Eldorado National Forest

Placerville Ranger District
El Dorado County

Terrestrial Wildlife
Biological Assessment and Evaluation
Trestle Forest Health Project

2017

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California Spotted Owl Analysis
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I. INTRODUCTION

According to FSM 2670.32, a biological evaluation (BE) is prepared to evaluate the effects of proposed projects upon Forest Service (FS) "sensitive" species as designated in the Forest Service Regional Forester's Species List (USDA Forest Service 2013a), to ensure that project decisions do not result in the loss of species viability or create significant trends towards federal listing. The purpose of this BE is to evaluate the potential effects of the Forest Service (FS), Eldorado National Forest (ENF), Placerville Ranger District (District), Trestle Forest Health Project (USDA Forest Service 2015a) (hereafter called Trestle Project) on designated sensitive species.

Sensitive Species on the Eldorado National Forest

Twelve terrestrial wildlife species have been identified for the Eldorado National Forest from the Regional Forester's list of Sensitive Species for Region 5 (USDA Forest Service 2013a). In 2013, the Regional Forester's list of Sensitive Species List was revised resulting in the removal of the western red bat (*Lasiurus blossevilli*) and Sierra Nevada red fox (*Vulpes vulpes necator*), and the addition of the fringe-tailed bat (*Myotis thysanodes*) and western bumblebee (*Bombus occidentalis*) on the Eldorado National Forest (USDA Forest Service 2013a) in regards to terrestrial wildlife species. This document considers the potential effects of the proposed Trestle Project on the Region 5 sensitive terrestrial wildlife species shown in Table I.1.

Table I.1 –Region 5 Designated Sensitive Species on the Eldorado NF

Region 5 Sensitive Species for the Eldorado National Forest	
California spotted owl (*Strix occidentalis occidentalis*)	Pallid bat (*Antrozous pallidus*)
Northern goshawk (*Accipiter gentilis*)	Townsend's big-eared bat (*Corynorhinus townsendii*)
American bald eagle (*Haliaeetus leucocephalus*)	Fringe-tailed bat (*Myotis thysanodes*)
Great gray owl (*Strix nebulosa*)	Willow flycatcher (*Empidonax trailli*)
Western bumblebee (*Bombus occidentalis*)	Pacific fisher (*Martes pennanti pacifica*)
American marten (*Martes americana*)	California wolverine (*Gulo gulo luteus*)

The Trestle Project area is defined as the project boundary and associated project units for species that may be in the area and that have a potential to be impacted by the proposed project. The project area has been evaluated for Region 5 sensitive terrestrial wildlife species by consulting the Forest geographic information system (GIS) (USDA Forest Service 2016a) and considering literature in the species information files (USDA Forest Service 2016b). Based on the existence of suitable habitat within the analysis area, Table I.2 examines the potential for occurrence of the Region 5 sensitive species mentioned above, and identifies the species that will be analyzed in this Biological Evaluation.

Table I.2 – Project Assessment for Region 5 Sensitive Species Occurrence in the Trestle Project

Species	Potentially Affected Suitable Habitat within the Project Boundary	Suitable Habitat Not Available or Not Affected within the Project Boundary	Potential for Disturbance	Considered for Further Analysis
California spotted owl	16,331 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes. Existing PACs in and within 1/4 mile of the project boundary.	Yes
Great gray owl	16,355 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes. Existing PACs occur within the project boundary.	Yes
Northern goshawk	16,331 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes. Existing PACs in and within 1/4 mile of the project boundary.	Yes
Pallid bat	4,184 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes	Yes
Townsend's big-eared bat	4,184 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes	Yes
Fringe-tailed bat	4,184 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes	Yes
Western bumblebee	Suitable habitat occurs randomly within the project boundary where forage and nesting substrate occur.	Suitable habitat occurs within the analysis area.	Yes	Yes
American bald eagle	6,504 acres of suitable habitat	Suitable habitat occurs within the analysis area.	Yes	Yes
Pacific fisher	16,331 acres of suitable habitat	Suitable habitat occurs within the analysis area.	No. Not believed to be present on the ENF.	Yes in regards to habitat.
American marten	No	No red fir or lodgepole pine habitats in the area. Project area occurs below 6,000 feet in elevation.	No	No
California wolverine	No	No sub-alpine habitat in the project area. High human disturbance and fragmentation.	No	No
Willow flycatcher	No	Wet meadow complexes preferred by this species, are absent in the project area on Forest Service land.	No	No

Federally Listed Threatened, Endangered, Proposed and Candidate (TEPC) Species

Forest Service manual (FSM) 2672.42 direct that a biological assessment (BA) be prepared for all proposed projects that may have effects upon United States Fish and Wildlife Service

(USFWS) listed threatened, endangered, and proposed species. Current Forest Service policy (FSM 2670) is to manage National Forest system lands so that the special protection measures provided under the Endangered Species Act are no longer necessary and threatened or endangered species will become de-listed. The LRMP for the Eldorado National Forest provides general direction for the management of threatened and endangered species (USDA Forest Service 1988). The LRMP directs that the Forest utilize administrative measures to protect and improve habitat for endangered species, and to prepare local management plans to meet recovery objectives. Additionally, the LRMP provides direction to maintain and enhance populations of threatened and endangered species.

Pursuant to Section 7(c) of the Endangered Species Act of 1973 as amended, the U. S. Fish and Wildlife Service (USFWS) website was accessed to obtain a current list of TEPC species that may be present on the Eldorado National Forest (ENF) in the vicinity of the project area. An official species list was obtained from the Sacramento U.S. Fish and Wildlife Office website on December 1, 2015 (Consultation Code #08ESMF00-2016-SLI-0381). No federally listed terrestrial wildlife species or their critical habitats were identified for the Trestle Forest Health Project (USDI 2015). An updated and revised list was obtained on January 12, 2017. No new information was provided for terrestrial wildlife species (USDI 2017).

The Valley elderberry longhorn beetle occurs on the ENF; however; the Valley elderberry longhorn beetle will not be analyzed as the Trestle Project is above the species elevational range and therefore; there will be no effects to the species.

On October 7, 2014, the USFWS issued a Proposed Rule to list the West Coast DPS of fisher as Threatened (Federal Register 2014). On April 18, of 2016, the USFWS did not list the fisher (Federal Register 2016a). The fisher will continue to be addressed as a FS sensitive species, within the BE document.

On October 8, 2015, the USFWS issued a finding that the Sierra Nevada red fox (SNRF) was warranted as a candidate for listing as an endangered or threatened species (Federal Registrar, 2015b). Sierra Nevada red fox has the potential to occur on the ENF. The SNRF was not analyzed due to lack of habitat within the Trestle Project boundary, and therefore; there are no effects to the species.

On September 18, 2015 the USFWS initiated a status review of the California Spotted Owl (CASPO) and following this review will issue a 12-month finding on whether listing of the species is warranted (Federal Register 2015a). Unless the status for the CASPO changes, the species will continue to be addressed as a FS sensitive species, within the BE document.

On October 18, 2016, the USFWS reopened the public comment period and also initiated a new status review of the North American wolverine to determine whether or not the Northern wolverine meets the definition of endangered or threatened species under the Act or whether the species is not warranted for listing under the Act. (Federal Registrar, 2016b). Wolverine has the

potential to occur on the ENF. Wolverine was not analyzed due to lack of habitat within the Trestle Project boundary, and therefore; there are no effects to the species.

II. CURRENT SPECIES MANAGEMENT DIRECTION

The Sierra Nevada Forest Plan Amendment Final Supplement was approved and signed in January 2004. This document amends all Forest plans across the Sierra Nevada range. It also includes revised and new Forest-wide standards and guidelines for management of forest lands. Standards and guidelines from the LRMP and the Sierra Nevada Forest Plan Amendment Record of Decision (ROD) that are pertinent to this project have been summarized below for species potentially affected by the project.

Region 5 Listed Sensitive Species

Direction to maintain the viability of Region 5 sensitive species is provided by the National Forest Management Act, the Code of Federal Regulations (219.19), the Forest Service Manual (2672), and the Eldorado National Forest Land Management Plan (LRMP). The Sierra Nevada Forest Plan Amendment (SNFPA) Final Supplementary Environmental Impact Statement (SEIS) Record of Decision (USDA Forest Service 2004) amends the Eldorado National Forest LRMP.

Forest Service Manual and Handbooks (FSM/H 2670) include the following:

- As part of the National Environmental Policy Act process, review programs and activities, through a biological evaluation to determine their potential effect on sensitive species.
- Avoid or minimize impacts to species whose viability has been identified as a concern.
- If impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its habitat within the area of concern and on the species as a whole.
- Establish management objectives in cooperation with the States when a project on National Forest System lands may have a significant effect on sensitive species population numbers or distribution.

National Forest Management Act (NFMA), and implementing regulations (CFR 219.19)

- Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

Eldorado National Forest Land and Resource Management Plan (LRMP), as amended by the Sierra Nevada Forest Plan Amendment in January 2004.

- Utilize administrative measures to protect and improve endangered, threatened, rare, and sensitive wildlife species.
- General management directs to avoid or minimize impacts to species whose viability has been identified as a concern, and to manage fish and wildlife habitat to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.

Specific standards and guidelines from the LRMP and the 2004 Sierra Nevada Forest Plan Amendment record of Decision (ROD) that are pertinent with regard to terrestrial sensitive species potentially affected by the project are described below.

California Spotted Owl

- Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable California spotted owl habitat with unknown occupancy. Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results (SNFP SEIS ROD Appendix A-54).
- Limited operating periods are applied within a quarter mile of spotted owl activity centers, from March 1 through August 15, if activities may disturb nesting spotted owls (SNFP SEIS ROD Appendix A-60). *Note: change in LOP from August 31 to August 15, based on a letter from Regional Office based on owl demographic study results in regards to owl fledgling times in the Sierra Nevada* (USDA Forest Service 2006).
- California spotted owl protected activity centers (PACs) are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known (SNFP SEIS ROD Appendix A-37).
- PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 300 acres of habitat in as compact a unit as possible. The best available habitat is selected for California spotted owl PACs to include: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater; (3) at least 70 percent tree canopy cover (including hardwoods); and (4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50 percent canopy cover (including hardwoods). Aerial photography interpretation and field verification are used as needed to delineate PACs (SNFP SEIS ROD Appendix A-37).
- As additional nest locations and habitat data become available, boundaries of PACs are reviewed and adjusted as necessary to better include known and suspected nest stands and encompass the best available 300 acres of habitat (SNFP SEIS ROD Appendix A-37).
- When activities are planned adjacent to non-national forest land, available databases are checked for the presence of nearby California spotted owl activity centers on non-national forest lands. A 300-acre circular area, centered on the activity center, is delineated. Any part of the circular 300-acre area that lies on national forest lands is designated and managed as a California spotted owl PAC (SNFP SEIS ROD Appendix A-37).
- PACs are maintained regardless of California spotted owl occupancy status. However, after a stand-replacing event, evaluate habitat conditions within 1.5-mile radius around

the activity center to identify opportunities for re-mapping the PAC. If there is insufficient suitable habitat for designating a PAC within the 1.5-mile radius, the PAC may be removed from the network (SNFP SEIS ROD Appendix A-37).

- Desired conditions in each PAC are: (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 to 70 percent 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 (SNFP SEIS ROD Appendix A-37).
- For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale. (ROD 2004, page 37).
- Breeding season limited operating period restrictions may be waived, were necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl PACs per year per forest (ROD 2004, page 37).
- California spotted owl home range core areas (HRCAs) are established around each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core area sizes are 1,000 acres for the Eldorado National Forest (SNFP SEIS ROD Appendix A-39). Desired conditions in each HRCA are (1) at least two tree canopy layers; (2) at least 24 inches dbh in dominant and co-dominant trees; (3) a number of very large (greater than 45 inches dbh) old trees; (4) at least 50 to 70 percent canopy cover; and (5) higher than average levels of snags and down woody material (SNFP SEIS ROD Appendix A-40).
- Aerial photography is used to delineate the core area. Acreage for the entire core area is identified on national forest lands. Core areas encompass the best available California spotted owl habitat in the closest proximity to the owl activity center. The best available contiguous habitat is selected to incorporate, in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50 percent tree canopy cover (including hardwoods). The acreage in the 300-acre PAC counts toward the total home range core area. Core areas are delineated within 1.5 miles of the activity center (SNFP SEIS ROD Appendix A-39).
- Within California spotted owl Home Range Core Area: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit (SNFP SEIS ROD A-51).
- Outside of California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover within the treatment unit. Exceptions are allowed where project objectives require additional

canopy modification (such as need to adequately reduce ladder fuels, provide for safe and efficient equipment operations, minimize re-entry, design cost efficient treatments, and/or significantly reduce stand density). Where canopy cover must be reduced below 50 percent, retain at least 40 percent canopy cover averaged within the treatment unit (SNFP SEIS ROD A-51).

- Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb nest sites (SNFP SEIS ROD Appendix A-38).

Northern Goshawk

Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol (SNFP SEIS ROD Appendix A-38).

- Limited operating periods are maintained, prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center is unknown, either apply the LOP to a ¼ mile area surrounding the PAC, or survey to determine the nest stand location (SNFP SEIS ROD Appendix A-60).
- The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. When a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified (SNFP SEIS ROD Appendix A-54).
- Northern goshawk protected activity centers (PACs) are delineated surrounding all known and newly discovered breeding territories detected on National Forest System lands. Northern goshawk PACs are designated based upon the latest documented nest site and location(s) of alternate nests. If the actual nest site is not located, the PAC is designated based on the location of territorial adult birds or recently fledged juvenile goshawks during the fledgling dependency period (SNFP SEIS ROD Appendix A-38).
- PACs are delineated to: (1) include known and suspected nest stands and (2) encompass the best available 200 acres of forested habitat in the largest contiguous patches possible, based on aerial photography. Where suitable nesting habitat occurs in small patches, PACs are defined as multiple blocks in the largest best available patches within 0.5 miles of one another. Best available forested stands for PACs have the following characteristics: (1) trees in the dominant and co-dominant crown classes average 24 inches dbh or greater; (2) in westside conifer and eastside mixed conifer forest types,

stands have at least 70 percent tree canopy cover; and (3) in eastside pine forest types, stands have at least 60 percent tree canopy cover. Non-forest vegetation (such as brush and meadows) should not be counted as part of the 200 acres (SNFP SEIS ROD Appendix A-38).

- As additional nest location and habitat data becomes available, PAC boundaries are reviewed and adjusted as necessary to better include known and suspected nest stands and to encompass the best available 200 acres of forested habitat (SNFP SEIS ROD Appendix A-38).
- When activities are planned adjacent to non-national forest lands, available databases are checked for the presence of nearby northern goshawk activity centers on non-national forest lands. A 200-acre circular area, centered on the activity center, is delineated and managed as a northern goshawk PAC (SNFP SEIS ROD Appendix A-38).
- PACs are maintained regardless of northern goshawk occupancy status. PACs may be removed from the network after a stand-replacing event if the habitat has been rendered unsuitable as a northern goshawk PAC and there are no opportunities for re-mapping the PAC in proximity to the affected PAC (SNFP SEIS ROD Appendix A-38).
- It is desired that PACs have: (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 to 70 percent 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 (SNFP SEIS ROD Appendix A-38).
- For northern goshawk PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests (SNFP SEIS ROD Appendix A-38).
- Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of northern goshawk PACs per year on a forest (SNFP SEIS ROD Appendix A-38).
- Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb nest sites (SNFP SEIS ROD Appendix A-38).

Great Gray Owl

Desired conditions are that meadow vegetation in great gray owl PACs supports a sufficiently large meadow vole population to provide a food source for great gray owls through the reproductive period (SNFP SEIS ROD Appendix A-39).

- Conduct additional surveys to established protocols to follow up reliable sightings of great gray owls
- Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15). The LOP may be waived for vegetation treatments of limited

scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced (SNFP SEIS ROD Appendix A-39).

- The PAC encompasses at least 50 acres of the highest quality-nesting habitat (CWHR types 6, 5D, and 5M) available in the forested area surrounding the nest. The PAC also includes the meadow or meadow complex that supports the prey base for nesting owls (SNFP SEIS ROD Appendix A-38).
- Protected activity centers are established and maintained to include the forested area and adjacent meadow around all known great gray owl nest stands (SNFP SEIS ROD Appendix A-38).
- In meadow areas of great gray owl PACs, maintain herbaceous vegetation at heights commensurate with site capability and habitat needs of prey species. Follow regional guidance to determine potential prey species and associated habitat requirements at the project level (SNFP SEIS ROD Appendix A-60).

Pacific Fisher

Pacific fisher is associated with large patches of late seral stage forests. Management direction for Old Forest Emphasis Areas in the SNFP are intended to maintain suitable habitat well distributed throughout the Sierra Nevada Range for species dependent on late seral forest.

- The Sierra Nevada Forest Plan Amendment includes a conservation strategy for the Pacific fisher. The direction includes the following guidelines: (1) provide protection for all den sites; and (2) den sites will have 700 acres of the highest quality habitat (CWHR size class 4 or greater and canopy cover greater than 60%) in a compact arrangement surrounding den sites, in the largest contiguous block available, will be delineated and protected for fishers. Areas surrounding fisher den sites include at least two large (greater than 40 inches dbh) conifers per acre and one or more oaks (greater than 20 inches dbh) per acre with suitable denning cavities. Canopy closure exceeds 80%. (SNFP SEIS ROD Appendix A-39).
- Protect fisher den sites from disturbance with a limited operating period (LOP) from March 1 through June 30 for vegetation treatments (SNFP SEIS ROD Appendix A-61).
- Minimize old forest habitat fragmentation. Assess potential impacts of fragmentation on old forest associated species in biological evaluations (SNFP SEIS ROD Appendix A-53).
- Assess the potential of projects on the connectivity of habitat for old forest associated species (SNFP SEIS ROD Appendix A-54).
- Consider retaining forested linkages (with canopy cover greater than 40 percent) that are interconnected via riparian areas and ridgetop saddles during project-level analysis (SNFP SEIS ROD Appendix A-54).

- Identify areas for acquisition, exchange, or conservation easements to enhance connectivity of habitat for old forest associated species (SNFP SEIS ROD Appendix A-54).

