper ground was not tractor piled (example units 1 and 26). Most of the soils do not have a high compaction hazard. Legacy compaction is expected to be limited to present landings and main skidtrails. The tractor piling obliterated most skidtrails but added somewhat to the overall compacted area.

Drainages and Wet Areas

There are hydrologically connected road segments identified in the Hydrology report. The native road surface is weak (low bearing strength) where these roads expose springs and other wet areas, particularly on granitic soil materials. Often, seeps occur along a contact where permeable volcanic geology overlies less porous granitic bedrock. This appears to be the case along the

7N46 road where the stream drainage cuts through the volcanic hillslope into underlying granite. Unit 4 has a small moist meadow area where conifers are to be removed to rehabilitate meadow habitat. Unit 22 has a meadow complex originating from several moisture seeps; merchantable timber and biomass removal is the prescribed treatment for this unit.

Large Woody Material

Few downed logs (> 20 inches in diameter) are present in the plantations as a result of old tractor piling and burning practices.

Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

Direct, indirect, and cumulative effects of the proposed action are summarized in Table 16. The Stanislaus National Forest has met Soil Quality Analysis Standards by 1) operating on high strength soils; 2) having an effective Forest subsoiling program; and 3) using monitoring to refine practices and management requirements. Additional information on the effects of soils from the proposed action is provided in the Bailey Plantation Health Improvement Project Soil Evaluation in the project record.

Alternative 2 (No Action)

Direct, indirect, and cumulative effects of the this Alternative include unchanged soil factors that affect long-term soil productivity, and unchanged soil cover, porosity, organic matter, and coarse woody debris in the treated areas. Soil erosion/displacement in the project area would continue in areas with poor soil cover.

Table 16 Estimated direct, indirect, and cumulative effects to soils by the proposed action.

	Soil Cover for Erosion Control and Nutrient Cycling	Soil Compaction and Displacement
Direct and Indirect	Mechanical thinning and prescribed burning would reduce ground cover temporarily, however cover for erosion control and nutrient cycling is expected to be more than adequate. Coarse woody debris would remain unchanged.	Soil compaction and displacement can be a consequence of ground-based operations. Project design criteria are applied project-wide to minimize impacts to the soil resource.
	Mastication: Shredding small trees and brush increases soil cover, provides excellent erosion control, and eventually recycles nutrients to the soil	Soil displacement on the steeper units listed above would occur. Utilizing options listed in Table 3 would limit or correct this disturbance.
Cumulative	Cumulative effects would be a product of legacy disturbance and new thinning activities. Project design criteria related to soil disturbance (see Alternative 1, Proposed Action) would minimize soil concerns.	

Cultural Resources

Affected Environment

The affected environment for cultural resources includes the 302 acres of plantations, and the 7.8 acres of riparian, meadow, and hardwood rehabilitation activities previously described.

Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

The potential affected area has been surveyed for cultural resources. The project, as defined, and its alternatives would not have an adverse direct, indirect, or cumulative effect on cultural

resources. Riparian, meadow, and hardwood rehabilitation activities would enhance cultural resources by reducing conifer encroachment and promoting environmental conditions for native species. Vegetation removal would enhance the forested landscape that provides environmental context to the cultural resources.

Alternative 2 (No Action)

If the proposed treatments are not conducted (no action), direct, indirect, and cumulative effects include increased conifer densities and canopy cover, reduced deciduous canopy, continued conifer encroachment in wet meadow habitats, and the loss of riparian dependent vegetation species. These effects may alter species composition, further reducing the environmental context to the cultural resources.

2. Public health and safety.

Alternative 1 (Proposed Action) would avoid adverse impacts to public safety through project design efforts. Implementation of the proposed action would be governed by standard public health and safety contract clauses. Standard precautionary measures such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining the haul route, would be used.

Short-term adverse effects on public health related to air quality from pile burning are a small possibility and management requirements have been developed to mitigate these effects. These potential short-term effects are of limited scope and duration and have been minimized to the extent possible through timing of pile burning and use of mechanized fuels reduction methods (mastication) in some cases. Regional air quality standards would be met in a manner consistent with the Clean Air Act.

3. Unique characteristics of the geographic area.

The Bailey Plantation Health Improvement project area is part of a historically rich area that has been thoroughly surveyed for cultural sites. Known and newly located sites have been documented for protection from activities. 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 criteria have been developed to protect these critical habitats from disturbance activities.

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

Through involvement and discussion with interested publics, controversy over environmental effects was minimized during project design. Activities and treatments proposed are standard practices on the Forest, and are not considered to be highly controversial. Consideration was given to long-term beneficial effects of the project.

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

Alternative 1 (Proposed Action) was designed to achieve desired conditions identified in the Forest Plan and minimize the potential for adverse resource effects. Using local expertise and management requirements during project implementation minimizes the chances of highly uncertain effects or effects which involve unique or unknown risks. Proposed activities are routine in nature, have been implemented in the past on similar forest conditions, employ standard practices and protection measures, and their effects are known.

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

A precedent would not be set for future decisions with significant effects. Future projects would be considered, evaluated, and analyzed separately on their own merits.

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

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

This analysis relies on current environmental conditions as a proxy for the impacts of past actions. Existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. In addition, the Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of each individual past action.” The cumulative effects analysis in this environmental assessment is also consistent with Forest Service National Environmental Policy Act Regulations (36 CFR 220.4(f)) (July 24, 2008).

Past, present, and reasonably foreseeable future actions were assessed along with Proposed Actions to determine whether cumulative effects would occur. Each resource specialist identified the appropriate cumulative effects analysis area specific to their resource (see specialist reports in project record). No adverse cumulative effects were identified (see pages 18-38 in this EA).

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 distraction of significant scientific, cultural, or historic resources.

Historic Preservation Compliance has been met and documented. The proposed project area has been surveyed for cultural resources. Standard contract provisions would protect historic properties discovered during project implementation. Consultation requirements under Section 106 of the National Historic Preservation Act have been fulfilled as outlined in the First Amended Regional Programmatic Agreement among the USDA Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation. Native Americans and local Tribes were consulted about project activities. No conflicts were identified.

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.

Endangered or threatened species or their habitat does not exist in the project area (See Table 10). As such, the Alternative 1 (Proposed Action) would not affect the valley elderberry longhorn beetle, California red-legged frog, Lahontan cutthroat trout, Delta smelt, or the Central Valley steelhead. See the Aquatic and Terrestrial Wildlife Biological Assessments for more detail.

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

Alternative 1 (Proposed Action) was developed in accordance with and does not threaten to violate any Federal, State, or local laws or requirements imposed for the protection of the environment (i.e. Endangered Species Act, National Historic Preservation Act, Federal Clean

Water Act, Executive Order 11988 for Floodplain Management, or the Clean Air Act). The Forest Service would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.

4. CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Interdisciplinary Team Members

Teresa McClung	District Ranger
Kendal Young	Interdisciplinary Team Leader, Planner
Zachary Croyle	Hydrology
Kate Day	Hydrology
Tom Durston	Transportation planning
Foster Kuramata	Transportation planning
Quinn Young	Botany/Wildlife
Curtis Kvamme	Soil Science
Alex Janicki	Soil Science
Derrick Bawdon	Aquatic biology
John Lucas	Fuels
Barbara Balen	Heritage
Karl Graves	Timber
Brian Block	Timber
Beverly Bulaon	Forest Health

Federal, State, and Local Agencies

- Calaveras County Water District
- California Department of Fish and Game
- California Departments of Forestry and Fire Protection
- East Bay Municipal Utility District
- US Fish and Wildlife Service