A conservation assessment for the Pacific fisher was released in 2010 – Conservation of Fishers (*Martes pennanti*) in South-Central British Columbia, Western Washington, Western Oregon, and California: Volume 1: Conservation Assessment (Lofroth et al. 2010). A letter titled Fisher Conservation Assessment and Strategy came out on March 21, 2011 describing the "Development of the Interagency Fisher Conservation and Strategy (FCAS) for the west coast fisher population." The last paragraph of the letter talks about FCAS and the Endangered Species Act (ESA) and states "For the Conservation Strategy to have an effect on the listing status of the fisher, federal agencies will need to incorporate the conservation strategy into their planning processes and management direction to inform the FWS that effective conservation will occur for the fisher."

- Review of the conservation assessment as it could apply to the Trestle Project is as follows:
    - Retention of large diameter trees, closure of roads, enhancement of riparian corridors and hardwoods will aid in maintaining or enhancing potential fisher habitat in the project area.
    - Return of fire to aid in creating heterogeneity as well as the enhancement of hardwoods from prescribed burning and conifer encroachment removal fits in with the assessment on fisher habitat use and also past effects (fire suppression) to habitat.
    - Loss of large coarse woody debris; existing snags; large diameter cavitory oaks; and trees with heart rot, mistletoe or broom structures from prescribed fire, will affect potential fisher denning and resting habitat.
        - Measures through design criteria to prevent loss of these structures will aid in maintaining habitat for fisher should they be utilizing the area or should they be considered for translocation to the area in the future.

Pallid Bat, Townsend's Big-Eared Bat and Fringe-Tailed bat

Pallid bats, Townsend's big-eared bats and fringe-tailed bats are associated with oak woodlands, snags, rock outcrops, caves, bridges, abandoned mines, and riparian habitat. Forest-wide Standards and Guidelines are expected to provide habitat to support viable populations of these species. Restoration of hardwood ecosystems is accomplished through standards and guidelines requiring retention of large live hardwood trees and snags and recruitment of young hardwood trees.

The LRMP or SNFP do not provide specific guidelines for the management of these three bat species. Standards and guidelines for hardwoods, snag and down logs, and riparian conservation areas (USDA Forest Service 1988, USDA 2004), address some of the habitat elements important

to these species. Riparian Conservation Objectives (RCOs) under the Sierra Nevada Framework aid in sustaining riparian habitat. In addition, Best Management Practices (BMPs), designed to reduce the amount of sediment and erosion created by project activities, are implemented to protect water quality. Adult stages of aquatic insects are used as forage by all three bat species.

Riparian management goals and direction, that are applicable to the three bats species under the 2004 Sierra Nevada Framework ROD, for this project, are summarized below (SNFP ROD page 32).

- Maintain and restore habitat to support viable populations of native and desired non-native plant, invertebrate and vertebrate riparian-dependent species.
- Maintain and restore the species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows to provide desired habitats and ecological functions.
- Maintain and restore the distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) to perpetuate their unique functions and biological diversity.
- Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.

Riparian Conservation Objectives to aid in meeting the above objectives for the three bat species for this project include (SNFPA ROD page 33-34):

- **Riparian Conservation Objective #2** - Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic dependent species.
- **Riparian Conservation Objective #3** - Ensure a renewable supply of large down logs that: (1) can reach the stream channel and (2) provide a suitable habitat within and adjacent to the RCA.
- **Riparian Conservation Objective #4** - Ensure that management activities, including fuels reduction actions, within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic and riparian dependent species.
- **Riparian Conservation Objective #5** - Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.
- **Riparian Conservation Objective #6** - Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian or aquatic species.

The SNFP provides goals and direction specifically for hardwoods applicable to wildlife species (including bat species) that utilize this habitat type (USDA Forest Service 2004).

Goals for lower Westside forest ecosystems include establishing and maintaining (SNFP ROD page 35):
1. a diversity of structural and seral conditions in landscapes in proportions that are ecologically sustainable at the watershed scale;
2. sufficient regeneration and recruitment of young hardwood ecosystems over time to replace mortality of older trees; and
3. sufficient quality and quantity of hardwood ecosystems to provide important habitat elements for wildlife and native plant species.

Hardwood management direction that is pertinent to this project includes (SNFP ROD page 53):
1. Where possible, create openings around existing California black oak and canyon live oak to stimulate natural regeneration.
2. Manage hardwood ecosystems for a diversity of hardwood tree size classes within a stand such that seedlings, saplings, and pole-sized trees are sufficiently abundant to replace large trees that die.
3. Retain the mix of mast-producing species where they exist within a stand.
4. When planning prescribed fire or mechanical treatments in hardwood ecosystems: (1) consider the risk of noxious weed spread and (2) minimize impacts to hardwood ecosystem structure and biodiversity.
5. During mechanical vegetation treatments, prescribed fire, and salvage operations, retain all large hardwoods on the Westside except where: (1) large trees pose an immediate threat to human life or property or (2) losses of large trees are incurred due to prescribed or wildland fire. Large montane hardwoods are trees with a dbh of 12 inches or greater. Allow removal of larger hardwood trees (up to 20 inches dbh) if research supports the need to remove larger trees to maintain and enhance the hardwood stand.
6. Include hardwoods in stand examinations. Encourage hardwoods in plantations. Promote hardwoods after stand-replacing events. Retain buffers around existing hardwood trees by not planting conifers within 20 feet of the edge of hardwood tree crowns.

American Bald Eagle

The bald eagle was listed by the U.S. Fish and Wildlife Service (FWS) as a federally endangered species in 1978. On July 12, 1995, this species was reclassified to threatened status in the lower 48 states. It was proposed for de-listing on July 6, 1999. The bald eagle was delisted in 2007. The Pacific Southwest Region of the Forest Service added the bald eagle to the Regional Forester's Sensitive Species List for Region 5 for those Forests. The Eldorado National Forest now manages the bald eagle as a sensitive species. Management direction for the bald eagle is provided in the National Bald Eagle Management Guidelines (USDI 2007). Bald eagles will continue to be protected under the Migratory Bird Treaty Act of 1918 and the Bald and Golden

Eagle Protection Act (USDI 2013). Known bald eagle nests are protected from harm or disturbance under the Bald and Golden Eagle Protection Act.

The Eldorado National Forest Land and Resource Management Plan (USDA Forest Service 1988) management direction for the bald eagle is to manage nesting and wintering habitats to meet target populations of the species as specified in the Bald Eagle Recovery Plan. Based upon the Pacific Bald Eagle Recovery Plan, the ENF LRMP established a target population of 2 nesting pairs on the ENF. A 1999 Bald Eagle Habitat Management Plan has been prepared for the ENF, identifying nesting and wintering habitats and actions needed to implement the Pacific Bald Eagle Recovery Plan within these habitats.

- In addition, the ENF LRMP requires that the Forest maintain "medium to high quality (capability) habitat according to the Habitat Capability Models for management indicator species and Habitat Quality Criteria for special habitats" (Management Practice #35, Eldorado National Forest LRMP 1988). Wildlife Habitat Capability Models were prepared for a number of species applicable to the Western Sierra Nevada in 1982 (Hurley et al. 1982). The model for bald eagle defined high and medium capability nesting habitat as the following:
- Early- and late-seral habitat stages in oak and coniferous forest types.
- Large size class trees in multi-layered stands with low to moderate canopy cover.
- Presence of dominant ponderosa pine or sugar pine with limbs large enough to support a nest.
- Occurring within one mile of water.
- 2 to 3 snags per acre within 0.25 miles of the nest.
- Slopes less than 40 percent on south or west aspects.
- Availability of fish or waterfowl for forage.

Requirements for addressing old forest habitats and species, riparian habitats and species, hardwood forests and species, and fuels treatments that are provided by the Sierra Nevada Forest Plan Amendment provide direction consistent with this requirement (USDA Forest Service 2004).

The Eldorado National Forest LRMP specifies that bald eagle populations will be monitored to determine use of available habitat and ensure that Plan direction has been followed. Direct counts and surveys, including winter survey reports coordinated with the State, are to occur annually at lakes and reservoirs with wintering or nesting bald eagles. A reduction in habitat capability or loss of snags in areas indicated as primary bald eagle habitat around reservoirs, are changes indicating a need for further action (USDA Forest Service 1988).

Western Bumblebee

The western bumble bee was added to the Regional Forester's Sensitive Species List for Region 5 in 2013. Current management guides, primarily developed by the Xerces Society in

association with other agencies, including the Forest Service, will be used in assessing existing conditions, effects, and mitigations for this species in regards to the Trestle Project. A draft document entitled PSW Sensitive Species Review- Conservation Status of the Western Bumble bee *Bombus occidentalis* (USDA 2013) provides a species account. In 2015, the draft Pollinator-Friendly Best Management Practices for Federal Lands (USDA Forest Service and USDI 2015) provided information on managing pollinator species and their habitat. Information from both documents was utilized for this analysis.

III. PROJECT LOCATION AND DESCRIPTION

The Placerville Ranger District on the Eldorado National Forest proposes to implement activities to reduce fuel loads and fire hazards; improve forest health; improve wildlife habitat; watershed condition; and restore more sustainable forest conditions, in the Trestle Forest Health project area, while considering effects on other resources and activities. Proposed activities would include: commercial and pre-commercial thinning of mature conifer natural stands and plantations; road reconstruction; hardwood enhancement; hazard tree removal adjacent to system roads and dispersed camping areas; removing impediments to terrestrial wildlife; watershed restoration activities; decommissioning and closing roads and trails; and, prescribed understory burning. The Trestle project area is located east of the community of Grizzly Flat, including the area surrounding Leoni Meadows, west of Caldor, and north of Big Mountain. The gross area of the project is 20,452 acres. This total includes 1,325 acres of other ownership. The project is located entirely in El Dorado County, California in T8N, R13, in all or portions of Sections 1 and 2; T8N, R14E, in all or portions of Sections 4-6; T9N, R13E, in portions of Section 1-3, 11-16, 19-30 and 33-36; T9N, R14E, in all or portions of Sections 5-10, 14-22 and 28-33; and T10N, R13E, in all or portions of Sections 35 and 36; M.D.B & M. The area is accessed from Grizzly Flat using the Capps Crossing Road (9N30) or the North South Road (10N83). Elevations range from 3,200 feet on the west side of the project area to 5,800 feet on east side of the project area.

DESCRIPTION OF ALTERNATIVES

ALTERNATIVE ONE

Under the No Action Alternative, current management plans would continue to guide management of the project area. No commercial thinning, prescribed burning, watershed restoration activities, or other activities would be implemented under this project to accomplish the purpose and need. This alternative provides for the comparison of the effects of "No Action" against the magnitude of the environmental effects of the action alternatives.

ALTERNATIVE TWO

Activities under Alternative Two are listed below:

Thinning

- Use a combination of ground based and skyline logging systems to conduct mechanical thinning on approximately 4,834 acres (4,391 acres within natural stands and 443 acres

within plantations). Thinning would include the cutting and removal of select commercial (trees 10" to 29.9" dbh) and non-commercial (trees 4" to 9.9" dbh) sized trees, using a combination of variable density thinning and thinning from below to maintain or increase within stand heterogeneity while reducing ladder fuels in strategic locations.

- On slopes generally less than 35%, ground-based mechanized equipment (low-impact feller-buncher, hand felling, and conventional skidding equipment) would be used to remove both commercial and non-commercial material on approximately 4,733 acres and non-commercial sized material only on 25 acres.
- A skyline system would be used to thin approximately 76 acres of treatment units with slopes generally greater than 35%. Units identified for thinning using skyline systems would include harvest on slopes generally less than 50% with mechanical equipment to cut and bunch thinned trees. Hand felling would be used in areas with slopes generally steeper than 50%.
- Within the mechanical thinning units, cutting of small trees (1" to 3.9" dbh) and brush would occur on approximately 1,522 acres.
- Removal of hardwoods greater than 4" dbh and trees $\geq$ 30" dbh would not occur, except to allow for equipment operability or safety.
- The removal of dead and unstable live trees (hazard trees) of all sizes would occur along utility lines, timber haul roads and landings to provide for safety of woods worker and public throughout project implementation, except where restrictions for removal apply.
- Existing and operations generated slash and brush would be tractor piled or grapple piled after mechanical thinning operations. Tractor piling would occur as a follow-up treatment on approximately 1,597 acres in natural stands and 310 acres in plantations to reduce ground fuels and ladder fuels. Tractor piling would not occur on slopes generally greater than 35%. Grapple piling would occur on 15 acres in natural stands.
- Biomass (non-commercial) material accumulated on landings would be disposed of or removed in a number of ways, including on-site burning, commercial and personal use firewood, or as co-generation fuel where feasible.
- Conduct non-commercial mechanical thinning (trees less than 12 inches dbh) up to 100 feet on one or both sides of the Capps Crossing Road (9N30) and Grizzly-Caldor Road / Leoni Road (9N73) in 5 segments totaling approximately 3 miles (approximately 57 acres). Material would be moved to landings and treated as described for biomass from thinning units. Conduct brush cutting up to 100 feet of Capps Crossing Road (9N30) and Grizzly-Caldor Road / Leoni Road (09N73) in 3 segments totaling approximately 5 miles (approximately 88 acres).

Hand Thinning

- Hand cut and pile understory vegetation (trees less than 9 inches dbh and brush) on approximately 1,490 acres. Approximately 1,044 acres of the treatments by hand occur in units that are located within 500 feet of private property boundaries in the Wildland Urban Interface (WUI) defense zones and threat zones.
- Within plantations, conduct approximately 6 acres of hand thinning of non-commercial sized material, with some hand piling and some lop and scatter of thinned material.

Prescribed Burning

- Prescribed fire as follow-up treatment is proposed on 15,812 acres within the project area. Pile burning and underburning are the two primary techniques of prescribed fire proposed in this project.
- Underburning is proposed as the initial or primary treatment for this project on approximately 9,583 acres, where land allocations, environmental constraints, or stand conditions makes prescribed fire the preferred tool to achieve treatment objectives. Of the approximately 9,583 acres of underburning as an initial treatment, 984 acres is considered priority for prescribed fire only treatments and anticipated to be completed within the next 5 to 10 years.
- All treatment units, except those specifically excluded from proposed burning, are proposed for follow-up prescribed burning. Multiple burn entries would occur in burn only stands with heavy fuel build up conditions to reach desired conditions described in the purpose and need for the project.
- Pile burning is proposed as a follow-up treatment on 3,412 acres. Within thinning and piling units, underburning may be implemented concurrent with pile burning or separately.
- Prescribed fire may be ignited using ground based firing techniques or through aerial firing techniques.
- In preparation for prescribed burning, perimeter line construction would be needed where roads, trails, or natural barriers are absent. This may involve hand cutting of vegetation including trees up to 9-inch diameter, pruning, and scraping a bare soil line, or line construction with a D-6 or smaller dozer.

Transportation System

- Road reconstruction to facilitate treatments and improve road conditions is proposed on approximately 84 miles. See Table III.1. Reconstruction activities may include, repair or replacement of inadequate drainage culverts; elimination of ruts; roadside drainage maintenance; cattle guard cleaning and repair; installation of waterbars and dips with inadequate water runoff control; placement of erosion resistant and protective material (riprap), gate installation to control seasonal use or replacement of existing non-

functional gates or barricades; cleaning and filling cracks and potholes on existing asphalt roads; and, cutting and removing roadside vegetation encroaching on all system roads.

- Approximately 3 miles of temporary roads would be used for project operations. Once there is no longer a use for the road, the temporary roads would be obliterated using methods such as, earth barricades; ripped to alleviate soil compaction and restore infiltration; seeding, removing drainage structures; slashing; and, camouflaging road junction.
- Obliterate approximately 3.1 miles of 3 roads not open to public use identified as causing negative watershed impacts and identified as not needed for administrative access (Routes 09N44B, 09N45D, and 09N65B). Obliteration would include: earth barricades; ripping to alleviate soil compaction and restore infiltration; removing drainage structures, mulching with native materials (slash); and seeding.

Water Hole Maintenance and Repair

To furnish an adequate water supply for fire or contract work, perform maintenance and repair work on eleven existing water supply facilities. Work would include: clearing plugged pipes; installing temporary weirs or sandbags; placing erosion resistant and protective material (riprap) on road surfaces accessing water supply facilities; and, cleaning pond areas of debris.

Table III.1 Alternative Two Road Work

Road ID	Obliterate	Reconstruction		Road ID	Obliterate	Reconstruction
08N49A		0.7		09N60C		0.1
08N49B		3.6		09N61		3.6
08N58		3.4		09N64		3.2
09N16		3.1		09N64A		0.2
09N30		5.4		09N64C		0.3
09N30B		0.3		09N64D		0.6
09N30G		0.8		09N65		1.7
09N30Z		0.9		09N65B	1.9	
09N44		1.4		09N65C		0.4
09N44B	0.5	0.01		09N69		0.6
09N44C		0.04		09N71		0.2
09N45		4.3		09N73		6.4
09N45D	0.7	1		09N73A		1.4
09N46		2.1		09N73AW		
09N46B		1.3		09N73B		1.7
09N47		4.4		09N73C		0.2
09N47A		3.1		09N86		0.9
09N47F		0.3		09N86A		1.4

Table III.1 Alternative Two Road Work

Road ID	Obliterate	Reconstruction		Road ID	Obliterate	Reconstruction
09N49		4.3		09N88		
09N49B		2.1		09N89		1.6
09N49G		0.8		09NY13		1
09N53		1		09NY13A		0.2
09N53Z		0.5		09NY14		0.9
09N55		2.7		09NY14A		0.4
09N56		1.5		09NY17		1.4
09N57		1.7		09NY18		1.8
09N57A		1.4		09NY19		0.3
09N57W		0.02		09NY37		0.9
09N60		0.4		09NY45		0.3

Dispersed Recreation and Off Highway Vehicle Management

- Steely Fork Consumnes River Site 1 (T9N R13E Section 15)
    - Reduce watershed damage from a denuded area eroding into Steely Fork Consumnes River while continuing to allow for dispersed recreation use and water drafting activities.
        - Block access to stream crossing with boulders and gate to stop creek crossing, but leave access to water hole; place aggregate base between the gate and stream; and re-establish existing lead-off ditches.
        - Place boulders along the border of the dispersed camping area to restrict site expansion. Break up the soil compaction (outside of the defined camping area) via sub-soiler, ripping shanks, or by hand. Avoid underground lines and sensitive sites.
- Steely Fork Consumnes River Site 2 (T9N R13E Section 14)
    - Reduce watershed damage from area eroding sediment into Steely Fork Consumnes River and enhance the meadow in the area.
        - Replace the gate blocking access to the 09N73A (road closed to public use); construct water bars on stream approaches; block access to non-system routes with boulders; break up the soil compaction (in the dispersed camping area and the spur road) via sub-soiler, ripping shanks, or by hand; and plant or seed vegetation as needed.
        - Meadow enhancement activities would include; removal of encroaching conifers by hand, block motorized vehicle access to the meadow using the

felled trees, hand pull invasive plant species, remove barbed wire, and install nesting platform for great gray owl.
        - Identify designated hiking path by blocking and obscuring non-system trails with natural materials.
- Steely Fork Consumnes River Site 3 (T9N R13E Sections 21-22)
    - Reduce watershed damage from area eroding sediment into Steely Fork Consumnes River.
        - Block unauthorized route off of 09N65B using native materials; break up soil compaction in the dispersed site and non-system route via sub-soiler, ripping shanks, or by hand and mulch with straw or native vegetation; and reestablish vegetation through seeding and planting.
        - Obliterate 09N65B (closed to public use). Break up soil compaction via sub-soiler or ripping shanks and cover with straw or native vegetation. Reestablish vegetation through seeding and planting.
- Dogtown Creek Site 1 (T9N R14E Section 30)
    - Reduce watershed damage from area eroding sediment into Dogtown Creek.
        - Block access through placement of boulders; break up soil compaction via sub-soiler or ripping shanks and mulch with straw or native vegetation. Reestablish vegetation through seeding and planting.
- Dogtown Creek Site 2 (T9N R14E Section 30)
    - Reduce watershed damage from area eroding sediment into Dogtown Creek while continuing to provide for dispersed recreation opportunities.
        - Place boulders at border of the dispersed recreation use site to restrict site expansion; break up soil compaction via sub-soiler or ripping shanks and mulch with straw or native vegetation. Reestablish vegetation through seeding and planting. Plant riparian vegetation on stream banks with absent or suppressed vegetation.
- Intersection of 09N34Y and 14E31 (T9N R13E Section 25)
    - Reduce erosion and restore drainage by removing small diameter pipe with hand tools while maintaining existing water source upslope for wildlife.
- Intersection of 14E31 trail and 10N83 (T9N, R14E, S15)
    - Define the designated use area and reduce non-system vehicle use activities by installing barriers to define and narrow the trail, and cover to eroded areas, and place coarse woody material in open areas.
- Intersection of 14E31 and 09N45 Site 1 (T9N, R14E, S29)
    - Improve water control features and reduce sediment deposits on road and channels.

        - Realign the system trail parallel to the contour and obliterate, block and restore abandoned trail; break up soil compaction via sub-soiler or ripping shanks; install waterbars; and mulch with straw or native vegetation to provide soil cover.
- Intersection of 14E31 and 09N45 Site 2 (T9N, R14E, S30)
    - Improve water control features and reduce sediment deposits on road and channels by aligning the system trail parallel to the contour and obliterate, block and restore abandoned trail.
- 14E31 near Plummer Ridge Guard Station (T9N R14E S20)
    - Reduce impacts to sensitive soils and plant habitat (shallow lava cap by defining and restoring the trail intersection through the placement of boulders and native materials).
- Unauthorized route associated with 14E13 (T9N R14E S29)
    - Reduce erosion and sedimentation by unauthorized vehicle use on large road cut bank by installing barrier rocks along the road at cut slope; placing coarse woody material on the slope, installing dips to change the drainage patterns; and blocking and disguising access to the area from 14E31 using natural materials (hand fall trees) or boulders.
- Unauthorized route associated with 09N65B (T9N R13E, S21)
    - Reduce impacts to riparian vegetation and soil compaction by blocking, obliterating, and disguising the non-system route by hand falling small material across the trail.
- Road 09N55 (T9N, R14E, S32)
    - Reduce sediment contribution to Middle Dry Creek while providing for OHV recreation opportunity.
        - Reclassify the last 1.1 miles of road 09N55 from a system road to a motorized trail, allowing only vehicles <50" in width.
        - Rehabilitate sides of existing road to narrow the trail corridor and accommodate vehicles <50" in width.
- Meadow near Harrel Water Tank (T9N R1E, S7)
    - Restore meadow vegetation by removing debris and blocking areas with native material to enable vegetation to recover.
- 08N49 Road (T9N R14E S32)
    - Reduce unauthorized vehicle use in sensitive plant populations by placing boulders along the edge of the road to barricade vehicular access.
- Abandoned Mine Closure (T9N R13E S23)

  - Close shaft to provide for human and wildlife safety while protecting applicable heritage features. A bat friendly enclosure would be used if identified as habitat.
- Barbed wire removal and T-post relocation (T9N R14E, Sections 6 and 7)
  - Remove barbed wire and some T-posts. T-posts would be relocated as necessary with applicable signage to indicate the boundary of the research plot.

ALTERNATIVE FOUR

Alternative Four was developed based on Issue #1: The proposed action may have significant negative effects on the California spotted owl population due to treatment of high quality habitat coupled with declining population trends in the area.

This alternative would commercially thin 2,087 fewer acres within natural stands and increase commercial thinning in 13 acres of plantation stands, non-commercially thin 54 additional acres, reduce hand thinning by 367 acres, increase prescribed burning as an initial treatment by 3,012 acres, including increasing priority initial prescribed fire treatments by 579 acres, decrease follow-up prescribed fire by 699 acres, increase non-commercial mechanical roadside thinning by 2 acres, increase road brushing by 79 acres, reduce road reconstruction by approximately 20 miles and changes some of the roads to be reconstructed, increase the proposed use of temporary roads by 0.6 miles, and increase road obliteration adding 0.8 miles of one road (09N49G) as compared to the proposed action, Alternative 2. This alternative would include the following treatments:

- 2,735 acres of mechanical thinning of commercial and non-commercial sized trees (2,304 acres within natural stands and 431 acres of plantations) using ground based equipment, with follow up surface fuels treatments as proposed in Alternative 2.
- Conduct approximately 53 acres of non-commercial mechanical thinning (trees less than 10 inches dbh) within natural stands and 25 acres within plantations.
- Within the mechanical thinning units, cutting of small trees (1" to 3.9" dbh) and brush would occur on approximately 1,007 acres.
- Conduct non-commercial mechanical thinning (trees less than 12 inches dbh) within 100 feet on one or both sides of Capps Crossing Road (09N30) and Grizzly-Caldor Road / Leoni Road (09N73) on 5 segments of the road that are outside of mechanical thin units (approximately 59 acres).
- Conduct mechanical brush cutting up to 100 feet of Capps Crossing Road (09N30) and Grizzly-Caldor Road / Leoni Road (09N73) on 4 segments of the road that are outside of mechanical thin units (approximately 167 acres).
- Hand thin and pile on approximately 1,123 acres, including 483 acres located within 500 feet of private property boundaries.

- Conduct approximately 6 acres of hand thinning within conifer plantations.
- Perform tractor piling on approximately 1,049 acres within natural stands and 312 acres within plantations, and grapple piling approximately 15 acres within natural stands.
- Conduct prescribed understory burning as the initial or primary treatment on approximately 11,032 acres, of which 1,563 acres is first priority burning.
- Pile burning is proposed as a follow-up treatment on 2,508 acres.
- Conduct prescribed understory burning as a follow-up treatment on up to 15,113 acres.
- Approximately 66 miles of road reconstruction.
- Obliterate approximately 3.9 miles of roads not open to public use.
- Restoration activities are the same as proposed in Alternative 2.

ALTERNATIVE FIVE

Alternative Five was developed based on Issue #1: The proposed action may have significant negative effects on the California spotted owl population due to treatment of high quality habitat coupled with declining population trends in the area. In addition, this treatment should provide for an effective fire modification strategy that can be implemented in a relative short timeframe to protect both the community and forest resources. This alternative would commercially thin 1,020 fewer acres within natural stands and 13 additional acres in plantation stands, reduce hand thinning by 378 acres, increase prescribed burning as an initial treatment on 1,519 acres while reducing prescribed fire as a priority initial treatment on 14 acres, reduce prescribed fire as a follow-up treatment on 701 acres, increase non-commercial mechanical roadside thinning by 2 acres, increase roadside brushing by 55 acres, reduce road reconstruction by approximately 15 miles and changes some of the roads to be reconstructed, increases the use of temporary roads by 0.6 miles, and increase road obliteration adding 0.8 miles of one road (09N49G) compared to the proposed action, Alternative 2.

- 3,726 acres of mechanical thinning of commercial and non-commercial sized trees (3,295 acres within natural stands and 431 acres of plantations) using ground based equipment, with follow up surface fuels treatments as proposed in Alternative 2.
- Conduct approximately 25 acres of non-commercial mechanical thinning (trees less than 10 inches dbh) within conifer plantations.
- Within the mechanical thinning units, cutting of small trees (1" to 3.9" dbh) and brush would occur on approximately 1,190 acres.
- Conduct non-commercial mechanical thinning (trees less than 12 inches dbh) within 100 feet on one or both sides of Capps Crossing Road (9N30) and Grizzly-Caldor Road / Leoni Road (09N73) on 5 segments of the road that are outside of mechanical thin units (approximately 59 acres).

- Conduct mechanical brush cutting within 100 feet of one or both sides of Capps Crossing Road (09N30) and Grizzly-Caldor Road / Leoni Road (09N73) on 4 segments of the road that are outside of mechanical thin units (approximately 167 acres).
- Perform tractor piling on approximately 1,231 acres within natural stands and 312 acres within plantations, and grapple piling approximately 15 acres within natural stands.
- Hand thin and pile on approximately 1,112 acres, including 470 acres located within 500 feet of private property boundaries.
- Conduct approximately 6 acres of hand thinning within conifer plantations.
- Conduct prescribed understory burning as the initial or primary treatment on approximately 10,132 acres, of which 970 acres is priority burning for initial prescribed fire treatment.
- Pile burning is proposed as a follow-up treatment on 2,671 acres.
- Prescribed understory burning is proposed as a follow-up treatment on approximately 15,111 acres.
- Approximately 69.5 miles of road reconstruction.
- Obliterate approximately 3.9 miles of roads not open to public use.
- Restoration activities are the same as proposed under Alternative 2.

Design Criteria Common to all Action Alternatives

The Forest Service has developed the following design criteria to be used for all action alternatives (unless otherwise specified). The purpose of these design criteria is to avoid, or to minimize the potential for adverse effects to the resources discussed below. The design criteria relating to terrestrial wildlife are shown below.

Mechanical and Hand Thinning

- Rust-resistant sugar pine trees would be identified and protected from all activities.
- Water would be used to abate dust from logging traffic with water selected from water drafting sites that have suitable stream flow and access. When water is scarce, alternative sources such as chlorite, sulfonate or other dust abatement materials may be used.
- Landings would be relocated or shifted where feasible to protect advanced pine regeneration in units 624575, 624573, 623417, 623413 and 622081. Advanced regeneration would be hand thinned based on species composition and tree vigor to between 90 and 120 trees per acre.
- Within the skyline thinning units (under Alternative Two only), divots greater than 2 feet in depth caused by mechanical equipment would be re-contoured where it is a potential to channel water.

- In addition to the seasonal closure identified by the Wheeled Motorized Travel Management Final Environmental Impact Statement (FEIS) (2008) roads identified as open for public use may be temporarily closed during inclement weather to protect reconstruction investments until those roads have stabilized. A Forest Order would be issued.
- Infrastructure for Grizzly Flat including Grizzly Flats Community Services District diversion dams, drafting stations, pipelines, electrical lines, phone lines, and water pipes for private inholdings would be protected during treatment activities.
- Activities within 500 feet of residences would be coordinated so that operations do not begin before 6 am.
- Near residences, some material that would otherwise be put into landing piles may be stacked in decks to facilitate access for firewood collecting where feasible.

Prescribed Fire

- Smoke emissions would be minimized by following Best Available Control Measures (BACM). A smoke permit administered by the local County Air Resource Agency would accompany burn plans.
- Burn piles would be placed at least 50 feet from property boundary lines to reduce risk of fire escape and facilitate burning. Piles would be placed away from the boles of residual trees to reduce damage to residual trees and snags.
- Tree mortality associated with prescribed burn activities in plantations would be designed to be less than 30 percent. If burning conditions are such that mortality would be expected to exceed 30 percent, firelines would be cut around the plantations in order to exclude them from the prescribed burn. All trees and brush killed by prescribed burning activities shall be left in place for wildlife purposes.
- Raking of individual legacy ponderosa pines (pines with orange, smooth bark) and legacy sugar pine, typically 30" dbh or greater, with more than 4" duff accumulation or with pre-existing fire scars would occur in stands prior to broadcast burning if the area is to be burned when duff is dry in order to reduce potential for loss of residual trees.
- Because prescribed burning could occur several years after completion of thinning or other treatments, the project leader or burn boss would consult and coordinate with the resource specialists (wildlife, botany, aquatics, hydrology, soils, archaeology) prior to implementing prescribed burning activities (including preparation activities, such as perimeter line construction) to identify any new information and implement design criteria.

Roads and OHV Trails

- Provide for public safety by posting traffic control signs on any OHV trails within the project area warning visitors of potential hazards due to project activities (burning,

mastication, felling). Post closure information on local information boards and on the Eldorado National Forest website.

- Display system trails and Plummer Ridge Guard Station on project implementation maps, where activities have the potential to affect these improvements.
- Repair or replace damage to improvements caused during project implementation in coordination with the recreation staff. If trails are damaged during contract administration, the contractor would effectively repair/restore damaged trails prior to acceptance of work.
- Skid trails that intersect system roads open to the public would be barricaded with natural material so as to discourage unauthorized vehicle use.
- Where feasible and where segments of OHV trails are not used as control lines during prescribed fire operations, a 20-foot buffer would be retained between burn area and the trails. Where necessary to define the designated route and discourage unauthorized travel, barrier and native materials would be placed along these segments after prescribed burning operations have been completed.
- Thinning and fuels reduction activities along system OHV trails would be performed so that the trail experience and difficulty level is maintained where possible. A 15 foot no treatment buffer would be located adjacent to designated trails that are not co-located with roads reconstructed as part of this project.
- Where road reconstruction is co-located with designated OHV trails, trails would be constricted post treatment to accommodate a trail experience, but would also facilitate access to fire suppression crews should a wildfire start in the area. The trail location would traverse across the entire road prism to provide curves for variety and challenge for the trail users. Where possible, the majority of the trail will be located on the outer third of the road bed to facilitate drainage of the trail in the future. Trail location would incorporate the drainage features of the road, such as rolling dips to also provide drainage for the trail.

Snags, Down Logs, and Hazard Trees

- Designation of hazard or "danger" trees would follow direction in the Hazard Tree Guidelines for Forest Service Facilities and Roads in the Pacific Southwest Region. Hazard trees within the RCAs would be felled toward the stream and left in place below roads to provide for additional down wood in RCAs. Hazard trees within spotted owl, great gray owl, and northern goshawk PACs would be felled and left on site unless reviewed by a wildlife biologist. Hazard trees within down log and snag deficient areas would be felled and left in place, unless review by the fuels officer indicates removal is needed.

- Within treatment units, snags would be retained consistent with forest LRMP standards. Generally the 4 largest snags will be retained per acre, averaged over the entire project area. Snags will not be evenly spaced across the landscape but would vary based on land allocation, such as WUI, and landscape position, such as near roads, ridgetops, and streams.
- Where possible, large down logs (logs greater than 10 feet long and 16 inches in diameter at mid-point) would be left in place and protected to the extend practical during mechanical treatment and understory prescribed burning.

Wildlife

- A limited operating period (LOP) for California spotted owls, prohibiting vegetation treatments would be implemented within ¼ mile of spotted owl activity centers during the breeding season (March 1 through August 15), unless surveys confirm that owls are not nesting.
    - Based on survey data (most recent 2008, 2009, 2012 and 2013 and PAC monitoring done in 2014 and 2015), LOPs would be implemented for all or portions of units 622078, 622079,622081, 622082, 622084, 622085, 622086, 622087, 622089, 622091, 622092, 622094, 622095, 622096, 622097, 622098, 622099, 622101, 622103, 623401, 623404, 623407, 623413, 623414, 623415, 623416, 623417, 623418, 623419, 623425, 623427, 623431, 623436, 623437, 623459, 623460, 623463, 623465, 623466, 623467, 623468, 623470, 623470, 623471, 623375, 623476, 623477, 624573, 624585, 624586, 624587, 624588, 624594, 624605, 624606, 624607, and 624608.
- A limited operating period (LOP) for northern goshawks, prohibiting vegetation treatments would be implemented within ¼ mile of the northern goshawk nest site during the breeding season (February 15 through September 15), unless surveys confirm that goshawks are not nesting. Where the nest stand within a protected activity center is unknown, the LOP will apply to a ¼ mile area surrounding the PAC.
    - Based on survey data (most recent 2008, 2009, 2015), LOPs would be implemented for all or portions of units 623438, 623439, 623440, 623407, 623416, 623418, 623419, 623427, 623439, 623440, 623441, 623442, 623459, 623460, 623469, 623470, 623471, 624576, and 624579.
- A limited operating period (LOP) for great gray owls, prohibiting vegetation treatments within ¼ mile of the PAC during the nesting period (March 1 to August 15), unless surveys confirm that great gray owls are not nesting.
    - Based on survey data (most recent 2008, 2009, 2012, 2013, 2014, 2015), the LOP for great gray owl would be implemented for all or portions of units 623413, 623414, and 623415.

- LOPs for spotted owl would be implemented for road reconstruction activities for for a portion of road 09N47 and 09N49 from March 1 to August 15.
- Because prescribed fire could occur several years after the mechanical harvest work is completed, future prescribed understory burning within ¼ mile of PACs would have an LOP around California spotted owl, northern goshawk, and great gray owl PACs unless surveys determine that the birds are not nesting. LOPs can be waived to allow for early season burning on up to 5 percent of California spotted owl and northern goshawk PACs per year, with up to 10 percent per decade across the bioregion.
- To minimize potential impacts to known roosting populations of bats at Arctic Mine, minimize the amount of smoke entering the mine shaft to the extent practical through firing techniques.