Tribes

- Tuolumne Band of Me-Wuk Indians

Others

- Calaveras Consensus Group
- Ebbetts Pass Property Owner's Council

LITERATURE CITED

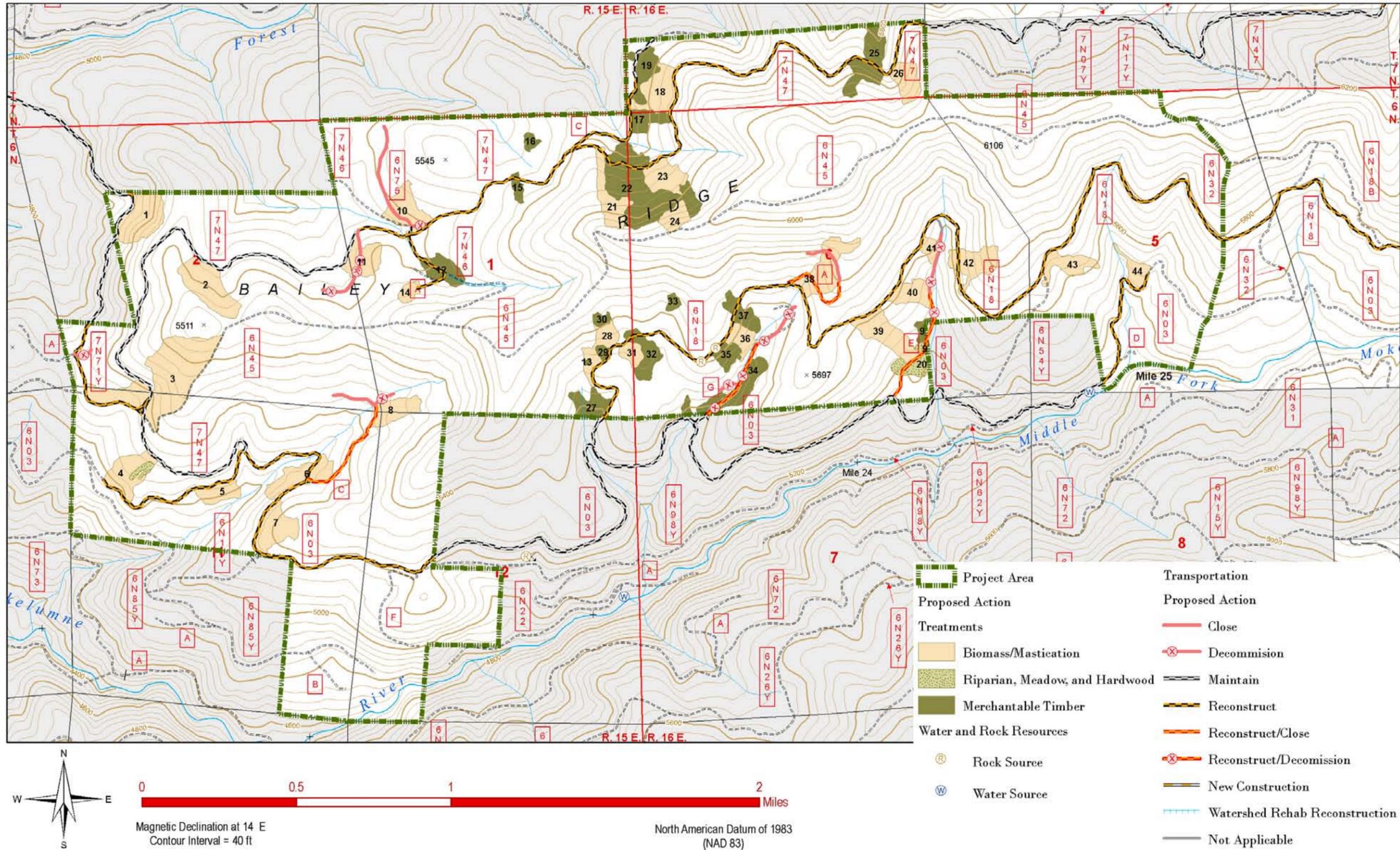
- Barrett, J.W. 1983. Growth of ponderosa pine poles thinned to different stocking levels in central Oregon. USDA Forest Service, Pacific Northwest Research Station Research Paper, PNW RP-311. Portland, Oregon.
- Bryce, S.A., G.A. Lomnický, and P.R. Kaufmann. 2010. Protecting sediment-sensitive aquatic species in mountain streams through the application of biologically based streambed sediment criteria. *Journal North American Benthological Society* 29:657-672.
- CDFG (California Department of Fish and Game, California Interagency Wildlife Task Group). 2008. CWHR Version 8.0 personal computer program. California Department of Fish and Game Sacramento, California.
- Chojnacky, D.C., B.J. Bentz, J.A. Logan. 2000. Mountain pine beetle attack in ponderosa pine: comparing methods for rating susceptibility. USDA Department of Agriculture, Forest Service, Rocky Mountain Research Station Research Paper, RP-RM-26. Fort Collins, Colorado. 10 pp.
- Cochran, P.H., and J.W. Barrett 1995. Growth and mortality of ponderosa pine poles thinned to various densities in the Blue Mountains of Oregon. USDA Forest Service, Pacific Northwest Research Station Research Paper, PNW RP-483. Portland, Oregon. 27 pp.
- Dunning, D., and L.H. Reineke. 1933. Preliminary yield tables for second-growth stands in the California pine region. USDA Technical Bulletin No. 354.
- Fettig, C.J.; K.D. Klepzig, R.F. Billings, A.S. Munson, T.E. Nebeker, J.F. Negron, and J.T. Nowak. 2007. The effectiveness of vegetation management practices for prevention and control of bark beetle infestations in coniferous forests of the western and southern United States. *Forest and Ecology Management*. 238:24-53.
- Frazier, J.W., and S.L. Grant 2006. Clavey River watershed analysis road inventory hydrologically connected segments. USDA Forest Service, Stanislaus National Forest, Resource Management Program Area. Sonora, California. 8pp.
- Goodwin, C.N., C.P. Hawkins, and J.L. Kershner. 1997. Riparian restoration in the Western United States: Overview and perspective. *Restoration Ecology* 5:4S:4-14.
- Heath, M., and E.B. Alexander. 1982. Soil compaction on skidtrails, Peak Timber Sale: Validation of predictive equations. USDA Forest Service, Region 5. Earth Resources Note 3. San Francisco, California
- Hoag, J.C. 2009. Vertical bundles: a stream bank bioengineering treatment to establish willows and dogwoods on stream banks. Technical Note 53. U.S. Department of Agriculture, Natural Resource Conservation Service, Plant Materials Center, Aberdeen, Idaho. 6 pp.
- Hoyer, D. 2002. Live siltation. Technical Paper in Bio Draw 2.0: Compendium of biotechnical soil stabilization solutions. *Salix Applied Earthcare*, Redding California. 2 pp.
- Keppeler, E.T. 1998. The summer flow and water yield response to timber harvest. Pages 35-43 in Ziemer, R.R. (tech. coord). *Proceeding of the conference on coastal watersheds: The Caspar*

- Creek story. USDA Forest Service General Technical Report PSW-GTR-168. USDA Forest Service, Pacific Southwest Research Station, Albany. California.. 149 pp.
- Kolb, T.E., J.K. Agee, P.Z. Fule, N.G. McDowell, K. Pearson, A. Sala, and R.H. Waring. 2007. Perpetuating old ponderosa pine. *Forest Ecology and Management*. 249:141-157.
- Long, J.N. and J.D. Shaw. 2005. A density management diagram for even-aged ponderosa pine stands. *Western Journal of Applied Forestry*. 20:205-215.
- Lutz, J.A., J.W. van Wagendonk, and J.F. Franklin. 2009. Twentieth-century decline of large diameter trees in Yosemite National Park, California, USA. *Forest Ecology and Management*. 257:2296-2307.
- Mathews, K.R., and K.L. Pope. 1999. A telemetric study of the movement patterns and habitat use of *Rana muscosa*, the mountain yellow-legged frog, in a high-elevation basin in Kings Canyon National Park, California. *Journal of Herpetology* 33:615-624.
- Mullally, D.P., and J.D. Cunningham. 1956. Ecological relations of *Rana muscosa* at high elevations in the Sierra Nevada. *Herpetologica* 12:189-198.
- North, M., J. Innes, and H. Zald. 2007. Comparison of thinning and prescribed fire restoration treatments to Sierran mixed-conifer historic conditions. *Canadian Journal of Forest Research*. 37: 331342.
- Oliver, C.D., and B.C. Larson. 1990. *Forest stand dynamics*: McGraw-Hill, Inc. 520 pp.
- Oliver, W.W. 1972. Growth after thinning ponderosa and Jeffery pine pole stands in northeastern California. Berkeley, CA: Pacific Southwest Forest and Range experiment Station, USDA Forest Service Research Paper PSW-85. 8 pp.
- Oliver, W.W. 1995. Is self-thinning in ponderosa pine ruled by *Dendroctonus* Bark Beetles? Pages 213-218, in *National Silviculture Workshop Forest Health through Silviculture: Proceedings of the 1995 National Silviculture Workshop*, Mescalero, New Mexico. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. 246 pp.
- Oliver, W.W. 1997. Twenty-five-year growth and mortality of planted ponderosa pine repeatedly thinned to different stand densities in northern California. *Western Journal of Applied Forestry* 12:122-130.
- Stednick, J.D. 1996. Monitoring the effects of timber harvest on annual water yield. *Journal of Hydrology*. 176:79-95.
- USDA, Forest Service. 1988. Cumulative off-site watershed effects analysis. Chapter 20, in *Soil and water conservation handbook*. R-5 FSH 2509.22 Amend. 1 7/88. San Francisco, California. 34pp.
- USDA, Forest Service. 1995a. Soil Survey Stanislaus National Forest Area California. Supervisor's Office, Stanislaus National Forest. Sonora, California.
- USDA, Forest Service. 1995b. Handbook 2509.18 – Soil Management Handbook, US Forest Service, Region 5, Supplement No. 2509.18-95-1. 10 pp.

- USDA, Forest Service. 1999. Soil Interpretations. USDA Forest Service, Region 5. San Francisco, California.
- USDA, Forest Service. 2000. Two Forks Landscape Analysis, Draft Report. Stanislaus National Forest, Calaveras Ranger District. Hathaway Pines, California.
- USDA, Forest Service. 2004. Sierra Nevada Forest Plan Amendment. Final Supplemental Environmental Impact Statement. Record of Decision. Pacific Southwest Region, Vallejo, CA.
- USDA, Forest Service. 2009 .Motorized Travel Management Environmental Impact Statement, Stanislaus National Forest. USDA Forest Service, Stanislaus National Forest, Sonora, California. 676 pp.
- USDA, Forest Service. 2010. Stanislaus National Forest, Forest plan direction. US Forest Service, Stanislaus National Forest, Pacific Southwest Region, Sonora, California. 202 pp.
- USDA, Forest Service. 2010a. Sierra Nevada forests bioregional Management Indicator Species (MIS) Report: Life history and analysis of Management Indicator Species of the 10 Sierra Nevada National Forests: Eldorado, Inyo, Lassen, Modoc, Plumas, Sequoia, Sierra, Stanislaus, and Tahoe National Forests and the Lake Tahoe Basin Management Unit. Pacific Southwest Region, Vallejo, CA. December 2010. 132pp.
- Vite, J.P., and D.L. Wood. 1962. Study on applicability of measurement of oleoresin exudation pressure in determining susceptibility of second growth ponderosa pine to bark beetle infestation. Contributions from Bruce Thompson Institute. 21: 67.
- Zald, H.S.J., A.N. Gray, M.P. North, and R.A. Kern. 2008. Initial tree regeneration responses to fire and thinning treatments in a Sierra Nevada Mixed Conifer Forest. Forest Ecology and Management. 256:168179.



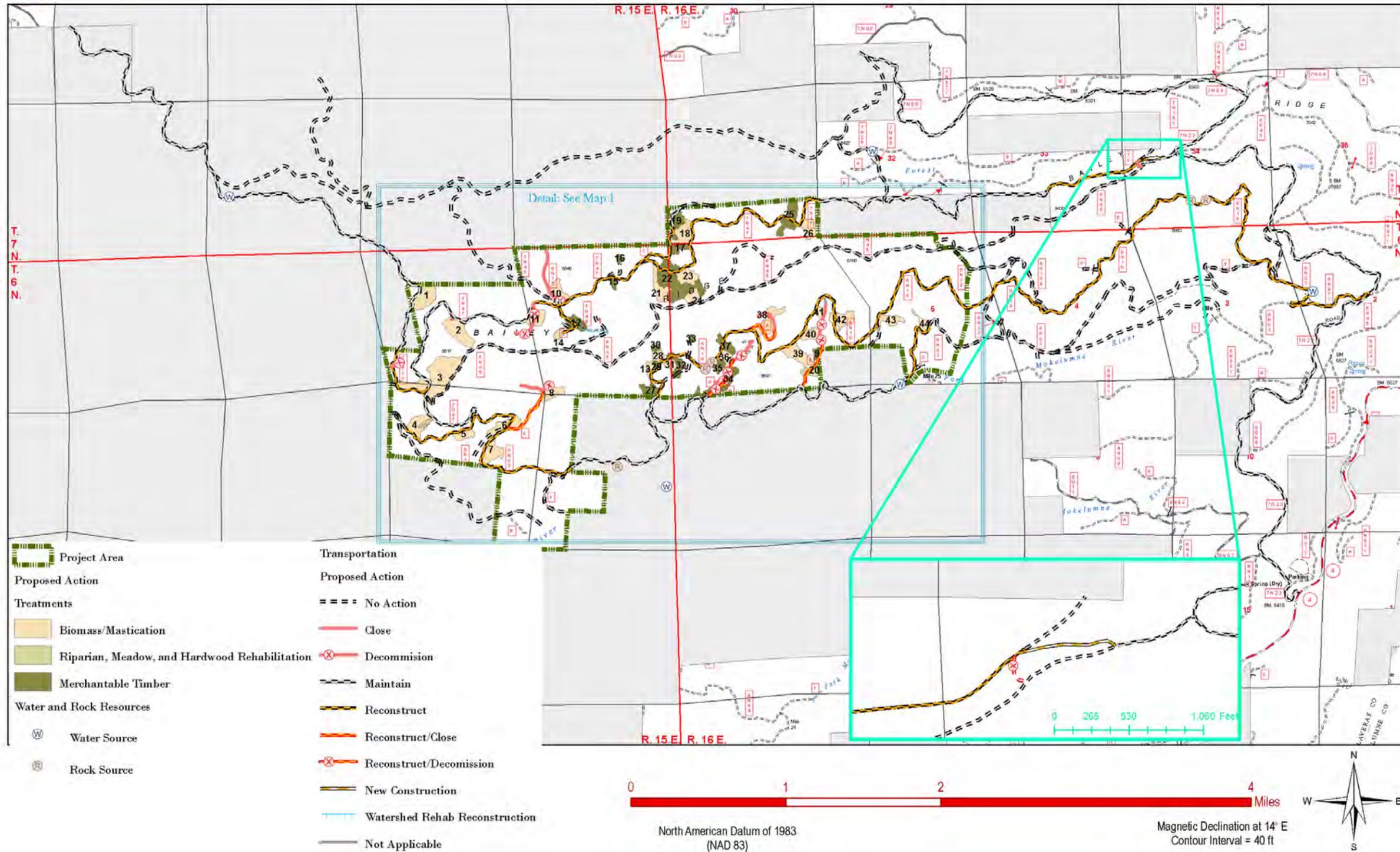
Bailey Plantation Health Improvement - Proposed Action



Map 1 Alternative 1 (Proposed Action) Thinning, Riparian, Meadow, and Hardwood Rehabilitation



Bailey Plantation Health Improvement - Transportation



Map 2 Alternative 1 (Proposed Action) Transportation Management.

A. MANAGEMENT REQUIREMENTS

Management Requirements	Best Management Practices (BMPs)	Applicable Locations
<u>Skid Trails</u>		
Skid trail location and design should best fit the terrain, volume, velocity, concentrations, and direction of runoff water in a manner that would minimize erosion and sedimentation.	1-10: Tractor Skidding Design	All units using ground-based yarding systems
Existing skid trails would be used wherever possible except where unacceptable resource damage may result.	1-17: Erosion Control on Skid Trails	
Skid trails would be located at least 50 feet from intermittent and ephemeral streams and special aquatic features.		
Waterbars and other erosion control measures would be implemented as needed on skid trails immediately following completion of timber operations.		
<u>Log Landings</u>		
Re-use log landings to the extent feasible.	1-12: Log Landing Location	All landings
New landings should not be constructed within 100 feet of perennial or intermittent streams and 50 feet of ephemeral streams.	1-16: Log Landing Erosion	
Subsoil all landings when biomass operations are complete.		
<u>Road Construction/Reconstruction, Maintenance and Use</u>		
An Erosion Control Plan should be approved prior to road construction/reconstruction operations.	2-1: General Guidelines for the Location and Design of Roads.	All roads undergoing construction, reconstruction, or maintenance and those used for hauling, where stream sedimentation may occur.
Conduct operations during the dry season or when rain and runoff are unlikely.	2-2: Erosion Control Plan.	
Equipment will not be allowed to operate when ground conditions are such that excessive rutting and soil compaction could result.	2-3: Timing of Construction Activities.	
Road cut, fill and spoil disposal areas shall be constructed in a stable fashion; design cut and fill slopes not greater than the angle of repose to the extent feasible and stabilize slopes with ground cover as needed near streams to minimize soil erosion and stream sedimentation.	2-4: Stabilization of Road Slope Surfaces and Spoil Disposal Areas	
Do not sidecast material into RCAs. Prevent construction and logging-related debris (both mineral and organic) from reaching stream channels; protect streambanks and obligate riparian vegetation from damage.	2-5: Road Slope Stabilization Construction Practices.	
Water roads when needed to control dust during hauling.	2-10: Construction of Stable Embankments (Fills)	
Restrict wet weather road use when moist soil conditions will result in damage and accelerated erosion.	2-11: Control of Side Cast Material During Construction and Maintenance	
	2-13: Control of Construction and Maintenance	

Management Requirements	Best Management Practices (BMPs)	Applicable Locations
	Activities Adjacent to SMZs 2-19: Disposal of Right-of-Way and Roadside Debris 2-23 Road Surface Treatment to Prevent Loss of Materials 2-24: Traffic Control During Wet Periods	
.....		
<u>Road Drainage</u>		
Seeps and springs should be diverted across roads where they occur to prevent them from pooling and diverting on or along the road.	2-6: Dispersion of Subsurface Drainage from Cut and Fill Slopes	7N47- Several spring/seeps
A layer of coarse rock with geotextile fabric or other treatments may be necessary.	2-7: Control of Road Drainage	7N47C- spring/seep
Cross drains (e.g., rolling dips, culverts, water bars) should be spaced to minimize road erosion as much as feasible.		6N03C- spring/seep on cut slope
Outlets should drain onto non-erodable materials such as natural vegetation, rock aprons and/or other energy dissipaters.		6N03G- spring in road/fill slope All other applicable locations along constructed and reconstructed roads.
.....		
<u>Stream Crossings</u>		
Keep streambank disturbance to a minimum; stabilize disturbed banks and mitigate any damage caused.	2-1: General Guidelines for the Location and Design of Roads	All stream crossings along constructed and reconstructed roads
Keep the number of crossings to a minimum. Remove temporary crossings and rehabilitate and stabilize site prior to rainy season or when facility is no longer needed.	2-14: Controlling In-Channel Excavation	
Ford crossings and entry/exit approaches should be armored with rock.	2-16: Stream Crossings on Temporary Roads	
Rock fills for ford crossings should not include fine particles.	2-17: Bridge and Culvert Installation	
Base material should be clean 6 inches or greater, with a smaller clean rock running course if needed.		
Excess materials from the installation of culverts or stream crossings should be disposed of such that it does not re-enter the channel.		
Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species.		
.....		
<u>Road Decommissioning and Closure</u>		
Ensure road is effectively drained (e.g. waterbars, dips, outsloping) and treated to return the road prism to near natural hydrologic	2-26: Obliteration or Decommissioning of	All roads planned for

Management Requirements	Best Management Practices (BMPs)	Applicable Locations
<p>function.</p> <p>Block road to prevent vehicle access.</p> <p>Remove crossing structures and restore natural drainage.</p> <p>Treat and stabilize road surfaces through tilling, ripping, scattering slash, and/or revegetation.</p> <p>Reshape and stabilize side slopes as needed.</p>	<p>Roads</p>	<p>decommissioning or closure.</p>
<p>.....</p>		
<p><u>Water Sources</u></p>		
<p>Locate water drafting sites to avoid adverse effects to in-stream flows and depletion of pool habitat.</p> <p>Favor the development of a limited number of durable, long-term sources rather than constructing numerous temporary and expedient sources.</p> <p>Permanently designed sources, such as small piped diversions to off-site storage tanks or ponds, are preferable and will result in the lowest, long-term net effects.</p> <p>Cofferdams and water holes will be built out of sand bags filled with clean sand, gravel, or other methods that will not contribute to non-point source pollution; earth fill should not be used.</p> <p>Damage to resources during construction and use will be repaired in a timely and agreed upon manner to the extent practical to restore and prevent further resource damage.</p> <p>Overflow from water holding developments will be returned to the stream. Road access approaches to the source will be as near perpendicular to the stream as possible and will be gravel surfaced or otherwise stabilized as appropriate.</p> <p>Streambank and in-channel excavation will be kept to a minimum.</p> <p>At no time will downstream water flow be reduced to a level that will be detrimental to aquatic resources, fish passage, and other uses.</p> <p>Use screening devices for water drafting pumps.</p> <p>Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.</p>	<p>2-21: Water Source Development Consistent with Water Quality Protection</p>	<p>All proposed and existing water drafting sites</p>
<p>.....</p>		
<p><u>Rock Borrow Pits/Quarries</u></p>		
<p>When developing new pits, remove and stockpile topsoil for use as surface dressing in post-operation site rehabilitation.</p> <p>Rehabilitate and stabilize sites after operations are complete: grade side slopes to ensure proper drainage; smooth and stabilize general pit area; finer material will be spread over the bottom of the pit prior to spreading stockpiled or imported topsoil.</p> <p>Seeding, soil amendments and mulching may be required. Installation of sediment basins and/or upslope diversions and berms or other sediment reduction measures will be considered.</p>		<p>All existing and proposed borrow pits</p>

Management Requirements	Best Management Practices (BMPs)	Applicable Locations
<p>Temporary access roads to the site will be obliterated or decommissioned unless other treatment is required by design.</p> <p>System roads to quarries or borrow pits will be maintained.</p>		
Slope Limitations		
<p>See Soils section in this EA and Soil Evaluation Report for specific slope limitations for operation of ground-based equipment.</p>	<p>5-2: Slope Limitations for Mechanical Equipment Operation.</p>	<p>All treatment units utilizing ground-based equipment</p>
Erosion Prevention and Control Measures During Timber Sale Operations		
<p>See Soils section in this EA and Soil Evaluation Report for specific slope limitations for operation of ground-based equipment.</p>	<p>1-13: Erosion Prevention and Control Measures During Timber Sale Operations</p>	<p>All treatment units</p>
Servicing and Refueling Equipment		
<p>Prohibit servicing and fueling within RCAs unless there are no alternatives.</p> <p>A Spill Prevention and Containment and Counter Measures (SPCC) plan is required where total oil products on site in above-ground storage tanks exceed 1320 gallons or where a single container exceeds 660 gallons.</p> <p>Review and ensure spill plans are up-to-date.</p>	<p>2-12: Servicing and Refueling of Equipment</p> <p>7-4: Forest and Hazardous Substance Spill Prevention Control and Countermeasure</p>	<p>All RCAs</p>
Prescribed Fire		
<p>Burn piles should be placed a minimum of 50 feet away from perennial and intermittent streams and special aquatic features and 25 feet from ephemeral streams, unless otherwise approved by a hydrologist and/or soil scientist.</p> <p>Locate piles outside of areas that may receive road runoff.</p>	<p>6-2: Consideration of Water Quality in Formulating Fire Prescriptions.</p> <p>6-3: Protection of Water Quality from Prescribed Burning Effects.</p>	<p>All treatment units utilizing prescribed fire.</p>

B. ROCK SOURCE CRITERIA

Five borrow sources from which soil and rock can be excavated to repair roadbed erosion have been identified in or near the Bailey Plantation Health project area. One potential source is an existing borrow source that is on Sierra Pacific Land. The other four potential sites are along 6N18 on Forest Service lands. Sites selected would provide suitable construction material with minimal visual impact. Rock source sites are on gentle slopes that would minimize drainage, safety and construction concerns. Providing a source for construction borrow materials is expected to have a long-term benefit in reducing roadbed erosion by enabling maintenance projects to fill low areas as needed to correct road drainage.

The following management requirements prevent unnecessary and undue degradation during construction and implementation need to be implemented. BMP's for this rock and gravel locations are designed to assist in achieving the objectives for limiting potential impacts to water quality, and aiding in site reclamation.