Soils

- To control the surface erosion, mechanical activities would maintain a minimum soil cover of 70% in units with potentially moderate or higher erosion risk, including: 623400, 623403, 623407, 623408, 623414, 623416, 623422, 623436, 623439, 623440, 623441, 623442, 623450, 623456, 623457, 623458, 623459, 623460, 623463, 623465, 623470, 623471, 623475, 624572, and all Riparian Conservation Areas. In all other units, maintain a minimum of 50% cover.
- Following prescribed burning operations, average soil cover for each treated unit would be maintained at 70% or greater one year following burning activities. If soil cover does not meet this threshold value after treatment, implement measures such as mulching with lop and scatter material or weed free straw until vegetation re-growth could provide cover.
- Activities would not increase unacceptable soil conditions above 15 percent in the activity area. Units 322-084, 085, 086, 087, 623-404, 405, 449, 465 and 471 were identified as above or near 15% extent for soil compaction.
    - In units where soil disturbance currently exceeds or is expected to exceed the 15% threshold from mechanical activities, decompaction with a sub-soiler or ripping shanks of main or secondary skid trails with detrimental compaction or displacement would be ripped to the extent that detrimental soil disturbance is less than 15%.
        - Detrimental displacement is defined as displacement that results in "divots" where equipment has turned on loose soils where more than half the natural topsoil depth is displaced over 100 square foot area.
        - Detrimental compaction is defined as compaction that extends to the 4 to 8-inch depth, soil structure is clearly altered to massive or platy and does

not break towards a natural structure with gentle handling, and roots and pores are flattened.

- Further review by the soil scientist or designee would occur where creation of new landings and skid trails on shallow soils within mechanical treatment units as needed for operability to recommend mitigations for potentially significant effects.
- Outside of mechanical treatment units, new disturbance areas on shallow soils and low site areas such as new landings, skid roads, or temporary roads would be further reviewed by the soil scientist or designee if any such sites are identified as needed for operability to recommend mitigations for potentially significant effects.
- For skid trails and fire lines terminating at roads or OHV trails, two additional cross ditches would be installed; one cross ditch at approximately 30 feet from the intersection on all slopes and a second cross ditch 100 feet from the intersection for slopes less than 10 percent and 60 feet for slopes greater than 10 percent.

Project Level Implementation

Each active management unit would be visited at a frequency necessary to assure compliance. Monitoring of preparation and implementation would occur at regular intervals to ensure compliance with prescription intent and where applicable contract provisions. Minor contract changes or contract modifications would be enacted, when necessary, to meet objectives and standards on the ground.

Post-treatment monitoring within the project area may be conducted following project implementation to ensure that the design criteria are effective.

Wildlife

California spotted owl, great gray owl, and northern goshawk nest stands or territories will be surveyed to determine occupancy where LOPs may be waived.

Comparison of Alternatives

Table III.3 provides a brief summary of the acres affected by each Trestle Project alternative.

Table III.3 Comparison of Alternatives by Acres Affected by the Trestle Project

Project Activities	Alternative 1 (No Action)	Alternative 2 (Proposed Action)	Alternative 4	Alternative 5
Ground Based Mechanical Commercial Thinning (Natural Stands)	0	4,315	2,304	3,299
Skyline Commercial Thinning (Natural Stands)	0	76	0	0
Ground Based Mechanical Commercial Thinning (Plantations)	0	418	431	431
Non-Commercial Mechanical Thinning (Natural Stands)	0	0	53	0
Non-Commercial Mechanical Thinning (Plantations)	0	25	25	25
Hand Thinning and Pile (Natural Stands)	0	1,490	1,123	1,112
Hand Thinning and Rx Burn (Plantations)	0	6	6	6
Prescribed Burn	0	9,583	12,595	11,102
Prescribed burning, follow up/rx burn only	0	15,812	15,113	15,111
Non-Commercial Mechanical Roadside Road-Capps Crossing/ Caldor/Grizzly/Leoni	0	57	59	59
Roadside Brushing Road-Capps Crossing and Caldor-Grizzly/Leoni	0	88	167	143
Road Reconstruction (miles)	0	84.1	65.8	69.5
Road Obliteration (unauthorized routes)	0	3.1	3.9	3.9

IV. AFFECTED ENVIRONMENT

Table IV.1 displays California Wildlife Habitat Relations (CWHR) habitat type acres (Mayer and Laudenslayer 1988) and Table IV.2 displays CWHR habitat relations acres (density and size) that were obtained utilizing the 2005 Forest Vegetation Inventory for the Trestle Project boundary. Acre numbers are rounded up. The acres reported in this BE are generated from a geographic information system (GIS) analysis summarized through pivot table analysis. Acres are approximate and numbers reported in tables may have marginal rounding errors and may

differ slightly from acres reported in other project analyses due to differences in GIS analysis methods and processes used to aggregate and summarize data.

Table IV.1 –CWHR Habitat Type Acres in the Trestle Project Boundary

CWHR Habitat Type	Private	Forest Service Acres	Total Acres
Annual Grassland (AGS)	45	71	116
Barren (BAR)	0	6	6
Mixed Chaparral (MCH)	22	202	224
Montane Chaparral (MCP)	11	356	367
Montane Hardwood (MHW)	20	145	165
Montane Hardwood-Conifer (MHC)	27	347	374
Montane Riparian (MRI)	2	0	2
Perennial Grassland (PGS)	61	93	154
Ponderosa Pine (PPN)	114	2,619	2,733
Sierran Mixed Conifer (SMC)	994	15,275	16,269
Urban (URB)	7	3	10
White Fir (WFR)	0	9	9
Wet Meadow (WMC)	23	1	24
Total Acres	1,326	19,127	20,453

Table IV.2 – CWHR Size and Density Typing Acres in the Trestle Project Boundary

CWHR Size and Density Type*	Private	NF Acres	Total Acres
5S	0	6	6
5P	0	40	40
5M	0	14	14
5D	64	4,547	4,611
4S	13	34	47
4P	32	282	314
4M	182	1,343	1,525
4D	644	9,537	10,181
3S	.38	3	3.38
3P	17	137	154
3M	172	1,094	1,266
3D	28	435	463
2X	0	64	64
2S	3	183	186
2P	.11	529	529.11
2M	0	121	121
2D	0	46	46
1X	7	82	89
0	0	4	4
Null	163	619	782
Total Acres	1,325	19,120	20,445

*CWHR Canopy Closure Classifications: S=Sparse cover (10-24% canopy closure); P=Open cover (25-39% canopy closure); M=Moderate cover (40-59% canopy closure); D=Dense cover (60-100% canopy closure); CWHR Tree size classes: 1 (Seedling <1" dbh); 2 (Sapling 1"-5.9" dbh); 3 (Pole 6"-10.9" dbh); 4 (Small tree 11"-23.9" dbh); 5 (Medium/Large tree ≥24" dbh); 6 (Multi-layered Tree) [In PPN and SMC] (Mayer and Laudenslayer 1988).

V. EFFECTS ON SPECIES AND HABITAT

V.1 Climate Change

The California State Wildlife Action Plan by UC Davis Wildlife Health Center (2015) identifies a concern for species within the Sierra Nevada from increased urbanization pressure which causes the remaining natural areas to shrink and the gaps between habitats to grow. As climate change shifts annual average temperatures along the elevation gradient, fire reshapes plant communities, and as stream flow regimes change, habitats and wildlife populations will be substantially affected. Currently, little research has evaluated the consequences of projected climate change on species at risk in the Sierra. (UC Davis Wildlife Health Center, 2007). Climate change shifts could lead to changes in sensitive species habitat location, quality, and quantity. Much of the habitat for late seral, old forest dependent species will be even more restricted to north facing slopes and protected canyons; adding to further fragmentation of habitat. Some species, such as Pacific fisher, that utilize high canopy, old forest hardwood/conifer habitat may find refuge in the shift from mixed conifer to hardwood/shrub provided other factors such as canopy cover and large downed logs are present in the landscape. Other sensitive species, such as goshawks may not be able to adjust and may find their habitat more limited or shift higher in elevation. Most common prey species should move with shifting habitat such as rodents, reptiles and small birds. Longer annual warm periods in the area would allow some insect species to produce more broods (Skinner, 2007), effectively increasing insect prey abundance for species like woodpeckers, bats, flycatchers, and other insect eating predators. It is more likely that changes in habitat quality and quantity will influence sensitive species than changes in prey availability, as a result of climate change.

In a recent review of available literature on wildlife and climate change (Joyce and Flather, 2008), the most commonly prescribed actions for reducing the impacts of climate change on natural systems are: reducing emissions, manipulating habitat, translocations, land conservation, and increasing the resiliency of natural systems via restoration. The Trestle Project includes three of these actions: habitat manipulation, land conservation and increased resiliency. Vegetation treatments such as those proposed in this project increase the resiliency of the current habitat within the area impacted by the Trestle project for two reasons. First, they reduce the potential for stand replacing fire within treatments and over the landscape. Secondly they improve individual tree health by reducing competition for resources and stand health by promoting tree species that are adapted to hotter, drier summers and increased fire frequency (pines and hardwoods). While vegetation is likely to change and shift as described, treatments may delay some of the impacts to wildlife species, especially from fire, allowing them to adjust slowly to modified or shifted habitat by preserving their currently located, possibly unsustainable habitat.

Experts suggest that land managers manage current habitat as reservoir until suitable habitat can be established elsewhere (Hansen et al 2001). By retaining structure and characteristics suitable to foraging and dispersal, treatment areas can still be considered suitable connective habitat to suitable high quality habitat. Because habitat for many of the late seral species is located in

protected drainages, where habitat is not expected to majorly change, some habitat may not shift. The Trestle project and its various action alternatives would likely protect that habitat and aid the creation of future habitat in those areas. Therefore, while climate change is a threat to many of the sensitive species within the forest boundary, this project is unlikely to add to these threats due to the benefits of protection of current and future habitat, protection of connectivity, and increases in the resiliency of the current habitat. Also, while habitat quality for some of the sensitive species is expected to decrease temporarily, the long term benefits provided by the project fall along the timeframe with the expected negative impacts of climate change.

Climate change effects on Sierra Nevada forests include increases in high severity fire; changes in habitat distribution; decreases in large trees due to drought and insects; changes in temperature and precipitation patterns; changes in prey base; and increase in interspecific interactions which would affect species particularly the spotted owl (Gutiérrez et al. 2016).

V.2 – SPOTTED OWL

Species Status

The California Spotted Owl is currently managed as a Region 5 Forest Service sensitive species, a Sierra Nevada Management Indicator Species (MIS), and a State of California Species of Special Concern. The USFWS has received two petitions (December 22, 2014 and August 19, 2015) to list the California spotted owl as endangered or threatened. The USFWS is currently conducting a 12-month status of this species to determine if protection under the Endangered Species Act is warranted.

Species Account

The California spotted owl occurs from the southern Cascades, throughout the Sierra Nevada in California and into Nevada, mountainous regions of southern California and the central Coast Ranges up to Monterey County (USDA 2001). They breed from 1,000 to 7,700 feet elevation. On the west slope of the Sierra Nevada, they use a wide range of habitat types and are considered year round residents (Ibid).

The California spotted owl population size in the Sierra Nevada was estimated in 2006 at 1,865 owl sites, with 1,399 sites on NFS lands, 314 sites on private lands, 14 sites on Bureau of Land Management Lands, 8 on State of California lands, and 1 on Native American lands (USDI, Federal Register May 24, 2006 [Volume 71, Number 100]). These figures were based on a compilation of all known sites recorded over the past 30-40 years, and it is unknown what proportion remains occupied at this time (Keane 2014).

The sole source of empirical data to establish status and trend of the California spotted owl in the Sierra Nevada are from four long term demographic studies: (1) Eldorado National Forest (since 1986); (2) Lassen National Forest (since 1990); (3) Sierra National Forest (since 1990); and (4) Sequoia-Kings Canyon National Park (since 1990). A primary objective of these demographic studies is to monitor rate of change (lambda, λ) in owl populations (i.e., the number of owls present in a given year divided by the number of owls present the year before). For these demographic models a lambda (λ) value of 1 indicates a stable population; less than 1 indicates

the population is decreasing, and greater than 1 indicates an increasing population. For the California spotted owl demographic studies, lambda has been estimated individually for each study area at five-year intervals (Franklin et al. 2004, Blakesley et al. 2010).

A robust analysis of these data, called a meta-analysis, combines comparable data across the demographic studies to increase sample size and improve accuracy of detecting population trends. The most recent meta-analysis, using data collected between 1990 and 2005, provided estimates of lambda for all four Sierra Nevada demography study areas (Blakesley et al. 2010). Blakesley et al. (2010) concluded that with the exception of the Lassen study area, California spotted owl populations were stable with adult survival rate highest at the Sequoia-Kings Canyon study site.

Since the meta-analysis, population trends have been reanalyzed for all four study areas using new statistical techniques and incorporating additional information from the meta-analysis. With the exception of the Seqouia-Kings study area, all of the Forest Service demographic study areas were declining (Conner et al. 2013, Tempel and Gutiérrez 2013, and Tempel et al. 2014). Tempel et al. (2014) developed an integrated population model for the Eldorado study area using all data (occupancy, reproductively, and mark-recapture) and concluded that the population was declining [$\lambda < 1.0$ (95% confidence interval, 0.957-0.980)] with a 50% decrease in population size from 1992-2012.

Jones et al. 2016 reported that the Eldorado demographic study area proportion of occupied spotted owl sites declined by 43% over a 22-year period leading up to the 2014 King Fire (Jones et al. 2016; Figure 3e). For approximately 7 years from 2007-2013, the population within the Eldorado demography study was stable (Jones et al. 2016; Figure 3e). In September and October 2014, a human-ignited fire, the "King Fire" burned 39,545 ha and was one of the largest and most severe forest fires recorded in California history with high-severity fire (75–100% canopy mortality) occurring on 19,854 ha (50% of the area burned), with one continuous 13,683-ha high-severity burned patch (Jones et al. 2016). The King Fire affected 15,594 ha (44%) of the 35,500 ha Eldorado demographic study area and overlapped 30 of 45 spotted owl sites that have been monitored continuously since 1993 (Tempel et al. 2014b). Of the 15,594 ha that burned within the study area, 64% burned at high-severity. One year post fire, occupancy dropped from 0.57 to 0.44 following approximately 7 years of relatively stable occupancy (Jones et al. 2016). The 22% decline in site occupancy after the fire was the greatest single-year decline recorded in the Eldorado study area over the 23-year study period (Jones et al. 2016).

Recent radio telemetry research within the King Fire area found California spotted owls strongly avoided high-severity burned areas with the authors concluding that megafires were an emerging threat to old-forest species (Jones et al. 2016a). The extreme nature of the fire, more than two decades of pre-fire site occupancy data, and location information on owls – outfitted with Global Positioning System (GPS) receivers and tagged with colored leg bands for identification of individual birds – allowed the researchers to draw strong inferences regarding the effect of severe fire on a species considered to be a barometer of old-forest wildlife community health (Simberloff 1998). Their results suggest that (1) reducing the frequency of large, severe fires could benefit spotted owls and, by extension, other old-forest species, and (2) forest restoration and old-forest species conservation objectives may be more compatible than previously believed

(Jones et al. 2016). In general, factors driving these population trends are not known (Keane 2014) and the causation factors are not known.

Habitat

California spotted owls are associated with heterogeneous forests characterized by areas with large trees, large snags, and large down woody material (North et al. 2009, Roberts and North 2012, Keane 2014). Spotted owls nest in cavities, on top of broken trees, and on platforms located in older, larger diameter trees. Nests and roosts are typically located in stands that have >70% total canopy cover and contain one or several large trees and multiple canopy layers (Keane 2014). The reproductive season for spotted owls occurs between mid-February and August with most young fledging by August 31 (Verner et al. 1992).

Studies suggest the presence of large trees and high overstory canopy cover are the most important conditions associated with spotted owl occurrence and survival (North 2012, Verner et al. 1992, Blakesley et al. 2005, Seamans 2005, Seamans and Gutierrez 2007). High structural diversity, and canopy layers, is thought to benefit spotted owls by contributing to a greater diversity of prey species, a variety of perch sites for increased hunting opportunities, and cooler microclimates for roost sites and increased protection from predators (North et al. 1999, Verner et al. 1992, Weathers et al. 2001).

Suitable habitat definitions are derived from those listed in Verner et al. (1992), USDA 2004, and 70 Federal Register, June 21, 2005. Based on these definitions, the following California Wildlife Habitat Relations (CWHR) classification system identified types having the highest probability of providing stand structure associated with preferred nesting, roosting and foraging [(Classes 6, 5D, 5M, 4D, and 4 M (USDA 2001)]. On the ENF, high quality nesting habitat is Sierran Mixed Conifer, White Fir, and Ponderosa Pine (Classes 5D, 5M). Suitable foraging habitat includes CWHR classes 4D and 4M. Stands considered to be suitable for foraging have at least two canopy layers, dominant and co-dominant trees in the canopy averaging at least 12 inches in dbh, at least 40 percent canopy closure, and higher than average levels of snags and downed woody material.

Protected Activity Centers (PACs) – 300 Acres

California spotted owl habitat are managed through established Protected Activity Centers (PACs) and Home Range Core Areas (HRCAs) (SNFPA 2004). PACs are 300 acres of the best available habitat surrounding each PAC on National Forest System lands. PACs are maintained regardless of California spotted owl occupancy status. However, after a stand-replacing event (i.e., catastrophic wildfire), habitat conditions are re-evaluated within a 1.5-mile radius around the activity center to identify opportunities for re-mapping the PAC.

Home Range Core Area (HRCAs) – 1,000 Acres

HRCAs are delineated by selecting the most suitable 1,000 acres on Forest Service lands within 1.5 mile radius of the activity center, including the 300-acre PAC (USDA 2001; USDA 2004). HRCAs are defined as the nearest high quality blocks of habitat surrounding the PAC.

Substantial overlap in acreage can occur between HRCAs due to the relatively dense configuration of PACs in some locations near proposed units. All of the potentially directly affected PACs were reviewed and the PACs, and HRCAs were refined as part of the early planning for this project.

Circular Core Areas
Seamans and Gutierrez (2007) used a different method of analysis called a circular core area around owl activity centers. The circular core area is 1,000 acres in size and are defined as the nearest best available habitat within 0.7 miles of the activity center. Seamans and Gutierrez (2007) did not determine that California spotted owls use circular home ranges, but used this area for their statistical analysis to represent a core use area and to evaluate habitat and activities in direct proximity to activity centers.