Site Number	Location
1	Forest Road 6N03 T6N, R15E, Sec 12, NE 1/4, SW 1/16 Sierra Pacific Land
2	Forest Road 6N18 T6N, R16E, Sec 6 SW 1/4, SW 1/16
3, 4	Forest Road 6N18 (two sites) T6N, R16E, Sec 6, SW 1/4, SW 1/16
5	Forest Road 6N18 T7N, R16E, Sec 34, SW 1/4, SE 1/16

1. See Management Requirements and Best Management Practices, Appendix A, for sediment control would be employed, when necessary, during construction, operation, and reclamation to minimize sedimentation from disturbed areas.
2. Contractor would not knowingly disturb, alter, injure, or destroy any historical or archaeological site, structure, building, or object. If Contractor discovers any cultural resource, the discovery would be left intact and reported to the authorized individual. Contractor would maintain a 100 foot buffer between historic prospect pits, trenches, or other features and project related disturbance.
3. All refuse generated as a result of the project would be removed and disposed of in an authorized landfill facility off site, consistent with applicable regulations. No refuse would be disposed of or left on site.
4. Public safety would be maintained throughout the life of the Project. All equipment and other facilities would be maintained in a safe and orderly manner.
5. A Limited Operating Period would be in effect for spotted owls PACs from March 1-August 15, for northern goshawk PACs from February 15-September 15, and for American marten from May 1 through July 31 in mature forest stands (CWHR classes 4M, 4D, 5M, 5D, and 6). These LOPs would be for noise disturbance related to the rock and soil development.
6. Surveys for Forest Service Region 5 sensitive plants would occur prior to any rock source development. Surveys would occur between April and August to detect presence of sensitive plants in areas proposed for rock development. If sensitive plant populations are present, activities would be adapted to minimize mortality or disturbance, or plants may be transplanted in an attempt to preserve the individuals.

Bailey Plantation Health Improvement (30017) Decision Notice and Finding of No Significant Impact

Stanislaus National Forest
Calaveras Ranger District
Calaveras County, California

Decision and Reasons for the Decision

The Forest Service prepared an Environmental Assessment (EA) for the Bailey Plantation Health Improvement in compliance with the National Environmental Policy Act (NEPA) and other relevant laws and regulations. The EA discloses the direct, indirect and cumulative environmental impacts that would result from the alternatives. Additional documentation, including more detailed analyses of project-area resources, may be found in the project record located at the Calaveras Ranger District Office in Hathaway Pines, CA.

The EA (p. 2-3) explains the Purpose and Need for Action, of which the key points are:

- Enhance the general health of plantations by reducing susceptibility to insect, diseases, and drought-related mortality by improving and promoting stand and individual tree growth and vigor.
- Improve watershed conditions, water quality, and riparian habitat by reducing the amount of sediment from the road system delivered into streams and special aquatic features, and by maintaining or restoring the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, and meadows), and hardwoods.

The Proposed Action, as described in the EA (p. 5-16), authorizes plantation thinning treatments on approximately 302 acres in the Bailey Plantation Health Improvement project area. Thinning treatments include 91 acres of mechanical thinning of 45-50 year-old plantations to a Basal Area (BA) of 110, and 211 acres of biomass/mastication on 20-25 year-old plantations to 20 x 20 foot tree spacing. Prescribed fire treatments will remove old landing log decks and to remove slash piles generated during the project. Approximately 7.8 acres of riparian, meadow and hardwood rehabilitation work will be performed to reduce erosion and sedimentation and increase sustainability of meadows and hardwoods. The proposed action will include treatments on approximately 40.6 miles of roads, including a combination of road closure, decommissioning, maintenance, reconstruction, and new road construction as needed to facilitate traffic during the project, improve road drainage, and better protect the riparian and hydrologic systems. The Proposed Action responds to the goals and objectives outlined in the Stanislaus National Forest Land and Resource Management Plan¹ (Forest Plan).

This document contains a Decision Notice and Finding of No Significant Impact (FONSI). The Decision Notice identifies the decision and the rationale for selecting or modifying an alternative from the EA. The FONSI shows that the decision does not cause significant impacts on the human environment and explains why an environmental impact statement is not necessary.

Decision

Based upon my review of the alternatives, I decided to implement Alternative 1 (Proposed Action) as described in the EA (p. 5-16). In reaching this decision, I reviewed and considered the most recent information, including the specialist reports included in the project record and input from interested parties.

My decision authorizes ground based mechanical thinning treatments on approximately 302 acres of plantations (91 acres of 45-50 year age class trees and 211 acres of 20-25 year age class trees) in the

¹ USDA 2010. Forest Plan Direction. April 2010. Forest Service, Stanislaus National Forest, Sonora, CA.

Bailey Plantation Health Improvement project area (EA, Map 1, p 45). In addition, approximately 7.8 acres of riparian, meadow and hardwood rehabilitation activities are authorized; 3.4 acres in plantations, and 4.4 acres adjacent to plantations. Plantation prescription and specifications are provided in the EA (Table 1, p. 5). Specific treatments authorized include:

1. Mechanical Thinning of Plantations

The 45-50 year-old plantations will be thinned to a Basal Area (BA) of 110, and include 6 acres of merchantable timber (10.0-29.9 inch dbh) and biomass removal outside of California spotted owl Home Range Core Areas (HRCAs), and 85 acres of merchantable timber and biomass removal in HRCAs. The 20-25 year-old plantations will be thinned (biomass/mastication) to an average tree spacing of 20 feet. Units that require aerial methods will not be treated. Merchantable timber and biomass removal will be accomplished through the use of mechanized harvesters and rubber tired skidders, or utilizing low ground pressure equipment. The order of priority for trees to be retained in plantations is: Douglas-fir, sugar pine (free of white pine blister rust), white fir, incense cedar, and ponderosa pine. Small scattered clumps of conifers (less than 10 trees) will be left to create stand diversity. All black oaks and other hardwoods will be retained and conifers cleared around them to allow their release to increase growth and size. All project design criteria (Limited Operating Periods, Riparian Conservation Areas, Soil Disturbance and Noxious Weeds) provided in the EA (p. 5-16) will be followed.

2. Prescribed Fire

Old landing log decks will be burned, if feasible, or removed or rearranged by mechanical means, prior to the proposed plantation thinning treatments, to facilitate landing operations during the project. Slash piles generated during the project will be removed (biomass material), masticated, or burned (two years after material is piled). Any hand or machine piles created through the proposed action will meet the following criteria:

- a. All piles will be placed to minimize holding and resource concerns, tree scorch, and mortality to remaining trees in the surrounding area;
- b. Fire line will be constructed around all piles created down to bare mineral soil, utilizing hand tools or machinery. If machinery is utilized, it will be done with minimal ground disturbance; and
- c. Piles created will utilize Best Management Practices and Mitigation Measures (BMP: 6-2 and 6-3). All burning will comply with all applicable Calaveras County Air Pollution Control District (APCD), state and federal regulations.

3. Hazard and Danger Trees

Dead or unstable trees that present a hazard to Forest Service roads or landing operations during the project will be felled and removed [FSH 7709.59, sec. 41.7(2)]. Trees determined to be dangerous to the harvesting operation will be evaluated and maybe felled to alleviate hazards under an agreement between the Forest Service and purchaser/operator.

4. Riparian, Meadow and Hardwood Rehabilitation Activities

Riparian rehabilitation work is authorized in approximately 1.7 acres near Unit 34 (T6N, R16E, Sec 6, SW ¼ of the SE ¼). The culvert on the 6N03G spur will be removed from the stream channel and the stream channel will be reshaped to a low gradient (2-5%) through the installation of grade stabilization structures. Riparian vegetation will be planted to hold the new stream bank.

Meadow rehabilitation work (1.3 acres) will be performed in Unit 4 (T6N, R15E, Sec11; between roads 6N03 and 7N47) (Map 1). Trees in the meadow portion of Unit 4 will be hand felled and the material and slash lopped and scattered or removed as biomass.

Conifers around identified wet meadows will be removed to release the riparian vegetation and move the meadows toward the desired conditions. Trees will be hand felled and the material lopped and

scattered or removed as biomass. Black oak rehabilitation will occur in Unit 20 (4.4 acres). Encroaching conifers under 10 inch dbh will be removed by hand to enhance hardwood sustainability. No mechanized equipment will be used in Unit 20. Trees and biomass will be removed, or hand piled and burned.

5. Transportation

Approximately 40.6 miles of road treatments, encompassing road closure, decommissioning, maintenance, reconstruction and new road construction are authorized to facilitate traffic during the project, improve road drainage and better protect the riparian and hydrologic systems (EA, p 4 and 46). Road treatments would change approximately 2.3 miles of National Forest Transportation System (NFTS) road designations (see table below). The use of a small portion (0.06 miles) of private road along 6N03E will require securing a right-of-way from Sierra Pacific Industries. Actions resulting in changes in the National Forest Transportation System and unauthorized roads within the Infra database are listed in the table below.

Route Number	Proposed Transportation Action ¹	Miles	Current NFTS Designations				Proposed NFTS Designations			
			System ²	MTC Level ³	Allow Veh Type ⁴	Allow Season ⁵	System ^{1,2}	MTC Level ³	Allow Veh Type ⁴	Allow Season ⁵
06N03C	REOPEN/CLOSE	0.38	NFSR	2	ALL	4/15-12/15	NFSR	1	NONE	NONE
06N03E	REOPEN/CLOSE	0.22	NFSR	2	ADM	NONE	NFSR	1	NONE	NONE
06N03E	REOPEN/CLOSE	0.06	PRIVATE	2	NONE	NONE	NFSR	1	NONE	NONE
06N03E	REOPEN/DECOM	0.10	NFSR	0	NONE	NONE	DECOM	N/A	NONE	NONE
06N03G	DECOMMISSION	0.18	NFSR	1	ALL	4/15-12/15	DECOM	N/A	NONE	NONE
06N03G	REOPEN/DECOM	0.28	NFSR	1	ADM	4/15-12/15	DECOM	N/A	NONE	NONE
06N18A	CLOSE	0.18	NFSR	2	ALL	4/15-12/15	NFSR	1	NONE	NONE
06N18A	REOPEN/CLOSE	0.28	NFSR	2	ALL	4/15-12/15	NFSR	1	NONE	NONE
06N75	CLOSE	0.37	NFSR	2	ALL	4/15-12/15	NFSR	1	NONE	NONE
07N46C	DECOMMISSION	0.06	NFSR	2	ALL	4/15-12/15	DECOM	N/A	NONE	NONE
61501A	DECOMMISSION	0.29	UNAUTH	0	NONE	NONE	DECOM	N/A	NONE	NONE
61501F	DECOMMISSION	0.07	UNAUTH	0	NONE	NONE	DECOM	N/A	NONE	NONE
61502A	DECOMMISSION	0.06	UNAUTH	0	NONE	NONE	DECOM	N/A	NONE	NONE
61511B	RECONSTRUCT	0.05	UNAUTH	0	NONE	NONE	NFSR	2	ALL	4/15-12/15
61606C	DECOMMISSION	0.20	UNAUTH	0	NONE	NONE	DECOM	N/A	NONE	NONE
61606J	DECOMMISSION	0.07	UNAUTH	0	NONE	NONE	DECOM	N/A	NONE	NONE
FR14617	DECOMMISSION	0.04	UNAUTH	0	NONE	NONE	DECOM	N/A	NONE	NONE
FR98633	DECOMMISSION	0.14	NFST	0	4WD	4/15-12/15	DECOM	N/A	NONE	NONE
P71634B	NEW CONSTR	0.13	N/A	N/A	N/A	N/A	NFSR	2	ALL	4/15-12/15

1 Transportation Actions (in miles): the EA (p. 12-13) describes these actions.

REOPEN/CLOSE= Open road to allow for plantation health actions, then close (install barriers);

CLOSE=Close (install barriers) **DECOM**=Decommission (close and remove from the NFTS); **RECONSTRUCT**= Improve or Restore; **NEW CONSTR**=New construction and add to NFTS.

2 **NFSR**=National Forest System Road; **NFST**=National Forest System Trail; **UNAUTH**=No Public Road' **PRIVATE**=Private road.

3 **MTC Level**=Road Maintenance Level; **0**=not maintained; **1**= Maintenance Level 1; **2**= Maintenance Level 2

4 Allowable Vehicle Type - **4WD**=4 Wheel Drive; **ADM**=Administrative (no public access) **ALL**=All Vehicles

5 Allowable Season of Road Use

Reasons for the Decision

I selected Alternative 1(Proposed Action) for the following reasons:

1. Alternative 1 meets the purpose and need of the project which is to: enhance general forest plantation health by reducing susceptibility to insect, disease, and drought-related mortality and to improve watershed conditions, water quality, and riparian habitat by reducing the amount of sediment form the road system and by restoring the hydrologic and biological characteristics of special aquatic features and hardwoods.
2. Alternative 1 will reduce the high stocking levels in plantations, promoting stand and individual tree growth and vigor and reducing susceptibility to insect, disease and drought-related mortality.
3. Alternative 1 will have beneficial effects to riparian areas, meadows and hardwoods by reducing road and stream sedimentation and conifer encroachment. Roads treated through maintenance, reconstruction, decommissioning and closure activities will result in a reduction in the amount of hydrologically connected road segments and yield a beneficial effect on watershed condition.

Other Alternatives Considered

In addition to the selected alternative, I considered one other alternative described below. The EA (p. 16) includes a comparison of alternatives.

Alternative 2 (No Action)

Under Alternative 2 (No Action), current management plans would continue to guide management of the project area. No activities would be implemented to accomplish project goals. The 302 acres of plantations would not be thinned and watershed rehabilitation projects would not be applied in the project area.

I did not select Alternative 2 (No Action) for the following reasons:

1. The high stocking levels in the plantations contributes to increased tree stress due to inter-tree competition for moisture and nutrients, resulting in conditions that increase the susceptibility of the plantations to bark beetle infestations and other pathogens. Sporadic insect activity or disease occurrences in the plantations proposed for thinning include evidence of western pine beetle (*Dendroctonus brevicomis*). In addition, known western pine beetle activity centers in the vicinity of the Bailey project area indicates a heightened level of susceptibility for beetle infestation in the Bailey plantations under their current condition.
2. A survey of roads in the Bailey Plantation Health Improvement project area to assess hydrologic functionality and connectivity and cross drain stability noted approximately 3.07 miles of road with high hydrologic concern based on sediment delivery and the probability of long-term failure. Without treatment, watershed conditions in the project area would continue to deteriorate.
3. Without treatments spring fed meadows and hardwood environments in the project area that are threatened by conifer encroachment would have reduced long-term sustainability.

Public Involvement

The Forest Service first listed the Bailey Plantation Health Improvement project (formerly the Bailey Plantation Thin) in the October 2009 issue of the Stanislaus National Forest Schedule of Proposed Actions (SOPA). The Forest distributes the SOPA to about 160 parties and it is available on the internet [<http://www.fs.fed.us/r5/stanislaus/projects/sopa>].

On January 22, 2010 the Forest sent a scoping letter to 57 individuals, organizations, agencies, and Tribes interested in this project. The letter requested comments on the Proposed Action March 1, 2010. Two interested parties submitted letters, e-mails or verbal comments. No relevant issues were identified during scoping. Comments regarding the Bailey Plantation Health Improvement proposed actions primarily related to the amount and treatment of roads in the project area. As a result, the Forest Service carefully evaluated which roads were not essential and considered closing and/or decommissioning additional miles of roads. A list of non-relevant issues and reasons regarding their categorization as non-relevant may be found in the project record.

A legal notice, announcing the 30-day Opportunity to Comment on the EA appeared in the Union Democrat on March 4, 2011. The 30-day comment period ended on April 4, 2011. No comments were received during the comment period.

Finding of No Significant Impact

After considering the environmental effects described in the EA (p 17-36.), I determined that these actions will not have a significant effect on the quality of the human environment, considering the context and intensity of impacts (40 CFR 1508.27); therefore, an environmental impact statement will not be prepared. I incorporate, by reference, the EA and project record, in making this determination. I base this finding on the following.

Context

The Bailey Plantation Health Improvement project is located in the northern end of the Stanislaus National Forest and proposes to treat 307 acres out of approximately 900,000 acres in the Stanislaus National Forest. The project area has no urban communities in close proximity, and is surrounded by private lands managed for forest products.

Intensity

I considered the following ten elements of impact intensity (40 CFR 1508.27b) in assessing the potential significance of project effects.

1. My finding of no significant environmental effects is not biased by the beneficial effects of the action. All practical means to avoid or minimize environmental harm were adopted by project design (EA p. 5-16, and 17-36). Biological Evaluations (BE), Biological Assessments (BA) and specialist reports prepared for this project are available in the project record, and unless otherwise noted are available upon request. Those documents provide the basis for the following determinations.
 - The proposed treatments in Alternative 1 for the 45-50 year-old plantations would reduce the potential for beetle infestation by reducing the SDI to below the “zone of imminent bark beetle mortality.” Likewise, by thinning the 20-25 year-old stands to 20 x 20 foot spacing, competition for light, water and soil resources would be reduced; resulting in increased tree vigor and tree growth rate. Trees of high vigor are less susceptible to insect and pathogen attack.
 - The plantation thinning would increase tree growth rates and vigor, increasing the habitat suitability of the plantations in the project area for spotted owls and goshawk and assisting in population stability for these species. The current insufficient acres to allocate full acres of HRCA to each PAC may increase the likelihood of intraspecific (spotted owls) and interspecific (owls and goshawks) competition for habitat. This competition may reduce species’ fitness and contribute to unstable populations. Increasing the habitat suitability of plantations in the project area will help in population stability. The plantation thinning activities outlined in Alternative 1 (Proposed Action) would increase tree growth rates and vigor, resulting in improved habitat suitability of the plantations for spotted owls and goshawk and assisting in population stability for these species.

- Alternative 1 (Proposed Action) may affect individuals and/or habitat but would not result in a loss of viability or a trend toward federal listing for the northern goshawk, California spotted owl, pallid bat, Townsend's big-eared bat, American marten, Pacific fisher, Sierra Nevada red fox, or mountain yellow-legged.
 - The Bailey Plantation Health Improvement project would affect various components of Management Indicator Species habitats, but would not result in any lasting effects on their distribution or abundance.
 - Riparian and meadow treatments of Alternative 1 (Proposed Action) should have beneficial effects on sedimentation due to repairs performed on the road system and the replacement of inoperable culverts. Rehabilitation of the stream channel should reduce sedimentation to the watershed in the long-term. Planting of riparian vegetation should help stabilize the stream bank. Roads treated through maintenance, reconstruction, decommissioning, and closure would reduce the amount of hydrologically connected road segments and result in a beneficial effect on the watershed for the long-term, including water quality, beneficial uses, and watershed condition.
 - The combined effects of Alternative 1 (Proposed Action) are not expected to cause long-ranging adverse cumulative effects to Sensitive Plants.
 - The effects of Alternative 1 (Proposed Action) actions in combination with the effects of other reasonably foreseeable future activities in the project watersheds are not expected to result in adverse cumulative watershed effects.
2. There will be no significant effects on public health and safety. Alternative 1 (Proposed Action) would avoid adverse impacts to public safety through project design efforts. Implementation of the proposed action would be governed by standard public health and safety contract clauses. Standard precautionary measures such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining the haul route, would be used. Short-term adverse effects on public health related to air quality from pile burning are a small possibility and management requirements have been developed to mitigate these effects. These potential short-term effects are of limited scope and duration and have been minimized to the extent possible through timing of pile burning and use of mechanized fuels reduction methods (mastication) in some cases. Regional air quality standards would be met in a manner consistent with the Clean Air Act (EA p. 36).
 3. There will be no significant effects on unique characteristics of the area. Known and newly located cultural resource sites have been documented for protection from activities. 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 criteria will protect these critical habitats from disturbance activities (EA p. 17-36). No other unique characteristics or ecologically critical areas such as park lands, prime farmlands, or wetlands exist within the project area.
 4. The effects on the quality of the human environment are not likely to be highly controversial, because there is no known scientific controversy over the impacts of the project (EA p. 36).
 5. The Stanislaus National Forest has considerable experience with the types of activities to be implemented. The effects analysis (EA p. 17-36) shows the effects are not uncertain and do not involve unique or unknown risk.
 6. The action is not likely to establish a precedent for future actions with significant effects because it conforms to all existing Forest Plan direction and is applicable only to the project area. Future projects would be considered, evaluated and analyzed separately on their own merits. (EA p. 37).
 7. The cumulative impacts are not significant (EA p. 17-36). The effects of past, present and reasonably foreseeable future actions were assessed along with those of the Proposed Actions to determine

whether cumulative effects would occur (EA p. 37). See Intensity Element 1 above and resource reports for more information.

8. The action will have no significant adverse effect on districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places, because historic preservation compliance has been met and documented (EA p. 37). The action will also not cause loss or destruction of significant scientific, cultural or historical resources, because consultation requirements under Section 106 of the National Historic Preservation Act have been fulfilled and Native Americans and local Tribes were consulted about project activities. No conflicts were identified (EA p. 35-36).
9. The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species act of 1973, because Endangered or threatened species or their habitat do not exist in the project area (EA p. 22 and 37).
10. The action will not violate applicable laws and regulations for the protection of the environment (EA p. 37-38). The action is consistent with the Forest Plan (EA p. 1). The Forest Service would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation (EA p. 38).

Findings Required by Other Laws and Regulations

This decision to implement Alternative 1 (Proposed Action) is consistent with the long term goals and objectives of the Forest Plan (USDA 2010, p. 5-16). The project conforms to the Forest Plan by incorporating appropriate standards, guidelines and desired conditions (EA p. 1).