Status of the Species on the Forest and in the Project Area
Eldorado National Forest California Spotted Owls
California spotted owl PACs are identified through Region 5 Pacific Southwest protocol surveys (USDA Forest Service 1993). With the exception of the Eldorado demography study (portions Georgetown and Pacific ranger districts), surveys for California spotted owls are conducted only for project-level activities to determine spotted owl occupancy within a project area. On the ENF there are 213 California spotted owl PACs and 187,423 unique acres of HCRAs (excluding acres of overlapping HRCAs). The project area is within the Placerville Ranger District which has 86 PACs. On the Eldorado National Forest (ENF), spotted owls are known to occur between 2,000' and 7,200' in elevation, with most of the nesting pairs found in the Sierran mixed conifer habitat type. Suitable spotted owl habitat on the ENF habitat has been mapped using a combination of the 2005 Forest Vegetation Inventory data [described in the Sierra Nevada Forest Plan Amendment (USDA Forest Service 2001)] and habitat modeling with the CWHR classification system.

On the ENF, Seamans and Gutierrez (2007) found that, within 0.7 miles of spotted owl activity centers (circular core area), composition of large and medium-sized trees (≥ 12" dbh) and high canopy cover (≥ 70% canopy cover), was positively correlated with survival and territory colonization and negatively related to territory extinction. Tempel et al. 2016 found that Forests with medium (40-69%) and high (>70%) canopy cover were the most important predictors of territory occupancy and that medium canopy cover was positively associated with colonization on the Eldorado demography study area.

Suitable Habitat in the Project Area
There are approximately 15,441 acres of California spotted owl habitat (CWHR size class 4 or greater and ≥ 50% canopy cover) on National Forest System lands within the project area and 890 acres on private lands for a total of 16,331 acres of suitable spotted owl habitat. Of those acres, most CWHD classes are 4M/4D (foraging habitat) and 5D (nesting/roosting habitat). No CWHR size 6 occurs within the project boundary.

The Project area was surveyed to Region 5 Pacific Southwest protocol surveys (USDA Forest Service 1993) protocol in 2008, 2009, 2012 and 2013 and PAC monitoring done in 2014 and 2015) prior to the finalization of this Biological Evaluation. There are approximately 19 PACS within the Trestle Project Boundary. The most recent information on these PACS is displayed in **Table V.2.2**. There are 19 HRCAS in the project area and approximately 17,725 acres of suitable habitat within these HRCAs (**Table V.2.3**). Five additional HRCAs overlap the project boundary [ELD0018, ELD0038, ELD0109, ELD0159 (6 acres), and ELD0162] and have zero to few acres of suitable habitat affected by the project, and therefore will not be considered for further analysis. Four additional PACs (ELD0023, ELD0038, ELD0109, and ELD0159) occur within a 0.25 mile of the project boundary but do not overlap the project boundary.

Table V.2.2 - Spotted Owl PAC Status in the Trestle Project Boundary

PAC #	Most Recent Survey Year	Owl Occupancy Status	Activity Center
ELD0007	2002	Pair	2002 Pair
ELD0011	2009	1 Adult, 2 Young	2009 1 Adult, 2 Young
ELD0017	2015	1 Adult	1992 Pair, 2 Young 2008 Pair, potential roost
ELD0019	2015	1 Adult	2000 Pair, 1 Young
ELD0035	2015	Nest Stand, 1 Adult, 1 Young	1992 Pair, 2 Young
ELD0059	2010	No detections	1991 Pair
ELD0063	2010	1 Adult, Roost	2009 Pair, 2 Young
ELD0110	2001	Pair	2001 Pair
ELD0111	2015	1 Adult, Roost	2002 Pair
ELD0112	2012	1 Adult	2000, 1 Adult
ELD0155	2014	1 Adult	1992 Pair, 2 Young
ELD0208	2015	Pair, Roost	1992 Pair, 2 Young
ELD0322	2010	1 Adult, Roost	2010 1 Adult, Roost
ELD0323	2015	Pair	2012 Male and Female Adult, possible Young
ELD0324	2015	1 Adult	2012 Pair, Roost
ELD0325	2012	1 Adult, Roost	2010 Pair
ELD0326	2015	1 Adult, 1 Young	2015 1 Adult, 1 Young
ELD0328	2012	1 Adult	2012 1 Adult
ELD0329	2015	Pair	2015 Pair

Table V.2.3 Home range core area (HRCA) habitat for California spotted owl (defined as CWHR 4+ with ≥ 50% canopy cover) that occurs in Trestle project proposed treatment units.

PAC #	Spotted Owl Habitat (CWHR Size Class 4+ with ≥50% canopy cover)
	Acres within the HRCA
ELD0007	976
ELD0011	827
ELD0017	952
ELD0019	916
ELD0035	982
ELD0059	957
ELD0063	876
ELD0110	988
ELD0111	1,000
ELD0112	961
ELD0155	876
ELD0208	940
ELD0322	863
ELD0323	902
ELD0324	818
ELD0325	996
ELD0326	961
ELD0328	979
ELD0329	955
Total	**17,725**

ALTERNATIVE ONE (No Action)

Direct and indirect effects:

The No Action Alternative is the current condition which is used as a baseline to compare effects to the proposed alternatives. Under the No Action alternative, the assumption is that there will be no direct, indirect, or cumulative effects to California spotted owl or their habitat. None of the

project objectives would be accomplished with this alternative. The risk of catastrophic wildfire to spotted owls would still exist.

Cumulative effects

Under current management, the existing conditions and associated risks of wildfire, and habitat trends in the project area would remain unchanged. There would be no increased capacity for fire suppression within the project area, and nearby spotted owl PACs, HRCAs and other suitable habitat could suffer more intense and larger wildfires, than would be expected to occur with the three action alternatives. The No Action Alternative would, therefore, provide less protection for existing high quality habitat, and could in the long-term result in loss of habitat that might be retained with the implementation of any of the action alternatives.

Alternative One Conclusion

Alternative One will have no effect on the California spotted owl.

EFFECTS OF ALTERNATIVES TWO, FOUR, & FIVE ON SPOTTED OWLS

Direct and Indirect Effects:

The effects to spotted owl habitat from project activities can occur at multiple scales: 1) PAC – protected activity center, 2) HRCA – 1,000-acre home range core area of a protected the activity center, and 3) the stand – stand density, structure and understory vegetation. Seamans and Gutierrez (2007) used a different scale to define a home core range than the Forest Service. The Forest Service uses the HRCA, which is the most suitable habitat (1,000 acres) only on Forest Service lands within 1.5 miles of the owl activity center (SNFPA 2004). Seamans and Gutierrez's equivalent to a HRCA is a circular core area (CCA) which is suitable habitat (1,000 acres) within 0.7 mile circular buffer of the activity center.

For analysis, both the HRCA and the CCA will be used for the analysis of the alternatives. The magnitude of potential impacts depend upon location, timing, frequency, and duration of activities. Below is a list of impact types that are discussed in detail.

Direct Impacts

1) Habitat modification - (mechanical thinning, hazard tree removal, brush/piling, prescribed burning and temporary road building)
2) Fatality potential – (spotted owl/reduction in prey)

Indirect Impacts

3) Disturbance – (noise, smoke)
4) Prey base alterations – (changes in plant communities that prey rely on)
5) Habitat resiliency – (reduction or increase in potential for catastrophic wildfire)

Mechanical thinning

No commercial thinning would occur within any PACs (**Table V.2.4**). The silvicultural prescriptions for thinning in this project have been designed to move towards stand structures more similar to the stand heterogeneity that would have occurred in mid-elevation conifer stands in the Sierra Nevada under a more frequent low-severity fire regime (North et al 2009). Project prescriptions are generally expected to retain at least 50% canopy cover in spotted owl home range core areas to maintain suitable spotted owl habitat. Long-term, canopy cover should return to pre-harvest treatment levels within 20-30 years.

Potential negative effects to spotted owls would most often result from the modification or loss of habitat or habitat components, and rarely from direct mortality. Disturbance associated with harvest activities, temporary road construction, or other associated activities within or adjacent to occupied habitat may disrupt nesting, roosting, fledging, and foraging activities. However, no commercial thinning would occur in PACs and LOPs prohibiting vegetation treatments within ¼ mile of spotted owl activity centers during the breeding season (March 1 to August 15), unless surveys confirm owls are not nesting, would minimize the potential for disturbance to nesting owls.

Table V.2.4 No Commercial Thinning in California Spotted Owl PACS in All Action Alternatives

PAC #	No Mechanical Commercial Thinning Treatments Are Proposed Within PACS		
	PAC Size (acres)	Acres Proposed for Commercial Treatment	Acres Retained
ELD0007	349	0	349
ELD0011	251	0	251
ELD0017	295	0	295
ELD0019	297	0	297
ELD0035	297	0	297
ELD0059	271	0	271
ELD0063	262	0	262
ELD0110	296	0	296
ELD0111	300	0	300
ELD0112	291	0	291
ELD0155	280	0	280
ELD0208	281	0	281
ELD0322	297	0	297
ELD0323	268	0	268
ELD0324	270	0	270
ELD0325	297	0	297
ELD0326	301	0	301
ELD0328	290	0	290
ELD0329	296	0	296
Total	5,489	0	5,489

Tempel et al. 2016 assessed occupancy dynamics of 275 spotted owl territories (1,000-acre circle of an activity center) in 4 study areas in the Sierra Nevada, California from 1993 to 2011 and found that mechanical treatments (i.e., timber harvest) within a spotted owl territory, had no significant impact on territory occupancy and was positively correlated with occupancy on the ENF.

Overall, high canopy cover (> 70%) and medium canopy cover (40-69% and were the most important predictors of territory occupancy (Tempel et al. 2016) with medium canopy covers positively associated with colonization on the ENF, further emphasizing the importance of maintaining medium canopy cover for spotted owl territories (Tempel et al. 2016).

Irwin et al. 2015 monitored radio-tagged northern spotted owl and California spotted owl response to study short-term direct responses (< 2 years post treatment) to various sivicultural treatments. Before harvest, radio-tagged owls generally used stands scheduled for harvest treatment in proportions significantly less than availability. Across all owls and all post-harvest conditions, the overall selection ratio increased after harvesting, suggesting that many of the harvests were benign or may have resulted in improved habitat. Irwin et al. 2015 study suggested that sivicultural treatments are likely to increase value of low-quality foraging habitat such as young and intermediate forests with dense canopy cover but generally without large trees.

In addition to prescribed fire, significant expansion of mechanical treatments will be needed to achieve long-term forest resilience objectives (Stephens et al. 2016).The long-term effects of the Proposed Action would be beneficial to individuals and their habitat as prevention of stand-replacing wildfire would help to maintain suitable spotted owl habitat on the landscape. Thus, effects to spotted owls and their habitat in the short term would be outweighed by the long term benefits of reduced potential for stand-replacing high severity fire.

Seamans and Gutierrez (2007) research (monitoring 66 owl territories from 1990-2004), suggested that there may be a higher probability of breeding dispersal for owl territories (1,000 acres of an activity center, circular core areas) with less than 150ha (~370 acres) of mature forest in a 400ha (~1,000 acre) circle and where > 20ha (~50 acres) are altered. Mature conifer forest is defined as >12" dbh and >70% canopy cover (Seamans and Gutierrez 2007). Their results suggested that owls following dispersal did not necessarily chosoe a new territory with more mature conifer forest (i.e., higher habitat quality) (Seaman and Gutierrez 2007). Selection of new territories by breeding individuals was not correlated with mature conifer forest but may have been associated with a mate (Seamans and Gutierrez (2007).

Seamans and Gutierrez (2007) used a different scale to define a home core range than the Forest Service. The Forest Service uses the HRCA, which is the most suitable habitat (1,000 acres) only on Forest Service lands within 1.5 miles of a protected activity center (SNFP 2004). Seaman and Gutierrez's equivalent to a HRCA is a circular core area (CCA) which is habitat (1,000 acres) within 0.7 mile circular buffer of a protected activity center.

For analysis, both the HRCA and the CCA will be analyzed for the alternatives.

Table V.2.5. Comparison of Mechanical Thinning Treatment within HRCAs: Number of Acres Thinned, Number and Percentage of Acres Not Thinned for Alternatives 2, 4 & 5, **CWHR Size 4+ and ≥ 50% Canopy Closure**

PAC #	HRCA Spotted Owl Habitat				HRCA Spotted Owl Habitat			HRCA Spotted Owl Habitat		
	Total Acres CWHR Size 4 and 5 with ≥50% canopy closure ALT 2				Total Acres CWHR Size 4 and 5 with ≥ 50% canopy closure ALT 4			Total Acres CWHR Size 4 and 5 with ≥50% greater canopy closure ALT 5		
	Current	Acres Thinned	Acres Not Thinned	% HRCA Not Thinned	Acres Thinned	Acres Not Thinned	% HRCA Not Thinned	Acres Thinned	Acres Not Thinned	% HRCA Not Thinned
ELD0007	976	541	435	45%	135	841	86.2%	347	629	64%
ELD0011	827	190	637	77%	166	661	79.9%	190	637	77%
ELD0017	952	35	917	96%	34	918	96.4%	0	952	100%
ELD0019	916	202	714	78%	198	718	78.4%	155	761	83%
ELD0035	982	330	652	66%	229	753	76.7%	236	746	76%
ELD0059	957	76	881	92%	76	881	92.1%	48	909	95%
ELD0063	876	170	706	81%	84	792	90.4%	84	792	90%
ELD0110	988	398	590	60%	280	708	71.7%	345	643	65%
ELD0111	1000	346	654	65%	185	815	81.5%	242	758	76%
ELD0112	961	261	700	73%	106	855	89.0%	241	720	75%
ELD0155	876	90	786	90%	69	807	92.1%	90	786	90%
ELD0208	940	22	918	98%	0	940	100.0%	0	940	100%
ELD0322	863	171	692	80%	8	855	99.1%	158	705	82%
ELD0323	902	125	777	86%	74	828	91.8%	74	828	92%
ELD0324	818	108	710	87%	46	772	94.4%	46	772	94%
ELD0325	996	90	906	91%	9	987	99.1%	51	945	95%
ELD0326	961	0	961	100%	0	961	100.0%	0	961	100%
ELD0328	979	539	440	45%	93	886	90.5%	445	534	55%
ELD0329	955	177	778	81%	179	776	81.3%	181	774	81%
Total	**17,725**	**3,871**	**13,854**	**78%***	**1,971**	**15,754**	**89%***	**2,933**	**14,792**	**84%***

*Average percentage of untreated acres across HRCAs within treatment units

Table V.2.6. Comparison of Mechanical Thinning Treatments Proposed Within High-Quality Habitat within HRCAs. **High-quality habitat** is defined as **CWHR Size Class 4+ and ≥ 70% Canopy Closure**. The number of acres of high-quality habitat currently available, proposed for treatment, and not commercial mechanically thinned was estimated for each California spotted owl HRCA within the Trestle project area.

PAC #	Current Acres of High-Quality HRCA Habitat	Alternative 2			Alternative 4			Alternative 5		
		High-Quality Habitat in HRCA			High-Quality Habitat in HRCA			High-Quality Habitat in HRCA		
		Acres Thinned	Acres Not Thinned	% HRCA Not Thinned	Acres Thinned	Acres Not Thinned	% HRCA Not Thinned	Acres Thinned	Acres Not Thinned	% HRCA Not Thinned
ELD0007	653	280	373	57%	67	586	90%	209	444	68%
ELD0011	565	111	454	80%	87	478	85%	111	454	80%
ELD0017	787	32	755	96%	74	713	91%	0	787	100%
ELD0019	694	137	557	80%	172	522	75%	99	595	86%
ELD0035	916	311	605	66%	39	877	96%	223	693	76%
ELD0059	800	41	759	95%	19	781	98%	39	761	95%
ELD0063	589	59	530	90%	1	588	100%	19	570	97%
ELD0110	862	311	551	64%	205	657	76%	260	602	70%
ELD0111	863	309	554	64%	161	702	81%	212	651	75%
ELD0112	515	118	397	77%	70	445	86%	114	401	78%
ELD0155	490	61	429	88%	47	443	90%	61	429	88%
ELD0208	721	20	701	97%	29	692	96%	0	721	100%
ELD0322	677	102	575	85%	2	675	100%	100	577	85%
ELD0323	517	120	397	77%	53	464	90%	71	446	86%
ELD0324	422	72	350	83%	50	373	88%	31	391	93%
ELD0325	851	82	769	90%	8	843	99%	48	803	94%
ELD0326	556	0	556	100%	0	556	100%	0	556	100%
ELD0328	729	357	372	51%	71	658	90%	266	463	64%
ELD0329	799	65	734	92%	64	735	92%	65	734	92%
Total	**13,006**	**2,588**	**10,418**	**80%***	**1,286**	**11,788**	**91%***	**1,928**	**11,078**	**85%***

*Average percentage of untreated acres across HRCAs within treatment units

Table V.2.7. Comparison of Mechanical Thinning Treatments Proposed within **Mature Conifer Forest (MCF) (High Quality Habitat) with CWHR 4+ with ≥ 70% Canopy Cover within 0.7 miles of an activity center (Circular Core Area)** for Alternatives 2, 4, and 5.

PAC #	Current Acres of High-Quality Habitat in CCA	Alternative 2			Alternative 4			Alternative 5		
		High-Quality MCF Habitat in CCA			High-Quality MCF Habitat in CCA			High-Quality MCF Habitat in CCA		
		Acres Thinned	Acres Not Thinned	% CCA Not Thinned	Acres Thinned	Acres Not Thinned	% CCA Not Thinned	Acres Thinned	Acres Not Thinned	% CCA Not Thinned
ELD0007	516	199	317	61%	27	489	95%	160	356	69%
ELD0011	315	50	265	84%	19	296	94%	19	296	94%
ELD0017	493	32	461	94%	0	493	100%	0	493	100%
ELD0019	392	45	347	89%	6	386	98%	6	386	98%
ELD0035	698	184	514	74%	72	626	90%	111	587	84%
ELD0059	616	63	553	90%	61	555	90%	61	555	90%
ELD0063	476	17	459	96%	14	462	97%	14	462	97%
ELD0110	747	317	430	58%	223	524	70%	289	458	61%
ELD0111	686	195	491	72%	126	560	82%	163	523	76%
ELD0112	467	113	354	76%	105	362	78%	108	359	77%
ELD0155	442	97	345	78%	42	400	91%	97	345	78%
ELD0208	434	7	427	98%	7	427	98%	7	427	98%
ELD0322	496	83	413	83%	2	494	100%	83	413	83%
ELD0323	486	54	432	89%	38	448	92%	38	448	92%
ELD0324	284	32	252	89%	11	273	96%	11	273	96%
ELD0325	646	72	574	89%	2	644	100%	36	610	94%
ELD0326	349	0	349	100%	0	349	100%	0	349	100%
ELD0328	580	266	314	54%	82	498	86%	231	349	60%
ELD0329	409	10	399	98%	10	399	98%	10	399	98%
Total	**9,532**	**1,836**	**7,696**	**81% ***	**847**	**8,685**	**91%***	**1,444**	**8,088**	**85%***

* Average percentage of untreated across Circular Core Areas within project units

Hazard tree and dead tree (snag) removal

Hazard tree removal is a project element designed to respond to the recent threat of insect mortality in the project area before the infestation expands further across the forest. Insect mortality (2015-2016) has caused the level of early decay stage small and large diameter snags, to increase on the landscape.