Implementation Date

Implementation of the decision may begin immediately following the publication date of the legal notice of this decision in the Union Democrat, the newspaper of record [36 CFR 215.9(c)].

Administrative Review or Appeal Opportunities

Since no comments or only supportive comments were received during the 30-day comment period (36 CFR 215.6), this decision is not subject to appeal (36 CFR 215.12).

Contact Person

For additional information concerning this decision contact: Kendal Young, Calaveras Ranger District, P.O. Box 500, 5519 Highway 4, Hathaway Pines, California, 95233; (209) 795-1381, kendalyoung@fs.fed.us.

Signature and Date

Christina M. Welch

For: **SUSAN SKALSKI**
Forest Supervisor
Stanislaus National Forest

MAY 27, 2011

Date



AUBURN OFFICE
11521 Blocker Drive, Ste. 205
Auburn, CA 95603
p (530)823-4670 f (530)823-4665

NEPA Questionnaire

If you are working with a Federal Land Manager as an applicant or the proposed project is located on federally managed lands, and the proposed project is most likely not exempt from CEQA and a CEQA lead agency has not been identified, please make sure to provide comprehensive answers to all of the applicable questions below in addition to the information required by the GAP.

A. What NEPA document has been prepared or approved?

Environmental Assessment

What is the proposed action addressed by the document?

- 1) Mechanical Thinning of Plantations
- 2) Prescribed Fire
- 3) Removal of Hazard and Danger Trees
- 4) Riparian, Meadow, and Hardwood Rehabilitation Activities

Specifically related to this proposal-

Riparian rehabilitation work would be performed in approximately 1.7 acres where a culvert on a short spur of 6N03G has initiated a headcut in an intermittent channel, creating a gully up to 8 feet deep that ranges from 6 feet to 30 feet wide. The gully is approximately 900-1,000 feet long. Approximately 10% of the obligate riparian vegetation remains along the stream. Gravel or larger substrate is absent along the stream bed, with current substrates consisting primarily of sand and silt. The existing condition makes this stream vulnerable to further degradation from erosion and down-cutting.

The culvert on the 6N03G spur would be removed from the stream channel. The stream channel would be reshaped to a low gradient (2-5%) through the installation of grade stabilization structures. Riparian vegetation would be planted to hold the new stream bank.

Road 6N03G would be decommissioned. Implementation of these restoration measures should stabilize the stream channel, improve the functionality of the floodplain and eliminate a considerable source of current and potential future sediment, thereby moving the stream channel toward the desired condition.

What is the scope of the environmental analysis in the document – e.g., for a NEPA environmental assessment – is the analysis large-scale (as for plans) or project specific?
Project Specific



B. If a NEPA EA/Finding of No Significant Impact (FONSI) or EIS was prepared and approved:

1. When was the NEPA document approved?

May 27, 2011

2. Is the proposed project clearly described within the NEPA document? Does it indicate the project location, project objectives, and all activities considered to be part of the project? Where in the document is the pertinent information located?

Yes,

Page 1, 10 - Project Location

Page 2-3 – Purpose and Need (Objectives)

Page 10-15 -- Riparian Restoration activities.

3. Describe what was included in the public participation/notification process.

The Forest Service first listed the Bailey Plantation Health Improvement project (formerly the Bailey Plantation Thin) in the October 2009 issue of the Stanislaus National Forest Schedule of Proposed Actions (SOPA). The Forest distributes the SOPA to about 160 parties and it is available on the internet [<http://www.fs.fed.us/r5/stanislaus/projects/sopa>].

On January 22, 2010 the Forest sent a scoping letter to 57 individuals, organizations, agencies, and Tribes interested in this project. The letter requested comments on the Proposed Action March 1, 2010. Two interested parties submitted letters, e-mails or verbal comments. No relevant issues were identified during scoping. Comments regarding the Bailey Plantation Health Improvement proposed actions primarily related to the amount and treatment of roads in the project area. As a result, the Forest Service carefully evaluated which roads were not essential and considered closing and/or decommissioning additional miles of roads. A list of non-relevant issues and reasons regarding their categorization as non-relevant may be found in the project record.

A legal notice, announcing the 30-day Opportunity to Comment on the EA appeared in the Union Democrat on March 4, 2011. The 30-day comment period ended on April 4, 2011. No comments were received during the comment period.

Is there a summary of issues raised in public comments?

Yes, A list of non-relevant issues and reasons regarding their categorization as non-relevant may be found in the project record.

4. Are mitigation measures (including design features) discussed, listed, and adopted as conditions? If so, where in the documentation do they exist? Do they include conditions as part of the project approval such as Best Management Practices (e.g., to prevent soil erosion, to protect water quality, to protect stream buffers, or to protect sensitive sites); wildlife, sensitive habitat, or cultural resources protocols, or other "standard" measures

used by federal agencies (e.g., regarding limited herbicide use, fire prevention or road maintenance/construction etc.)?

Yes, Page 5-10 list design features related to project activities.

5. How does the document address indirect impacts? This question will relate to the growth inducing impact discussion requirement by CEQA.

The EA does not address growth inducing impacts.

6. Does the document address cumulative impacts?

Yes – Page 17-37

7. Does the document address greenhouse gas emissions or climate change?

No, the EA did not address greenhouse gas emissions or climate change. However, a supplemental report was prepared that analyzed the direct, indirect, and cumulative effects of greenhouse gasses and recreation use (by Alternative) for the Bailey Plantation Health Improvement project.

C. General guidance on CEQA impact analysis may be found in the [Initial Study checklist](#) (CEQA Guidelines, Appendix G). See also "[Mitigated Negative Declarations](#)," CEQA Technical Advice Series, prepared by the Governor's Office of Planning and Research (OPR).

Notes: _____

CEQA/NEPA COMPLIANCE FORM

(CALIFORNIA ENVIRONMENTAL QUALITY ACT & NATIONAL ENVIRONMENTAL POLICY ACT)

Instructions: All applicants, including federal agencies, must complete the CEQA compliance section. Check the box that describes the CEQA status of the proposed project. You must also complete the documentation component and submit any surveys, and/or reports that support the checked CEQA status. NOTE: There is no page limit requirement on this form. You may use the space you need to fully describe the CEQA/NEPA status of this project.

If NEPA is applicable to your project, you must complete the NEPA section in addition to the CEQA section. Check the box that describes the NEPA status of the proposed project. Complete the documentation component and submit any surveys, and/or reports that support the NEPA status.

For both CEQA and NEPA, submittal of permits is only necessary if they contain conditions providing information regarding potential environmental impacts.

CEQA STATUS

(All applicants must complete this section)

Check the box that corresponds with the CEQA compliance for your project. The proposed action is either "Not a Project" under CEQA; is Categorically Exempt from CEQA; or requires a Negative Declaration, Mitigated Negative Declaration, or an Environmental Impact Report per CEQA.

"Not a Project" per CEQA

1. Describe how your project is "Not a Project" per CEQA:

[Click here to enter text.](#)

2. If appropriate, provide documentation to support the "Not a Project" per CEQA status.

[Click here to enter text.](#)

Categorical Exemption or Statutory Exemption

If a project is categorically exempt from CEQA, all applicants, including public agencies that provide a filed Notice of Exemption, are required to provide a clear and comprehensive description of the physical attributes of the project site, including potential and known special-status species and habitat, in order for the SNC to make a determination that the project is exempt. A particular project that ordinarily would fall under a specific category of exemption may require further CEQA review due to individual circumstances, i.e., it is within a sensitive location, has a cumulative impact, has a significant effect on the environment, is within a scenic highway, impacts an historical resource, or is on a hazardous waste site. Potential cultural/archaeological resources must be noted, but do not need to be specifically listed or mapped at the time of application submittal. Backup data informing the exemption decision, such as biological surveys, Cultural Information Center requests, research papers, etc. should accompany the full application. Applicants anticipating the SNC to file an exemption are encouraged to conduct the appropriate surveys and submit an information request to an office of the California Historical Resources Information System (CHRIS).

1. Describe how your project complies with the requirements for claiming a Categorical or Statutory Exemption per CEQA:

[The small footprint \(1.7 acres\) of riparian restoration work may be categorically exempted using](#)

Class 7 “actions to assure the maintenance, restoration, or enhancement of a natural resource.”
The Forest Service would consult with SNC to determine the appropriate Categorical Exemption.

2. If your organization is a state or local governmental agency, submit a signed, approved Notice of Exemption (NOE) documenting the use of the Categorical Exemption or Statutory Exemption, along with any permits, surveys, and/or reports that have been completed to support this CEQA status. The Notice of Exemption must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.
The U.S. Forest Service represents the organization.
3. If your organization is a nonprofit or federal agency, there is no other California public agency having discretionary authority over your project, and you would like the SNC to prepare a NOE for your project, let us know that and provide any permits, surveys, and/or reports that have been completed to support the CEQA status.
The Forest Service would like SNC to prepare any CEQA documentation necessary. Forest Service personnel are available to provide necessary documentation.

Project location is on US Forest Service land. As such, NEPA was completed for project activities. Supplemental analysis has been completed on greenhouse gasses and recreational use. NEPA documents and supplemental analysis are attached to the proposal application.

Project public participation and notification process:

The Forest Service first listed the Bailey Plantation Health Improvement project (formerly the Bailey Plantation Thin) in the October 2009 issue of the Stanislaus National Forest Schedule of Proposed Actions (SOPA). The Forest distributes the SOPA to about 160 parties and it is available on the internet [<http://www.fs.fed.us/r5/stanislaus/projects/sopa>].

On January 22, 2010 the Forest sent a scoping letter to 57 individuals, organizations, agencies, and Tribes interested in this project. The letter requested comments on the Proposed Action March 1, 2010. Two interested parties submitted letters, e-mails or verbal comments. No relevant issues were identified during scoping. Comments regarding the Bailey Plantation Health Improvement proposed actions primarily related to the amount and treatment of roads in the project area. As a result, the Forest Service carefully evaluated which roads were not essential and considered closing and/or decommissioning additional miles of roads. A list of non-relevant issues and reasons regarding their categorization as non-relevant may be found in the project record.

A legal notice, announcing the 30-day Opportunity to Comment on the EA appeared in the Union Democrat on March 4, 2011. The 30-day comment period ended on April 4, 2011. No comments were received during the comment period.

-
- Negative Declaration OR**
 Mitigated Negative Declaration

If a project requires a Negative Declaration or Mitigated Negative Declaration, then applicants must work with a qualified public agency, i.e., one that has discretionary authority over project approval or permitting, to complete the CEQA process.

1. Describe how your project complies with the requirements for the use of a Negative Declaration or a Mitigated Negative Declaration per CEQA:
[Click here to enter text.](#)
2. Submit the approved Initial Study and Negative Declaration/Mitigated Negative Declaration along with any Mitigation Monitoring or Reporting Plans, permits, surveys, and/or reports that have been completed to support this CEQA status. The IS/ND/MND must be accompanied by a signed, approved Notice of Determination, which must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.
[Click here to enter text.](#)

Environmental Impact Report

If a project requires an Environmental Impact Report, then applicants must work with a qualified public agency, i.e., one that has discretionary authority over project approval or permitting, to complete the CEQA process.