Hazard tree and dead tree (snag) removal and prescribed burning will change the existing snag and down log component by altering the existing age and size classes currently within the area. Higher levels of snags and down wood are associated with spotted owl habitat use and are likely important elements supporting prey. Snags provide nesting and denning habitat for spotted owls, and habitat for prey such as squirrels and woodrats (Verner et al. 1992). Management practices that decrease these elements, as well as decreases in litter depth and the soil organic layer, could affect the production of hypogeous fungi, which is major food source for flying squirrels and white footed mice (Meyer et al. 2007). In the eastern Cascade Range snag populations were found to decline following thinning treatments, probably as a result of snag removal to prevent safety hazards. However, thinning followed by burning was found to increase total snag abundance and clumpiness in all but the largest diameter class (Hessburg et al. 2010). Though new snags will be created from burning; late decay snags may be consumed; reducing or removing this habitat component for both spotted owls and prey that may be utilizing existing cavities within these trees for nesting or denning.

Late decay large diameter snag levels have been low (e.g., project area on average has three snags per acre) primarily from past insect salvage sales, illegal wood cutting; and lack of fire (2014 Silvicultural Report). However, the recent insect mortality (2015-2016), has increased the level of early decay stage small and large diameter snags, on the landscape, making more snags available in the project area.

Prescribed burning

Research has shown that California spotted owl will occupy territories with low to moderate levels of fire severity (Roberts et al. 2011, Lee et al. 2012, 2013, Lee and Bond 2015, Jones et al. 2016). In 2013, the Rim Fire, a 104,131-ha fire, occurred in and around the Stanislaus National Forest and Yosemite National Park. In one-year post fire, Lee and Bond estimated site occupancy for 45 historically occupied breeding sites within the Rim Fire, and found territories occupied with high proportions of high severity (> 70%) fire (Lee and Bond 2015).
Prescribed burning after harvest activities further reduce canopy cover. Follow-up prescribed burn activities are expected to reduce canopy cover by another 5% dependent on site conditions until the canopy levels returns back within 5-10 years after prescribed burning. In combination with canopy reduction associated with harvest activities, prescribed burning may drop the canopy cover to below the recommended 50% in certain areas; particularly if harvest treatments maintained canopy at the minimum levels with no room to adjust for further canopy alterations resulting from prescribed burning.
Bond et al. (2009) reported that owls nested and roosted in unburned or low to moderate-severity patches of forest, and, four years after the fire, they foraged selectively in high-severity burn patches that were located within larger home ranges that generally burned at low to moderate severities. Patches of early successional vegetation recovering from high severity fire may

provide access to early successional associated prey, such as woodrats and gophers, within the mosaic of mixed fire severity landscapes. North (2012) concluded that where overstory tree mortality remains low and areas of high canopy cover remain after a burn, prescribed burning is likely to retain habitat features that are important for roosting and reproducing spotted owls.

Prescribed fire is planned in some units within 2-7 years after mechanical treatment and may result in the loss of re-established shrub and small tree components within previously treated units (thinning), resulting in a longer timeframe for return of shrub and other early seral habitat components as well as multi-layered stand structures. Multi-layers are utilized by some species, such as spotted owls to utilize for hunting as well as perches (for both adults and young) that can be utilized as the microclimate (temperature) in the stand changes. Understory shrub cover and coarse woody debris would decrease following understory burning or piling and burning treatments in thinned units (Innes et al. 2007).

Within PACs outside of Wildland Urban Interface (WUI), Standards and Guideline #74 limits average flame lengths to 4 feet or less and hand pruning or cutting of small trees may be conducted prior to burning as needed to protect important elements of owl habitat from high intensity fires (Roberts 2010, Keane 2011, Lee et al. 2012).

Although the challenge is to retain habitat for the owl in the short-term (Gutiérrez et al. 2016), the long term benefits of prescribed fire to reduce wildfire hazard outweighs the short term loss of habitat. Activities that reduce wildfire hazard may benefit spotted owls in the long term by protecting habitat from loss to stand replacing wildfire (Jones et al. 2016). With strategic implementation, prescribed burning may benefit California spotted owls by protecting their nesting and roosting habitat from catastrophic fires while creating a diversity of landscape conditions (Roberts 2011, Gallagher 2010, and Lee et al. 2012).

Prescribed fire treatments are not expected to reduce canopy cover more than 5%, averaged across the treatment area.

Road maintenance, road reconstruction, and temporary road construction

Roads do not provide suitable habitat for spotted owls. Temporary road construction, may create habitat fragmentation in the short term. These activities would have no impact on spotted owl suitable habitat, as the areas proposed for maintenance, reconstruction, and new temporary road construction do not provide suitable habitat for this species. Collision of owls with vehicles can cause mortality, however, this is highly unlikely.

Road maintenance and reconstruction could cause disturbance to spotted owls during breeding season if they are in close proximity to these activities. Measures of behavioral response or fecal corticosterone hormone levels (hormones that indicate stress) have been used to assess spotted owl response to disturbance. Tempel and Gutierrez (2003, 2004) found little evidence for disturbance effects from chainsaws and roads as measured by fecal corticosterone hormone

levels for California spotted owls in the central Sierra Nevada. Hayward et al. (2011) found no association between baseline hormone levels and distance to roads for northern spotted owl response on the Mendocino National Forest. Owls had higher corticosterone levels when exposed to continuous traffic exposure, and they found that owl response may vary with age of owls and physiological body condition. Hayward et al. (2011) reported lower reproductive success for owls near roads with continuous loud noise versus owls near quiet roads. Closure of roads through gating or decommissioning will enhance habitat in the area for spotted owl by decreasing habitat fragmentation and decreasing disturbance to owls from road traffic. Noise disturbance to spotted owl activity will be minimized through the LOPs. Current limited operating period (LOP) management standards and guidelines used on national forest lands that limit noise within 400 m of nest/roost areas during the nesting period appear effective for mitigating acute, direct noise and activity disturbance on owls at the project level (Keane 2016, draft Chapter 8, pg, 180).

Prey

Prey species may be killed or harmed through project activities such as logging operations or burning; particularly during the nesting season in the case of avian prey; woodrats (brush/early seral) or loss of dens and associated young for other mammalian prey (flying squirrel/snags). A reduction in canopy cover (e.g., multi-layered stands) may reduce foraging or hiding cover for spotted owls that rely on heavier canopy cover for hunting prey. Plantations with noncommercial value trees that will be prescribed burned only will retain and rejuvenate shrub species and understory forbs and grasses in the area within 1-5 years, however; machine piling and prescribed burning of brush as well as removal of small understory trees (less than 10"dbh) have the potential to displace prey species both from disturbance and alteration of prey habitat structure. For some prey species, this is considered a short term impact as the removal of decadent brush can provide re-establishment of younger stages of shrubs with higher nutritional value. It may also encourage growth of a greater diversity of shrub species and also a variety of forbs and grasses, which serve as forage for prey. However, for species that require dense cover or forage (berries, host plants for invertebrates) provided by these habitat elements (shrub and small tree cover), there may be a short-term loss (1-3 years for forage, up to 10 years for dense cover) in forage or cover for shelter and/or nesting. In the long term (within 4-10 years) these habitat components are anticipated to return as habitat for shelter where site conditions are favorable.

Prey species (particularly dusky-footed woodrats and flying squirrels) could decrease in thinned and tractor piled units for 3-5 years as these species are positively related to shrub cover, litter depth, and woody debris (Converse et al. 2006, Innes et al. 2007, USDA Forest Service 2006). Herbers (2007) found that northern flying squirrel density in the northwest averaged 60% lower in harvested treatments from one year up to four years following treatment, regardless of intensity or pattern of logging. Flying squirrels were detected on multiple occasions and locations during spotted owl surveys (Yasuda, pers. obs. 2012 and 2013) and would be a prey species of concern to maintain for spotted owls in the project area.

Noise or Visual Disturbance

Disturbance during the nesting season can result in nest site failure or abandonment. It is assumed that reproductively active spotted owls roost primarily within their PACs close to nest sites. Project activities will occur during the daylight hours, which would reduce the risk of disturbance to either nesting or foraging owls, as spotted owls are nocturnal. LOPs are designed primarily to protect individuals from disturbance at breeding sites reducing the risk of disturbance to individual owls. Limited operating periods are applied within a quarter mile of spotted owl activity centers, from March 1 through August 15, (SNFP SEIS ROD Appendix A-60). This distance corresponds to the mean distance at which Mexican spotted owls were found to show an alert response to noise disturbance from chainsaws (Delaney et al. 1999).

Hand thinning activities (e.g., chainsaws) may cause individual roosting owls to awaken or relocate within the stand; however, this activity would be a short-term temporary disturbance. This activity would be minimized if occurring post breeding season after chicks have fledged.

Smoke from prescribed fire implementation is likely to cause temporary disturbance from people, as well as smoke and other effects similar to natural understory wildfires.

Disturbance from noise and smoke will be temporary, short-term temporary affects. The limited operating period (LOP), described in the design features, would eliminate the potential disturbance to reproducing owls, reducing potential disturbance to temporary displacement of individuals outside of LOPs.

Cumulative Effects to Suitable Habitat in HRCAs in the Analysis Area

Analysis of cumulative effects to the spotted owl considers the impacts of this alternative when combined with lingering effects of past, other present actions, and reasonably foreseeable future actions and events that have affected or may affect the quantity or quality of spotted owl habitat.

Within the cumulative effects analysis area for the spotted owl, there have been many past actions that altered the vegetation on both private and National Forest lands. Refer to the Trestle EIS for a detailed list of projects considered for cumulative projects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads, reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands (timber harvest plans, road right of ways, and continued recreational and residential development).

Actions before 2005, reflected in the 2005 Forest vegetation layer, have included: historic timber clear-cutting, shelterwood, and fuels reduction logging. Historic timber harvest practices that included the practice of clear-cutting removed or altered some suitable and potentially suitable owl habitat in the past, though it is unknown what habitat existed before these timber

management activities were implemented. These areas were reforested and are managed to enhance the growth and survival of planted conifers. Eventually, these plantations will likely develop into suitable owl habitat where site conditions allow. Plantations from these timber management activities are all generally at least 10 years old. All of these varied actions upon the analysis area are incorporated into the 2005 Forest Vegetation layer. As these previously treated areas attain structural conditions identified by their CWHR habitat types, they may function as foraging habitat and eventually nesting habitat. The quality of those future habitats will be tempered by the presence of structural elements of snags and down logs and tree species composition that remain within the treated areas. Some of the most important habitat elements (e.g. large trees with cavities for nests, large decaying down logs, and lichens to support flying squirrels) need time to establish within the stands.

On National Forest System lands, vegetation management projects after 1993 have been designed as fuels reduction projects under the 1993 California Spotted Owl Interim Guidelines (USDA Forest Service 1993b) to maintain those habitat elements most important to the owl and the most difficult to replace, such as large trees (>30" dbh.), canopy closures >40%, large snags, and downed woody debris.

There are no reasonably foreseeable future actions in the project area on FS lands. Timber harvest plans for private timberlands are anticipated to continue; particularly with the recent insect mortality.

The determination is based upon the factors discussed above.

ALTERNATIVE TWO

Table III.3 displays activities under Alternative Two that could affect spotted owl habitat in the project area.

No mechanical thinning will occur within the 19 PACS within the project area.
A limited operating period (LOP) prohibiting within 0.25 mile of spotted owl activity centers during the breeding season (March 1 through August 15), unless surveys confirm that owls are not nesting.

Of the 17,725 HRCA acres of suitable habitat (e.g., CWHR Class size 4+ with at least **50% canopy closure**) associated with the 19 activity centers in the project area, approximately 3,871 acres (or 22%) would be treated by mechanical thinning treatments (**Table V.2.5**).

Within HRCAs, the following design criteria will reduce impacts to spotted owl habitat:

- Where existing vegetative conditions permit, retain at least 50 percent canopy cover averaged within a treatment unit. Exceptions are allowed in limited situations where

additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry.

- Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit (SNFP SEIS ROD pg.50-51).

Of the 17,725 HRCA acres of suitable habitat (e.g., CWHR Class size 4+ with at least 50% canopy closure) associated with the 19 activity centers in the project area, approximately 3,871 acres (or 22%) would be treated by mechanical thinning treatments. An average of 78% or 13,854 acres of suitable habitat within the HRCA would not be affected by mechanical thinning treatments.

Of the 13,006 high quality HRCA acres (e.g., CWHR Class size 4+ with at least **70% canopy closure**), associated with the 19 activity centers in the project area, approximately 2,588 acres (or 20%) would be treated with mechanical thinning treatments (**Table V.2.6).** Averaged across units, approximately 80% or 10,418 acres of the HRCA would not be affected by mechanical thinning treatments.

In Alternative Two, there are approximately 9,532 acres of high quality mature conifer forest (MCF) habitat (CWHR habitat with ≥70% or greater canopy cover). Of those 9,352 acres, approximately 1,836 acres or 19% of the territories, post-harvest would be less than 370 (**Table V.2.7**). Across the project area, approximately 81% or 7,696 acres of the territories will meet the suggested threshold suggested by Seamans and Gutierrez (2007) for maintaining territory occupancy. Territory ELD0326 is excluded from commercial thinning. Eight territories in the project area would have less than 370 acres of high quality habitat post treatment. Whether owls would disperse from the territories with less than 370 acres of high quality habitat post treatment or disperse to territories with higher quality habitat as suggested by Seamans and Gutierrez (2007) is unknown.

Because minimal treatment (i.e., less than 5 % prescribed burn treatment) would occur in any of the 19 PACs, 10,418 acres (or 80%) of high quality habitat and 13,854 acres (or 78%) of suitable habitat would be retained in HRCAs, and 7,696 acres (or 81%) of high quality mature conifer forest habitat CCAs (0.7 mile radius of activity center), no significant impacts are anticipated to occur to spotted owls. Short-term negative effects from treatments may affect reproductive success or occupancy during operations; however, effects to spotted owls and their habitat in the short term would be outweighed by the long term benefits of reduced potential for stand-replacing high severity fire.

Alternative Two Determination

Alternative Two may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the California spotted owl.

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Four that could affect spotted owl habitat in the project area. Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Alternative Four was developed to reduce project effects upon spotted owls by focusing mechanical thinning treatments in areas that are outside high quality spotted owl habitat and/or are a greater distance from owl territory centers, particularly where such habitat may be limited for an owl site.

As described for Alternative Two, activities in Alternative Four may directly or indirectly affect California spotted owls by 1) altering habitat conditions, thereby resulting in reduced survivorship productivity, and/or declines in territory occupancy; 2) creating temporary noise or visual disturbance thereby reducing annual breeding success; and 3) benefit spotted owls by lowering the risk of habitat loss to high- intensity wildfire over the long term.

This treatment focuses on understory trees 4-12" in dbh to reduce ladder fuels within the understory. This alternative will serve to reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

No mechanical thinning will occur within the 19 PACS of the project area. A limited operating period (LOP) for California spotted owls, prohibiting vegetation treatments would be implemented within 0.25 mile of spotted owl activity centers during the breeding season (March 1 through August 15), unless surveys confirm that owls are not nesting.

The same design criteria and standards and guidelines to HRCAs in Alternative Two would apply to Alternative Four. Of the 17,725 suitable HRCA acres (e.g., CWHR Class size 4+ with ≥**50**% canopy closure), associated with the 19 PACs in the project area, approximately 1,971 acres (or 11%) would be treated by mechanical thinning treatments (**Table V.2.5**). Treatment would occur in 17 of the 19 HRCAs within the project area (ELD0208 and ELD0326 will not be treated) (**Table V.2.5**). On average, across units, 89% or 15,754 acres of the HRCA would not be affected by mechanical thinning treatment and would have at least have 50% canopy cover to support suitable spotted owl habitat post treatment.

Of the 13,006 high quality HRCA acres (e.g., CWHR Class size 4+ with ≥**70%** canopy closure; high quality habitat), associated with the 19 activity centers in the project area, approximately 1,286 acres (or 9%) would be treated (**Table V.2.6**). On average, across units, 91% or 11,788 HRCA acres (CWHR Class size 4+ with ≥**70%** canopy closure; high quality habitat) would not be affected by mechanical thinning treatments. (**Table V.2.6**).

In Alternative Four, of the 9,352 acres of high quality MCF habitat (CWHR habitat with 70% or greater canopy cover) in circular core areas (territories), 847 acres or 9% would be treated to less than 370 acres post-harvest in eight spotted owl territories (**Table V.2.7**). Across the project area, approximately 91% or 8,865 acres would meet the suggested threshold by Seamans and Gutierrez (2007) for maintaining territory occupancy. Territory ELD0326 is excluded from commercial thinning. Three territories in the project area would have less than 370 acres post treatment. There would be 15 territories (out of 19 or 79%) with at least 370-acres MCF post-harvest (**Table V.2.7**). Whether owls would disperse from the territories with less than 370 acres post treatment or disperse to territories with higher quality habitat as suggested by Seamans and Gutierrez (2007) is unknown.

Effects at the stand scale are the same as described for Alternative Two, however, the effects of mechanical thinning and follow-up treatments would occur on fewer acres as compared to Alternative Two (Table III.3). The acreage treated with prescribed fire is similar between both alternatives, and effects of these treatments would be similar to Alternative Two. The location of thinning treatments would generally be a greater distance from owl activity centers.