1. Describe how your project complies with the requirements for the use of an Environmental Impact Report per CEQA:
[Click here to enter text.](#)
2. Submit the Draft and Final Environmental Impact Report along with any Mitigation Monitoring or Reporting Plans, permits, surveys, and/or reports that have been completed to support this CEQA status. The EIR documentation must be accompanied by a signed, approved Notice of Determination, which must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.
[Click here to enter text.](#)

NEPA STATUS

(Applicable to federal applicants, some tribal organizations, and applicants receiving federal funding or conducting activities on federal lands)

Check the box that corresponds with the NEPA compliance for your project.

Categorical Exclusion

1. Describe how your project complies with the requirements for claiming a Categorical Exclusion per NEPA:
[Click here to enter text.](#)
- Submit the signed, approved Decision Memo and Categorical Exclusion, as well as documentation to support the Categorical Exclusion, including any permits, surveys, and/or reports that have been completed to support this NEPA status:
[Click here to enter text.](#)

Environmental Assessment & Finding of No Significant Impact

1. Describe how your project complies with the requirements for the use of an Environmental Assessment and Finding of No Significant Impact per NEPA:
[The project was analyzed under an Environmental Assessment \(EA\) that resulted in a Finding of No Significant Impact. The Forest Supervisor considered the environmental effects described in the EA \(p](#)

17-36.), and determined that the actions will not have a significant effect on the quality of the human environment, considering the context and intensity of impacts (40 CFR 1508.27); therefore, an environmental impact statement was not prepared. The Forest Supervisor finding was based on the following:

- The Bailey Plantation Health Improvement project is located in the northern end of the Stanislaus National Forest and proposes to treat 307 acres out of approximately 900,000 acres in the Stanislaus National Forest. The project area has no urban communities in close proximity, and is surrounded by private lands managed for forest products.
- The finding of no significant environmental effects was not biased by the beneficial effects of the action. All practical means to avoid or minimize environmental harm were adopted by project design (EA p. 5-16, and 17-36). Biological Evaluations (BE), Biological Assessments (BA) and specialist reports prepared for this project are available in the project record, and unless otherwise noted are available upon request.
- Riparian and meadow treatments of Alternative 1 (Proposed Action) should have beneficial effects on sedimentation due to repairs performed on the road system and the replacement of inoperable culverts. Rehabilitation of the stream channel should reduce sedimentation to the watershed in the long-term. Planting of riparian vegetation should help stabilize the stream bank. Roads treated through maintenance, reconstruction, decommissioning, and closure would reduce the amount of hydrologically connected road segments and result in a beneficial effect on the watershed for the long-term, including water quality, beneficial uses, and watershed condition.
- The effects of Alternative 1 (Proposed Action) actions in combination with the effects of other reasonably foreseeable future activities in the project watersheds are not expected to result in adverse cumulative watershed effects.
- There will be no significant effects on public health and safety. Alternative 1 (Proposed Action) would avoid adverse impacts to public safety through project design efforts. Implementation of the proposed action would be governed by standard public health and safety contract clauses. Standard precautionary measures such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining the haul route, would be used. Short-term adverse effects on public health related to air quality from pile burning are a small possibility and management requirements have been developed to mitigate these effects. These potential short-term effects are of limited scope and duration and have been minimized to the extent possible through timing of pile burning and use of mechanized fuels reduction methods (mastication) in some cases. Regional air quality standards would be met in a manner consistent with the Clean Air Act.
- There will be no significant effects on unique characteristics of the area. Known and newly located cultural resource sites have been documented for protection from activities. 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 criteria will protect these critical habitats from disturbance activities. No other unique characteristics or ecologically critical areas such as park lands, prime farmlands, or wetlands exist within the project area.
- The effects on the quality of the human environment are not likely to be highly controversial, because there is no known scientific controversy over the impacts of the project.
- The Stanislaus National Forest has considerable experience with the types of activities to be implemented. The effects analysis shows the effects are not uncertain and do not involve unique or unknown risk.

- The action is not likely to establish a precedent for future actions with significant effects because it conforms to all existing Forest Plan direction and is applicable only to the project area. Future projects would be considered, evaluated and analyzed separately on their own merits.
 - The cumulative impacts are not significant. The effects of past, present and reasonably foreseeable future actions were assessed along with those of the Proposed Actions to determine whether cumulative effects would occur.
 - The action will have no significant adverse effect on districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places, because historic preservation compliance has been met and documented. The action will also not cause loss or destruction of significant scientific, cultural or historical resources, because consultation requirements under Section 106 of the National Historic Preservation Act have been fulfilled and Native Americans and local Tribes were consulted about project activities. No conflicts were identified.
 - The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species act of 1973, because Endangered or threatened species or their habitat do not exist in the project area.
 - The action will not violate applicable laws and regulations for the protection of the environment. The action is consistent with the Forest Plan. The Forest Service would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.
2. Submit the signed, approved Environmental Assessment and Finding of No Significant Impact along with any permits, surveys, and/or reports that have been completed to support this NEPA status.
The Environmental Assessment and Finding of No Significant Impact documents are attached to the proposal application.
-

Environmental Impact Statement

1. Describe how your project complies with the requirements for the use of an Environmental Impact Statement per NEPA:
[Click here to enter text.](#)
2. Submit the Draft and approved, Final Environmental Impact Statement, along with the Record of Decision and any permits, surveys, and/or reports that have been completed to support this NEPA status.
[Click here to enter text.](#)

Sierra Nevada Conservancy (SNC)

Dear Ms. Feliz and Ms Griffith-Flatter

In an email dated February 17th, 2012 to Stanislaus National Forest Supervisor, Susan Skalski, the Sierra Nevada Conservancy requested additional information for the Bailey Plantation Health Improvement and Ecosystem Restoration project (Project 647).regarding:

- 1) Greenhouse Gases: impacts from burning methods and amounts of use of mechanical equipment and,
- 2) a discussion regarding the potential noise impacts from equipment, etc. on recreational users and what measures are proposed if necessary to avoid impacts.

Below is a discussion on Greenhouse Gasses and Recreation use for the Bailey Plantation Health Improvement and Ecosystem Restoration project (Project 647).

Greenhouse Gasses
Affected Environment

The EPA developed a “State of Knowledge” paper that outlines what is known and what is uncertain about global climate change (Environmental Protection Agency 2007). The following elements of climate change are known with near certainty:

1. Human activities are changing the composition of Earth’s atmosphere. Increasing levels of greenhouse gases, like carbon dioxide (CO₂) in the atmosphere since pre-industrial times, are well-documented and understood.
2. The atmospheric buildup of CO₂ and other greenhouse gases is largely the result of human activities such as the burning of fossil fuels.
3. A warming trend of about 1.0° to 1.7° F occurred from 1906-2005. Warming occurred in both the Northern and Southern Hemispheres and over the oceans (IPCC 2007).
4. The major greenhouse gases emitted by human activities remain in the atmosphere for periods ranging from decades to centuries. It is therefore virtually certain that atmospheric concentrations of greenhouse gases will continue to rise over the next few decades.
5. Increasing greenhouse gas concentrations tend to warm the planet.

However, it is uncertain how much warming will occur, how fast that warming will occur, and how the warming will affect the rest of the climate system including precipitation patterns (Environmental Protection Agency 2007).

Direct, Indirect, and Cumulative Effects
Alternative 1 (Proposed Action)

Emissions generated by fossil fuel combustion and burning are expected to contribute to the global concentration of greenhouse gases that affect climate change. Approximately 302 acres of would be treated using biomass/mastication. Research indicates that an understory thin to a canopy cover target of 40%, followed by a prescribed burn would release roughly 21.1 tons of carbon per acre into the atmosphere (North et al. 2009).

With only 302 treated acres (without an understory prescribed burn) the expected tons of carbon released would be substantially less than 6,372 tons of carbon. This is greater than 100 million times less than the global carbon emissions from fossil fuel combustion in the 1990s, which ranged from 5.5×10^{12} to 1.1×10^{13} tons per year (Houghton 2007).

Although project related carbon emissions may be negligible in terms of climate change, stands will become more fire and drought resilient. Research suggests that restoration of forested stands that lower tree density and fuel loading will result in a lower risk of uncharacteristically large, severe wildfire that can release large amounts of carbon into the atmosphere (Stephens et al. 2009, North et al. 2009). Lower stand densities also decrease crown competition and reallocate resources to more vigorous trees that are more resilient to disturbance and drought (Oliver 1995, Oliver and Larson 1996).

Treatments that reduce risk of large, high-severity wildfires have an effect on the carbon cycle, and thus, greenhouse gas emissions:

1. Carbon stock reductions and carbon emissions will likely be re-sequestered by continued tree growth within about fifteen years following treatments (Hurteau and North 2010a, Hurteau and North 2010b),
2. Consolidating carbon stocks in fewer, larger trees can reduce the risk of carbon loss from wildfire by over 50% (Hurteau and North 2010a, North and Hurteau 2011),
3. Wildfire in untreated stands shifts a disproportionate amount of carbon to decomposing stocks compared to wildfire in treated stands (North and Hurteau 2011), and
4. Following fire, higher survivorship of large trees will likely shorten the time needed to re-sequester carbon lost during a wildfire (Hurteau and North 2010a, North and Hurteau 2011).

Alternative 2 (No Action)

There would be no direct effects to greenhouse gases or climate change because no action would be taken. The causes of climate change identified by Environmental Protection Agency (2007) would continue unaffected. Although no reductions in forest carbon stocks or emissions from treatment activities would occur, demand for lumber and energy would remain the same; therefore, greenhouse gas emissions generated from harvesting of timber and biomass (for energy production) would be shifted to other forests.

Stand densities and fuel loadings would continue to increase. Regional droughts may cause widespread changes to ecosystems both directly through mortality of susceptible species and indirectly by creating conditions that more readily support high-intensity fires or insect outbreaks. These conditions may cause shifts in vegetation in ecotones where vegetation is normally under some stress (Skinner 2007). If a major disturbance, such as a fire did occur, there would be a large release of greenhouse gases. Following the disturbance, carbon emissions from decomposing dead vegetation would increase until carbon sequestration from new vegetation was able to regenerate and offset these emissions (Amiro et al. 2010, North and Hurteau 2011).

Recreation Use

Affected Environment

Recreation opportunities in the Bailey Plantation Health Improvement and Ecosystem Restoration project are limited to disperse camping opportunities, off-highway vehicle (OHV) use, and hunting opportunities. The project area is surrounded by private land. As such, many of the connecting roads pass through private lands that are not open to the public. There are no

designated camping sites near the project area. OHV use occurs down Bailey Ridge (06N45), with loop route along Forest Route 07N47 and 06N18. Motorized travel is open from April 15 - December 15, as designated by the Stanislaus National Forest Motorized Vehicle Travel Management plan. The area is moderately used for deer hunting during the fall months.