Because minimal treatment (i.e., less than 5 % prescribed burn treatment) would occur in any of the 19 PACs, 11,788 acres (or 91%) of high quality habitat, and 15,754 acres (or 89%) of suitable habitat would be retained in HRCAs; and 8,865 acres (or 91%) of high quality mature conifer forest habitat CCAs (0.7 mile radius of activity center), no significant impacts are anticipated to occur to spotted owls or their habitat. Short-term negative effects from treatments may affect reproductive success or occupancy during operations; however, effects to spotted owls and their habitat in the short term would be outweighed by the long term benefits of reduced potential for stand-replacing high severity fire.

Cumulative Effects to Suitable Habitat in HRCAs in the Analysis Area
Cumulative effects are expected to be similar to Alternative Two, with this project still contributing habitat change across the project boundary but at less intensity due to less commercial thinning and more understory thinning as shown in Table III.3.

The determination is based upon the factors discussed above.

Alternative Four Conclusion
Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the California spotted owl.

ALTERNATIVE FIVE
Direct, indirect and cumulative effects:

Alternative Five was developed to lessen effects to spotted owl habitat from that of Alternative Two, increase fuel reduction treatments from that of Alternative Four to reduce the threat of wildfire and still provide an economically viable project to conduct the project activities. Table III.3 displays activities under Alternative Five that could affect spotted owl habitat in the project area.

As described for Alternative Two, activities in Alternative Five may directly or indirectly affect California spotted owls by 1) altering their preferred habitat conditions, thereby resulting in reduced survivorship productivity, and/or declines in territory occupancy; 2) creating temporary noise or visual disturbance thereby reducing annual breeding success; and 3) benefit spotted owls by lowering the risk of habitat loss to high- intensity wildfire over the long term.

No mechanical thinning will occur within the 19 PACS of the project area. A limited operating period (LOP) for California spotted owls, prohibiting vegetation treatments would be implemented within 0.25 mile of spotted owl activity centers during the breeding season (March 1 through August 15), unless surveys confirm that owls are not nesting.

The same design criteria and standards and guidelines to HRCAs in Alternative Two would apply to Alternative Five. Of the 17,725 suitable HRCA acres (e.g., CWHR Class size 4+ with **50%** ≤ canopy closure; associated with the 19 PACs in the project area), approximately 2,933 acres (or 16%) would be mechanically thinned (**Table V.2.5).** Commercial mechanical thinning will occur in 16 of the 19 HRCAs within the project area (ELD0017, ELD0208 and ELD0326 will not be treated). On average, across units, 84% or 14,792 acres of the HRCA would not be affected by mechanical thinning and have at least have 50% canopy cover to support suitable spotted owl habitat post treatment (**Table V.2.5).**

Of the 13,006 suitable HRCA acres (e.g., CWHR Class size 4+ with ≥**70%** canopy closure; high quality habitat), approximately 1,928 acres (or 15%) would be treated (**Table V.2.6**). On average, across units, 11,078 HRCA acres (or 85%) (CWHR Class size 4+ with ≥**70%** canopy closure) would not be affected by mechanical thinning treatments (**Table V.2.6**).

In Alternative Five, of the 9,352 acres of high quality MCF habitat (CWHR habitat with 70% or greater canopy cover) in circular core areas (territories), 1,444 acres or 15% would be treated to less than 370 acres post-harvest in eight spotted owl territories (**Table V.2.7**). Across the project area, approximately 85% or 8,088 acres would meet the suggested threshold by Seamans and Gutierrez (2007) for maintaining territory occupancy. Territory ELD0326 is excluded from commercial thinning. Seven territories in the project area would have less than 370 acres post treatment. There would be 11 territories (out of 19 or 58%) with at least 370-acres MCF post-harvest (**Table V.2.7**). Whether owls would disperse from the territories with less than 370 acres post treatment or disperse to territories with higher quality habitat as suggested by Seamans and Gutierrez (2007) is unknown.

Effects at the stand scale are the same as described for Alternative Two, however, the effects of mechanical thinning and follow-up treatments would occur on fewer acres as compared to Alternative Two (Table III.3). The acreage treated with prescribed fire is similar between both alternatives, and effects of these treatments would be similar to Alternative Two.

Because minimal treatment (i.e., less than 5 % prescribed burn treatment across project area) would occur in any of the 19 PACs, 11,078 acres (or 85%) of high quality habitat and 14,792 acres (or 84%) of suitable habitat would be retained in HRCAs, and 8,088 acres (or 85%) of high quality mature conifer forest habitat CCAs (0.7 mile radius of activity center), no significant impacts are anticipated to occur to spotted owls. Short-term negative effects from treatments may affect reproductive success or occupancy during operations; however, effects to spotted owls and their habitat in the short term would be outweighed by the long term benefits of reduced potential for stand-replacing high severity fire.

Cumulative Effects to Suitable Habitat in the Analysis Area
Cumulative effects are expected to be similar to Alternative Two, with this project still contributing habitat change across the project boundary but at less intensity due to less commercial thinning and more understory thinning as compared to Alternative Two but more than Alternative Four as shown in Table III.3.

The determination is based upon the factors discussed above.

Alternative Conclusion
Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the California spotted owl.

V.3 Northern Goshawk

ALTERNATIVE ONE (No Action)

Direct, indirect and cumulative effects:
The following describes the current condition, also known as the No Action Alternative. There are no activities related to this project, therefore, there will be no indirect or direct effects to northern goshawk or their habitat. No activities related to fuels management, forest health, or road maintenance objectives would occur under this alternative. No habitat restoration projects for hardwood enhancement, riparian restoration; road closures, or noxious weed removal would occur under this project, leaving habitat conditions as they currently are in the short-term unless other opportunities arise to undertake these activities under other projects. Only pertinent current management practices such as fire suppression and public firewood cutting would take place in the project area at his time. The No Action Alternative is used as the baseline to measure effects of the action alternatives, and as such is assumed to have no direct, indirect, or cumulative effects associated with it.

Status

The northern goshawk is designated as a sensitive species for the Eldorado National Forest. Habitat is managed based upon standards and guidelines in the Eldorado National Forest Land and Resource Management Plan, as amended by the Sierra Nevada Forest Plan Amendment (USDA Forest Service1988, 2004). Comprehensive information regarding the status and biology of northern goshawk is summarized in the SNFPA FEIS (USDA Forest Service 2001: Vol.3, Ch.3, part 4.4, pages 113-124) and is incorporated by reference.

Northern goshawks occur in forested habitats throughout the northern hemisphere (USDA 2001). It is estimated that there are around 600 known goshawk territories on National Forest System lands in the Sierra Nevada, with over 75 territories occurring on the Eldorado National Forest. The territories appear to be well distributed across the Sierra; however, occupancy of many territories is unknown. Known goshawk sites on the Eldorado National Forest appear to be fairly well distributed across the Forest, between 4,000 and 7,000 feet in elevation (USDA Forest Service 2008, Lipton 2007). The population trend in the Sierra is unknown due to the lack of widespread demography studies for this species (USDA Forest Service 2001). For California, the Christmas Bird Count has goshawk showing a slight positive trend, although goshawk trends have been highly variable from year to year.

Habitat

Northern goshawks occur in a variety of coniferous forest communities in the western United States, primarily in ponderosa pine (*Pinus ponderosa*), Jeffrey pine (*Pinus jeffereyi*), mixed conifer, white fir (*Abies concolor*), and lodgepole pine (*Pinus contorta*). Goshawks utilize mixed conifer, ponderosa pine, red fir, sub-alpine conifer, lodgepole pine, montane riparian and montane hardwood vegetation types on the Forest.

Suitable habitat for the northern goshawk consists of mature forest habitats with large trees, dense canopy cover with at least two canopy layers, and abundant snags and down logs (USDA Forest Service 2001 and 2004). On the Eldorado National Forest suitable habitat has been mapped for northern goshawk on the forest, based on CWHR canopy and size classes.

Nesting habitat has been defined as having canopy cover >60% and trees greater than 24" dbh (5M, 5D). Suitable nesting habitat generally includes overstory trees greater than 24" dbh with a canopy closure greater than 60% on gentle north to east facing slopes. Keane (1999 In USDA 2001) found that in the Lake Tahoe region, goshawk nest sites had greater numbers of large live trees (>40" dbh) and canopy cover (70%), and lower numbers of shrub/sapling cover and small live trees (<12" dbh) than in random plots in the area (Keane 1999 In USDA 2001). Goshawks tend to build multiple nests within a given area, and may alternate between these sites from year to year. Habitat patches surrounding nest locations are known to range from 25 to 250 acres in size, therefore, the SNFPA recommended a 200-acre PAC around all known goshawk sites (Fowler 1988, Woodbridge and Detrich, 1994, USDA 2001). The northern goshawk breeding cycle extends from mid-February through mid-September on the Eldorado National Forest.

Nest stands are typically composed of large trees that have high canopy closure, are near the bottom of moderate hill slopes, and have a sparse understory. Studies of nesting habitat show that goshawks nest in older-aged forests with variable tree species (Shuster 1980, Reynolds 1975, 1978, Saunders 1982, Moore and Henny 1983, Hall 1984). Coniferous trees used for nesting in the western portion of northern goshawk's range include ponderosa pine, Douglas-fir, white fir, and lodgepole pine (Squires and Reynolds 1997). Nests are typically constructed in the largest tree in the stand (Hargis et al. 1994, Reynolds et al. 1982, Squires and Ruggiero 1996). Goshawks typically nest in stands with canopy cover between 60% and 80% (Crocker-Bedford and Chaney 1988). Studies of habitat characteristics at goshawk nest sites have reported average canopy closure measurements from 75% in northern California to 88% in northwestern California (Saunders 1982, Hall 1984). Stand structure ranges from dense multi-layered stands in Oregon (Reynolds and Wight 1978) to open park-like understories in Colorado and California (Shuster 1980, Saunders 1982, Hall 1984). Average nest tree size is just as variable, with mean tree diameters ranging from 8-20 inches in Colorado (Shuster 1980), 20 inches in Oregon (Moore and Henny 1983) and 36 inches in northwestern California (Hall 1984).

Foraging habitat is defined as canopy cover $\geq$ 40% and trees greater than 12" dbh (4M, 4D, 5M and 5D). Large snags and downed logs are believed to be important components of northern goshawk foraging habitat because such features increase the abundance of major prey species (Reynolds et al. 1992). When foraging, northern goshawks utilize a wider range of forest types and conditions, but most populations still exhibit a preference for high canopy closure and a high density of larger trees. Primary prey for northern goshawk in the Sierra Nevada are ground or near the ground dwellers and therefore open understory in forested stands facilitate foraging (USDA Forest Service 2001). Ideally, foraging habitat should consist of mature to late-seral stands with at least 40 percent canopy closure in dominant trees with an open understory.

Home range size for goshawk in the Lake Tahoe region is estimated at about 6,000 acres for males and about 5,000 acres for females (Keane 1999 In USDA 2001). Northern goshawk habitat remains broadly distributed on the Eldorado National Forest, however, habitat gaps exist in the areas burned by the Cleveland, Star, Freds, Power and King Wildfires on the Forest.

Suitable Habitat within the Project

High capability habitat is described as CWHR types 4M, 4D, 5M and 5D in certain habitat types (i.e. Sierran Mixed Conifer, etc.). Moderate capability habitat also includes 5S and 5P as well as 4M, 4D, 5M and 5D in lesser utilized habitat types. Using the 2005 Forest Vegetation Inventory data and modeling of goshawk habitat using CWHR, Table V.3.1 displays northern goshawk habitat acres within the project boundary that contain 4M, 4D, 5M and 5D CWHR types. There are 40 acres of 5P and 6 acres of 5S, all on Forest Service land; however; for this analysis 4M, 4D, 5M and 5D will be considered for the goshawk in Table V.3.1.

Table V.3.1- Goshawk CWHR 4M, 4D, 5M and 5D Habitat within the Trestle Project Boundary

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total

Forest Service	1,343	9,537	14	4,547	15,441
Private	182	644	0	64	890
Project Boundary	1,525	10,181	14	4,611	16,331

Protected Activity Centers (PACs)

The LRMP (USDA Forest Service 1988) directed that a 25-acre nest stand and a 25-acre alternate nest stand be established around known nest sites. In the mid-1990's it became standard practice on the Forest to create a 120-acre Goshawk Management Area (GMA) around all new goshawk sightings where nesting activity was suspected based on more recent literature. All GMAs have been being updated to a 200-acre goshawk PAC as required by the SNFP ROD (USDA Forest Service 2004).

Key habitat is designated as northern goshawk protected activity centers (PACs) which include the best 200 acres of suitable habitat surrounding a known goshawk activity center and habitat with highest nesting habitat capability (CWHR type 5D). There are five goshawk PACs within the project boundary. Table V.3.2 gives the habitat status of these PACS. One additional PAC (T37_02) occurs within 1/4 mile of the project boundary but does not overlap the project area.

Table V.3.2- CWHR 4M/4D and 5M/5D Habitat within Goshawk PACs in the Trestle Project Boundary

PAC #	**PAC CWHR 4M/4D and 5M/5D Habitat Acres**			
	5M/5D	**4M/4D**	**Other**	**Total**
T26-03	118	94	0	212
T27-02	16	193	20	229
T27-07	197	28	.2	225
T37-04	151	59	3	213
T37-06	186	35	5	226

Goshawk sightings recorded in the past on the Forest have been largely opportunistic meaning that many were discovered incidentally when completing other duties. Surveys specific to goshawk have been limited to specific project areas or historic territories and have not covered a large proportion of the northern goshawk habitat on the forest. The SNFP (SNFP SEIS ROD Appendix A-38) also directs that surveys for goshawks are conducted in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Goshawk surveys were conducted within and adjacent to the Trestle Project prior to the finalization of this document in areas primarily outside of existing spotted owl PACs. Goshawks can be detected incidentally during daytime follow-ups conducted for spotted owls even if surveys are not conducted for the species. PAC status is shown in Table V.3.3.

Table V.3.3- Goshawk PAC Status in the Trestle Project Boundary

PAC #	Best Status	Most Recent Status
T26-03	1995 1 Young, Nest Stand	2003 Adult
T27-02	2001 Adult, 1 Young, Nest	2005 Adult
T27-07	1998, 1 Adult, 1 Young, Nest	2015 Adult (auditory)
T37-04	1993 Pair, 3 Young, Nest	2010 Adult (auditory) 2013 Feather
T37-06	1998 Pair, Nest	1998 Pair, Nest

Alternative Conclusion

Alternative One will have no effect from project activities on the northern goshawk.

ALTERNATIVE TWO

Direct and indirect and effects:

The effects on goshawk habitat on the west slope of the Sierra Nevada from treatments following the SNFPA standards and guidelines are analyzed in the SNFPA FEIS and FSEIS and that analysis is incorporated by reference (Chapter 3, part 4.4, pgs. 113-142: USDA Forest Service 2001, Chapter 4, pgs. 280-286: USDA Forest Service 2004). Treated units are expected to retain habitat elements important to goshawks by adhering to the SNFPA ROD guidelines.

Table III.3 displays activities under Alternative Two that could affect goshawk habitat in the project area. Stand structural components will be altered from project activities, potentially affecting goshawk foraging behavior. Foraging opportunities (provided prey habitat was maintained) for goshawk, would be enhanced in these areas by opening up the understory, enabling higher maneuverability through the stand. Weber's (2006) study on the Six Rivers National Forest found that nearly 81% of trees in the Post-Fledgling Area (PFA) were at least "medium" sized and only 11% of the PFAs total area was composed of trees in the smallest size class. Goshawks may be limited, due to their size, in flying through early seral stands of shrub and pole sized trees (Weber 2006).

Reduction in understory density may also enable a greater number of prey species to occur which favor a moderate canopy closure (40 to 69%), medium size (>4 acres) openings and a medium to high level of interspersion of seral stages within forest habitats (Reynolds et al. 1992). However, more recent studies suggest "that prey availability is more important than prey abundance in habitat selection" by goshawk and "as long as prey numbers are above a rather low threshold, goshawks select foraging sites where structural characteristics favor their foraging strategies." These studies suggest that recommendations focusing on increasing prey abundance at the expense of forest structure within occupied home ranges are not likely to improve goshawk occupancy rates (Greenwald et al. 2005).

Wiens et al. (2006) indicated that goshawks are closely tied to their food resources, so forest management prescriptions designed to support abundant prey populations while providing forest structural conditions that allow goshawks to access their prey within breeding areas should

benefit goshawk reproduction and fledgling survival. Weber (2006) also indicated the importance of having abundant numbers of the main prey species (squirrels, lagomorphs, birds) within the PFA. Besides mature conifer stands with openings large enough to fly through, there should also be small pole sized trees intermixed with mature trees to enable goshawks to have cover while consuming prey on or near the ground, or during hunting. In addition, Weber (2006) emphasized riparian corridors and meadows as both areas to forage and to travel through, as well as providing specific habitat structure within coniferous forest to increase prey species.

Table V.3.4 displays northern goshawk habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh. Effects to goshawk habitat (4M/D and 5M/D) outside of PACs would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted owl HRCA acreage.

Table V.3.4 - Goshawk Habitat Acres in Trestle Project Alternative Two Commercial Harvest Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	423	3,086	0	614	4,123
% of Habitat Treated	31%	32%	0%	14%	27%

Surveys for goshawks were done in the field season of 2009 and 2010 to determine the current location of activity centers. PAC boundaries were delineated or redrawn based on the latest survey information. Historical and new activity centers will be protected as defined in Framework guidelines through close coordination with the wildlife biologist and the project implementers to insure Framework guidelines are met and LOPs are adhered to. Design criteria under the Trestle Project avoid or minimize disturbance through the use of LOPs. In addition, coordination with the district wildlife biologist in regards to the detection of TES species prior or during implementation will also provide additional appropriate protective measures (including but not limited to LOPs) for those particular species, including the goshawk.

Cumulative Effects:

Refer to the Trestle EIS for a detailed list of projects considered for cumulative projects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads), reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands (timber harvest plans, road right of ways, and continued recreational and residential development).