Direct, Indirect, and Cumulative Effects

Alternative 1 (Proposed Action)

Mechanical thinning of the 302 acres of plantations would not influence the recreation opportunity within the project area over the long-term. Recreation opportunities (e.g., camping, and OHV use) during project implementation may be temporally reduced by noise disturbance from mechanical equipment and logging trucks. Roads used during the logging operation would be signed to decrease potential encounters with OHVs and logging equipment. In addition, logging activities would only occur during week days. OHV trails would not be impacted during this project.

The creation of additional unauthorized roads and trails from forest restoration projects is possible. Although cross-country travel by motorized vehicles is illegal, there is still potential for an increase in cross-country motorized travel into stands leading away from skid trails, fire lines, temporary roads, and fuelbreaks. Temporary roads would be decommissioned, and in areas near OHV roads and trails, skid trails would be camouflaged to reduce the likelihood of additional user created unauthorized roads and trails.

Alternative 2 (No Action)

There would be no direct effects to recreation opportunities in the project area, as plantations would not be thinned.

Literature Cited

- Amiro, B.D., A. G. Barr, J. G. Barr, T. A. Black, R. Bracho, M. Brown, J. Chen, K. L. Clark, K. J. Davis, A. R. Desai, S. Dore, V. Engel, J. D. Fuentes, A. H. Goldstein, M. L. Goulden, T. E. Kolb, M. B. Lavigne, B. E. Law, H. A. Margolis, T. Martin, J. H. McCaughey, L. Misson, M. Montes-Helu, A. Noormets, J. T. Randerson, G. Starr, and J. Xiao. 2010. Ecosystem carbon dioxide fluxes after disturbance in forests of North America. *Journal of Geophysical Research*, 115, G00K02, doi:10.1029/2010JG001390.
- Environmental Protection Agency. 2007. Particulate Matter. United States Environmental Protection Agency. online: <http://www.EPA.gov/air/particlepollution>.
- Houghton, R.A. 2007. Balancing the global carbon budget. *Annual Review of Earth and Planetary Sciences*, 35:313-347.
- Hurteau, M.D. and M. North. 2010a. Carbon recovery rates following different wildfire risk mitigation treatments. *Forest Ecology and Management*, 260:930-937.
- Hurteau, M.D. and M. North. 2010b. Carbon Costs and Benefits of Fuels Treatments. Research Brief for Forest Managers. Northern Arizona University, Flagstaff, AZ; USDA Forest Service, Pacific Southwest Research Station, Davis, CA.
- IPCC 2007. *Climate Change 2007: Synthesis Report; an Assessment of the Intergovernmental Panel on Climate Change*. Valencia, Spain, 12-17 November 2007.

- North, M., M. Hurteau, J. Innes. 2009b. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. *Ecological Applications*, 19:1385-1396.
- North, M.P. and M.D. Hurteau. 2011. High-severity wildfire effects on carbon stocks and emissions in fuels treated and untreated forest. *Forest Ecology and Management*, 261:1115-1120.
- Oliver, W.W. 1995. Is self-thinning in ponderosa pine ruled by *Dendroctonus* Bark Beetles? Pages 213-218, in *National Silviculture Workshop Forest Health through Silviculture: Proceedings of the 1995 National Silviculture Workshop*, Mescalero, New Mexico. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado. 246 pp.
- Oliver, C.D. and B.C. Larson. 1996. *Forest Stand Dynamics*, Update Edition. John Wiley & Sons, Inc. New York, NY. 520 pp.
- Skinner, C.N. 2007. Silviculture and Forest Management Under a Rapidly Changing Climate. *In*: Powers, R.F. (editor). *Restoring Fire-Adapted Ecosystems: Proceedings of the 2005 National Silviculture Workshop*. PSW-GTR-203, USDA Forest Service, Pacific Southwest Research Station, Albany, CA, p. 21-32.
- Stephens, S.L., J.J. Moghaddas, B.R. Hartsough, E.E.Y. Moghaddas, N.E. Clinton. 2009. Fuel treatment effects on stand-level carbon pools, treatment-related emissions, and fire risk in a Sierra Nevada mixed-conifer forest. *Canadian Journal of Forest Research*, 39:1538-1547.

[Please let me know if you need additional information.](#)

[Thank you, Kendal](#)

**SIERRA NEVADA CONSERVANCY
PROPOSITION 84 - DETAILED BUDGET FORM**

Project Name: Amador Calaveras Consensus Group - Bailey Plantation Health Improvement, Ripa
Applicant: Stanislaus National Forest, Calaveras

SECTION ONE DIRECT COSTS	Year One	Year Two	Year Three	Year Four	Year Five
<i>Project Management Costs</i>	\$11,017.00	\$4,861.00			
<i>Site Restoration Work Costs</i>	\$45,000.00	\$15,000.00			
<i>Project Equipment, Building, Land purchases</i>					
DIRECT COSTS SUBTOTAL:	\$56,017.00	\$19,861.00	\$0.00	\$0.00	\$0.00

SECTION TWO INDIRECT COSTS	Year One	Year Two	Year Three	Year Four	Year Five
	\$0.00	\$0.00			
INDIRECT COSTS SUBTOTAL:	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
PROJECT TOTAL:	\$56,017.00	\$19,861.00	\$0.00	\$0.00	\$0.00

SECTION THREE Administrative Costs (Costs may not to exceed 15% of total Project Cost) :					
<i>*Organization operating/overhead costs</i>	\$0.00	\$0.00			
ADMINISTRATIVE TOTAL:	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SNC TOTAL GRANT REQUEST:	\$56,017.00	\$19,861.00	\$0.00	\$0.00	\$0.00

SECTION FOUR OTHER PROJECT CONTRIBUTIONS	Year One	Year Two	Year Three	Year Four	Year Five
Project Administration and Oversight	\$ 8,251.00	\$ 7,071.00			
USFS Vehicle /Transportation	\$1,000.00	\$1,000.00			
Misc expenses and Consummables	\$300.00				
Total Other Contributions:	\$9,551.00	\$8,071.00	\$0.00	\$0.00	\$0.00

NOTE: The categories listed on this form are examples and may or may not be an expense related to the project. Rows may be deleted on the form as needed. Applicants should contact the SNC if questions arise.

* Operating Costs should be allocated to the percentage that is applicable to the grant based on your cost allocation method and should not exceed 15% of your total project costs.

arian Restoration
; Ranger District

Total
\$15,878.00
\$60,000.00
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$75,878.00

Total
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$75,878.00

Total
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$75,878.00

Total
\$15,322.00
\$2,000.00
\$300.00
\$0.00
\$0.00
\$0.00
\$0.00
\$0.00
\$17,622.00

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United States
Department of
Agriculture

Forest
Service

Stanislaus National Forest

19777 Greenley Road
Sonora, CA 95370
(209) 532-3671
FAX: (209) 533-1890
TTY/TDD: (209) 533-0765
<http://www.fs.usda.gov/stanislaus>

File Code: 1900

Date: September 24, 2013

Brandon Sanders
Sierra Nevada Conservancy
11521 Blocker Drive, Suite 205
Auburn, CA 95603

Dear Mr. Sanders:

As the Forest Supervisor for the Stanislaus National Forest, I authorize the submittal of the grant application titled "Amador Calaveras Consensus Group – Plantation Health Improvement, Riparian Restoration" for consideration by Sierra Nevada Conservancy as a Category I Site Improvement activity.

Sincerely,

SUSAN SKALSKI
Forest Supervisor



Amador Calaveras Consensus Group

PO Box 1055

Pine Grove, California 95665

September 20, 2013

Sierra Nevada Conservancy
11521 Blocker Drive, Suite 205
Auburn, CA 95603

LETTER OF SUPPORT

The Amador-Calaveras Consensus Group is a community-based organization that works to create fire-safe communities, healthy forests and watersheds, and sustainable local economies. Partners include state and federal agencies, nonprofits, environmental groups, and contractors.

Our Mission

The Amador-Calaveras Consensus Group is a community-based organization that works to create fire-safe communities, healthy forests and watersheds, and sustainable local economies.

Our Vision

The economies, natural environments, and communities of Amador and Calaveras County are healthy and sustainable.

As part of that effort, we support the work of local agencies and businesses that reduce fuel around homes and communities, and create jobs for local residents. We collaborate with these agencies and businesses to help them secure government contracts and private investment.

The ACCG strongly supports the following funding proposal now before the Sierra Nevada Conservancy:

Amador Calaveras Consensus Group – Bailey Plantation Health Improvement & Riparian Restoration, Category 1 (Calaveras Ranger District, US Forest Service)

Sincerely,

/s/ Cathy Koos Breazeal for

Amador-Calaveras Consensus Group

Agreed to by consensus at the regular monthly ACCG on September 19 by members present: Brandon Sanders, Sierra Nevada Conservancy; Peter Zaragoza, Jr, California Indian Manpower Consortium; Cathy Koos Breazeal, Amador Fire Safe Council; William Haigh, Bureau of Land Management; Susan McMorris, Blue Mountain Community Renewal Council; Robert Smith, Smith Grinding; John Hofmann, Consultant to Amador County; Erik Kleinfelter, CA Department of Fish and Game; John Heissenbuttel, Heissenbuttel Natural Resource Consulting; Katherine Evatt, Foothill Conservancy; Reuben Childress, Foothill Conservancy; Patrick McGreevy, Calaveras County Parks and Recreation Commissioner, Leland Meyer, Victory Village Amador.

Amador Calaveras Consensus Group

PO Box 1055

Pine Grove, California 95665

ACCG MEMBERSHIP – MOA SIGNATORS

September 19, 2013

Amador County Veterans Organization (Victory Village Amador)
Amador Fire Safe Council
Amador-Calaveras Cooperative Association for Biomass Utilization (ACCABU)
Doug Barber
Blue Mountain Community Renewal Council
Mary Boblet
Jan Bray, Society of California Foresters
Buena Vista Biomass Power
California Department of Fish and Game
California Indian Manpower Consortium
Calaveras Foothills Firesafe Council
Calaveras Healthy Impacts Product Solutions (CHIPS)
CALFIRE
Central Sierra Resource Conservation and Development Council
Ebbetts Pass Forest Watch
Foothill Conservancy
Heissenbuttel Natural Resources Consulting
John Hofmann
Dennis Lewis, Blue Mountain Emergency Preparedness Committee
Pat McGreevy, Calaveras Parks and Recreation Commissioner
Motherlode Job Training
Pacific Gas and Electric
Sierra Forest Legacy
Sierra Nevada Conservancy
Smith's Grinding
Steve Wilensky
Supervisor Chris Wright, Calaveras County District 2
The Nature Conservancy
Rick Torgerson
Trout Unlimited, Sac/Sierra Chapter
USDA Forest Service, Eldorado National Forest
USDA Forest Service, Stanislaus National Forest
USDA Natural Resource Conservation Service
USDOI Bureau of Land Management
Vicini Brothers Green Material Recycling
West Point Fire District