Past timber management may have lessened habitat quality by reducing canopy closure and removing larger size class trees that goshawk tend to prefer for nesting. "There is a concern that northern goshawk populations and reproduction may be declining in North America and California due to changes in the amount and distribution of habitat or reductions in habitat quality (Bloom et al. 1986, Reynolds et al. 1992, Kennedy 1997, Squires and Reynolds 1997, Smallwood 1998, DeStefano 1998 In USDA Forest Service 2001). However, the U.S. Fish and

Wildlife Service completed a formal review of the species and determined that the goshawk is currently well distributed throughout its historic range and that there is "no evidence that the goshawk population is declining in the western United States, that habitat is limiting the overall population, that there are any significant areas of extirpation, or that a significant curtailment of the species' habitat or range is occurring" (Federal Register 1998). The Fish and Wildlife Service further found that the goshawk appears to be a "habitat generalist in terms of the variety and age classes of forest types it uses to meet its life requirements" and that the "contention that the goshawk is dependent on large, unbroken tracts of old growth and mature forest" was not supported by available information (Ibid). Observations of goshawk nest sites on the ENF have found numerous nests in second growth forests with medium size trees (USDA Forest Service 2005). Since goshawks prefer open understories for foraging, past fire exclusion in the Trestle Project may have reduced habitat quality due to the ingrowth of shade tolerant species.

Habitat effects across the landscape in the project boundary as well as cumulative effects to goshawk habitat (4M, 4D, 5M, and 5D) would be the same as described for the spotted owl as the two species utilize similar habitat. It is estimated that within 20 years, areas treated on National Forest system lands are expected to recover higher canopy closures and tree size and therefore have an increase in habitat quality (USDA Forest Service 2001 and 2004). The proposed project will not impact goshawk PACs from commercial harvest, and will maintain suitable habitat for goshawk foraging following treatments by retaining large trees and 40% canopy cover where it currently meets or exceeds it.

Alternative Conclusion

Alternative Two may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the northern goshawk.

This determination is based upon the following factors:

- LOPs will aid in preventing disturbance to nesting goshawks.
- Suitable goshawk habitat will not be entered for harvest in PACs.
- The alternative utilizes harvest prescriptions consistent with the SNFPA guidelines. By potentially reducing wildfire through thinning and fuels treatments, it is expected to make habitat more sustainable over time.
- Harvest in CWHR 4M/D and 5M/D stands outside PACs will reduce canopy conditions in suitable habitat through removal of medium and large trees.
- Late decay snag levels are low across the landscape providing limited habitat for prey species. Hazard tree removal will reduce existing snag levels at all decay stages. However; recent insect mortality has increased the number of early decay snags across the landscape.
- Understory thinning will improve foraging habitat conditions by opening the overstocked stands (in units with these site conditions) sufficiently to allow flight through the stands for foraging goshawks.

- Treatment of understory brush and small diameter trees (less than 10" dbh) through prescribed burning as well as tractor piling will alter prey habitat (cover, forage and nesting/denning components), including that of birds, squirrels and lagomorphs, several preferred prey species of the goshawk.
- Prescribed fire may reduce canopy closures in specific commercial harvest units where post-harvest canopy closure is down to 50%.
- Hand and dozer lines for prescribed fire implementation may reduce habitat quality through site specific canopy reduction; green tree, snag and down log removal; prey habitat alteration including potential fragmentation; and potential increase from encroachment and disturbance from dispersed recreation use including OHV use; squirrel hunters (affect prey base); and campfire use (increased risk of fire).

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Four that could affect goshawk habitat in the project area. Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Alternative Four was developed to aid in maintaining habitat components on the landscape for the California spotted owl. Harvest prescriptions in the majority of the units would primarily focus on understory trees contributing to fuel loading; and maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the northern goshawk.

Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions related to commercial thinning. There are 308 acres of 5D (as compared to 614 acres in Alternative Two) having trees up to 29.9" removed within treatment units. There are 1,725 acres of 4D (compared to 3,086 acres under Alternative Two) and 271 in acres of 4M (423 acres under Alternative Two) being thinned. The map in Appendix C displays affected spotted owl habitat under Alternative Four.

Table V.3.5 displays northern goshawk habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh. Effects to goshawk habitat (4M/D and 5M/D) outside of PACs would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted HRCA acreage.

Table V.3.5 - Goshawk Habitat Acres in Trestle Project Alternative Four Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	271	1,725	0	308	2,304
% of Habitat Treated	20%	18%	0%	7%	15%

The remaining acres within units containing 4M, 4D, 5M or 5D habitat, will not be intentionally removing medium to large diameter trees; retaining the existing CWHR classification of these stands as they currently are classified. These stands will be having understory trees (4-12" dbh)

removed to reduce fuel ladders within the understory. This alternative will serve to retain large diameter trees, dense canopy and reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

Alternative Conclusion
Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the northern goshawk.

This determination is based on the same factors provided under the Alternative Two Conclusion.

ALTERNATIVE FIVE
Direct, indirect and cumulative effects:
Table III.3 displays activities under Alternative Five that could affect goshawk habitat in the project area. Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. The stands will be having understory trees removed to reduce fuel ladders within the understory. The unit treatments are focusing on thinning trees 4-12" dbh. These size trees will be able to re-establish in the understory, conditions permitting within a few years and contribute to a multi-story stand. The remaining acres within units containing 4M, 4D, 5M or 5D habitat, will not be intentionally removing medium to large diameter trees; retaining the existing CWHR classification of these stands as they currently are classified. These stands will be having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory.

This determination is based on the same factors provided under the Alternative Two Conclusion. Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. There are 387 acres of 5D (as compared to 614 acres in Alternative Two and 308 acres in Alternative Four) having trees up to 29.9" removed within treatment units. There are 2,487 acres of 4D (as compared to 3,086 acres under Alternative Two and 1,725 under Alternative Four) and 310 in acres of 4M (as compared to 423 acres under Alternative Two and 271 acres under Alternative Four) being thinned (Tables V.3.4 and V.3.6).

Table V.3.6 displays northern goshawk habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh. Effects to goshawk habitat (4M/D and 5M/D) outside of PACs would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted HRCAs.

Table V.3.6 - Goshawk Habitat Acres in Trestle Project Alternative Five Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	310	2,487	0	387	3,184
% of Habitat Treated	23%	26%	0%	9%	21%

This alternative will serve to retain large diameter trees, dense canopy and reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

Alternative Conclusion
Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the northern goshawk.

This determination is based on the same factors provided under the Alternative Two Conclusion.

V.4 Great Gray Owl

ALTERNATIVE ONE (No Action)

Direct, indirect and cumulative effects:
The following describes the current condition, also known as the No Action Alternative. There are no activities related to this project, therefore, there will be no indirect or direct effects to northern great gray owl or their habitat. No activities related to fuels management, forest health, or road maintenance objectives would occur under this alternative. No habitat restoration projects for hardwood enhancement, riparian restoration; road closures, or noxious weed removal would occur under this project, leaving habitat conditions as they currently are in the short-term unless other opportunities arise to undertake these activities under other projects. Only pertinent current management practices such as fire suppression and public firewood cutting would take place in the project area at his time. The No Action Alternative is used as the baseline to measure effects of the action alternatives, and as such is assumed to have no direct, indirect, or cumulative effects associated with it.

Status
The great gray owl is designated as a sensitive species for the Eldorado National Forest. A Conservation Strategy for Great gray Owls (*Strix nebulosa*) in California (Wu 2016) came out in 2016 and indicate that Great gray owls in the Sierra Nevada likely consist of fewer than 100 nesting pairs

Habitat
Great gray owls in California utilize pine and fir forests adjacent to meadows between 750 and 2,250 meters (Winter 1986). The Conservation Strategy for Great Gray Owls (Wu, 2016) documents use of great gray owls also in lower elevations within mixed hardwood-conifer forests, including areas far from montane meadows. Availability of nesting structures and prey limit their use of habitat. Foraging habitat in the Sierra Nevada is generally open meadows and grasslands in forested areas, and trees along the forest edge are used for hunting perches. Leaning trees that lay against other trees provide structure for non-flying owlets to maneuver on and get off the understory floor. Openings caused by fires or timber harvest serve as foraging

habitat when the vegetation is in early successional stages (Hayward 1994, Greene 1995). Greene (1995) found that sites occupied by great gray owls had greater plant cover, vegetation height, and soil moisture than sites not occupied by owls. Canopy closure was the only variable of three variables measured (canopy closure, number of snags greater than 24" dbh, and number of snags less than 24" dbh) that was significantly larger in occupied sites than in unoccupied sites. Meadows are utilized for breeding and wintering habitat and also provide attributes important for foraging areas. Recent studies in Yosemite National Park showed that over 60% of detections occurred within 328 feet and 80% occurred within 656 feet of a meadow (Van Riper et al. 2006).

The diet of the great gray owl may vary locally but consists primarily of small mammals, predominantly rodents (Kalinowski et al. 2014). All available literature indicates that great gray owls in the western United States overwhelmingly select only two prey taxa: voles (*Microtus* spp.) and pocket gophers (*Thomomys* spp.). Voles prefer meadows with dense herbaceous vegetative cover (CWHR 2005). A four-inch stubble height at the end of the growing season is thought to provide suitable cover for voles (Beck 1985), although other studies suggest herbaceous heights of 12" are preferred (Greene 1995). Gophers are predominantly subterranean but they also appear to have herbaceous cover preferences (Ibid). Great gray owls catch these mammals by breaking through their tunnels. Compaction of meadow soils may reduce the suitability of areas for prey. During the winter, great gray owls have been observed plunging through the snow to capture prey.

Suitable Habitat within the Project

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005). Specifically, high and moderate capability habitat are lodgepole pine (4M, 4D, 5M, 5D), red fir (4M, 4D, 5M, 5D), Sierran mixed conifer (4M, 4D, 5M, 5D, 6), wet meadow (1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D) and white fir (4M, 4D, 5M, 5D, 6). Using the 2005 Forest Vegetation Inventory data, Table V.4.1 displays great gray owl habitat acres within the Trestle Project boundary.

Table V.4.1 - Great Gray Owl CWHR 4M, 4D, 5M, 5D, Wet Meadow Habitat in Trestle Project Boundary

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Wet Meadow	Total
Forest Service	1,343	9,537	14	4,547	1	15,442
Private	182	644	0	64	23	913
Project Boundary	1,525	10,181	14	4,611	24	16,355

Protected Activity Centers (PACs)

Great gray owls currently occur within the Trestle Project boundary. Surveys specific for great gray owls were not conducted for this species however; surveys for spotted owls in the area for the Trestle project and historical projects detected incidental detections of great gray owls in the project area. In 2004 and 2005 Sears (2006), in coordination with the California Department of

Fish and Game, surveyed 82 meadow sites in CA and detected owls at 12 sites; however, though meadow sites occurred on the Eldorado National Forest, none of the great gray owl detections occurred on the Eldorado National Forest. Great gray owls do occur on and adjacent to the Eldorado National Forest land, including on Sierra Pacific Industries land and other property managed by private entities.

Two great owl PACs are located within the Trestle Project Boundary. The Leoni Meadow great gray owl PAC GGELD0001 is incorporated into California spotted owl PAC ELD0007 bumping that spotted owl PAC acreage up to 350 acres. The great gray owl PAC is adjacent to an unrelated "preserved" natural area on Leoni Meadows property (created by the naturalist and staff on board at the time) that is not incorporated into recreational camp activities and to enable it to remain relatively undisturbed. The location of the great gray owl site is kept quiet by both the Forest Service and Leoni Meadows to avoid an influx of "birders" who would 1) disturb the owl and 2) increase the population of strangers frequenting a camp catering to large numbers of youth. A territorial pair as well its roost and potential nest (adult was sitting in broken top snag but unable to observe young) were located at this site. The great gray owls forage in Leoni Meadows and nearby Gould Meadow (private); primarily on meadow voles.

A fifty-acre PAC (GGELD0002) was established for a territorial adult great gray owl detected in 2012 during spotted owl surveys in Tonys Gulch drainage. The owl may be foraging for voles in small wet areas as well as gophers in nearby plantations where foraging conditions are suitable.

Alternative Conclusion
Alternative One will have no effect from project activities on the great gray owl.

ALTERNATIVE TWO

Direct and indirect effects:
Table III.3 displays activities under Alternative Two that could affect great gray owl habitat in the project area. Effects to great gray owl habitat (4M/D and 5M/D) outside of PACs would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted HRCA acreage. Table V.4.2 displays great gray owl habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh.

Table V.4.2 –Great Gray Owl Habitat Acres in Trestle Project Alternative Two Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	423	3,086	0	614	4,123
% of Habitat Treated	31%	32%	0%	14%	27%

Standards and Guidelines in regards to LOPs for great gray owls also includes disturbance that could result from activities associated with roadwork. Design criteria under the Trestle Project avoid or minimize disturbance through the use of LOPs. Prescribed burning often does not take

place until several years after the project is sold and initiated, resulting in the timeframe to have expired for any data from initial project surveys regardless of the species to still be valid. Surveys would occur through implementation as required to provide valid information in accordance and as needed through survey protocols.

For great gray owls, additional assessment may be needed should they be detected utilizing the area in regards to preventing disturbance to their foraging areas (specific meadows and other openings providing their preferred prey base-voles and gophers). Studies in Yosemite showed that disturbance by approaching humans resulted in great gray owls (over 50% of the time) not returning to continue foraging in the meadow, (Van Riper et al. 2006, Wildman 1992). The study also mentions impacts from disturbance to hunting adults during the breeding season in specific meadows may potentially affect prey delivery to the mate, young, or ingestion of prey by the hunting adult if forced to abandon hunting grounds or alter foraging forays; though further studies are needed on this.

Restoration efforts along road 9N73A will enhance the meadow to condition where it could potentially become suitable to provide nesting habitat for future occupancy by great gray owls. Efforts to remove the fence, control invasive plants, remove disturbance and vegetation damage from vehicle use; hand remove encroaching seedlings and saplings; and creating natural nest structures will benefit future great gray owl use and current vole populations which is a preferred prey item.

Cumulative Effects

Refer to the Trestle EIS for a detailed list of projects considered for cumulative projects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads), reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands (timber harvest plans, road right of ways, and continued recreational and residential development). Alternative Two will not contribute to adverse cumulative effects on great gray owl in combination with any past, present, or reasonably foreseeable future projects based on no treatment in the WUI that overlaps suitable habitat for the only known roost/nest site for great gray owls on the Forest. Other cumulative effects are similar to those described for the spotted owl.

Alternative Conclusion

Alternative Two may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the great gray owl.

This determination is based upon the following factors:

- Two great gray owl Protected Activity Centers occur within the project area with incidental detections of great gray owls in the project boundary. A known roost/nest

stand occurs within one of the PACs and is the only known roost/nest stand on the forest. The other PAC has great gray owl presence but has not had its roost/nest located at the time this document was written. Treatment units occur adjacent to both PACs.

- Design criteria under the Trestle Project avoid or minimize disturbance through the use of LOPs.
- Treatment of understory brush and small diameter trees (less than 10" dbh) through prescribed burning as well as machine piling; especially in plantations will alter prey habitat (cover, forage and denning components), including that of the gopher, one of preferred prey species of the great gray owl. However, meadow and other riparian protection and restoration projects will benefit habitat for voles, another primary prey species.
- Prescribed fire may reduce canopy closures in specific commercial harvest units where post-harvest canopy closure is down to 50%.
- Hand and dozer lines for prescribed fire implementation may reduce habitat quality through site specific canopy reduction; green tree, snag and down log removal; prey alteration including potential fragmentation; and potential increase from encroachment and disturbance from dispersed recreation use including OHV use and campfire use (increased risk of fire).

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Four that could affect great gray owl habitat in the project area. Alternative Four was developed to aid in maintaining habitat components on the landscape for the California spotted owl. Alterations to harvest prescriptions in the majority of the units proposed under Alternative Four would primarily focus on understory trees contributing to fuel loading; and maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the spotted owl. Stands containing 4M, 4D, 5M or 5D habitat and having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory, will not be intentionally removing medium to large diameter trees; retaining the existing CWHR classification of these stands as they currently are classified.

Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. There are 308 acres of 5D (as compared to 614 acres in Alternative Two) having trees up to 29.9" removed within treatment units. There are 1,725 acres of 4D (compared to 3,086 acres under Alternative Two) and 271 in acres of 4M (423 acres under Alternative Two) being thinned.

Table V.4.3 displays great gray owl habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh. Effects to great gray owl habitat (CWHR 4M/D and 5M/D) outside of PACs would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted HRCA acreage. This alternative will serve to retain large diameter trees, dense canopy and reduce the risk of wildfire

by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

Table V.4.3 - Great Gray Owl Habitat Acres in Trestle Project Alternative Four Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	271	1,725	0	308	2,304
% of Habitat Treated	20%	18%	0%	7%	15%

Alternative Conclusion

Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the great gray owl.

This determination is based on the same factors provided under the Alternative Two Conclusion.

ALTERNATIVE FIVE

Direct, indirect and cumulative effects:

Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. The stands will be having understory trees removed to reduce fuel ladders within the understory. The unit treatments are focusing on thinning trees 4-12" dbh. These size trees will be able to re-establish in the understory, conditions permitting within a few years and contribute to a multi-story stand. The remaining acres within units containing 4M, 4D, 5M or 5D habitat, will not be intentionally removing medium to large diameter trees; retaining the existing CWHR classification of these stands as they currently are classified.

Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. There are 387 acres of 5D (as compared to 614 acres in Alternative Two and 308 acres in Alternative Four) having trees up to 29.9" removed within treatment units. There are 2,487 acres of 4D (as compared to 3,086 acres under Alternative Two and 1,725 under Alternative Four) and 310 in acres of 4M (as compared to 423 acres under Alternative Two and 271 acres under Alternative Four) being thinned (Tables V.4.2 and V.4.4).

Table III.3 displays activities under Alternative Five that could affect great gray owl habitat in the project area. Table V.4.4 displays great gray owl habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh. Effects to great gray owl habitat (CWHR 4M/D and 5M/D) outside of PACs would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted HRCA acreage.

Table V.4.4 - Great Gray Owl Habitat Acres in Trestle Project Alternative Five Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	310	2,487	0	387	3,184
% of Habitat Treated	23%	26%	0%	9%	21%

This alternative will serve to retain large diameter trees, dense canopy and reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

Alternative Conclusion
Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the great gray owl.

This determination is based on the same factors provided under the Alternative Two Conclusion.

V.5 Pacific Fisher

ALTERNATIVE ONE (No Action)

Direct, indirect and cumulative effects:
The following describes the current condition, also known as the No Action Alternative. There are no activities related to this project, therefore, there will be no indirect or direct effects to Pacific fisher habitat. No activities related to fuels management, forest health, or road maintenance objectives would occur under this alternative. No habitat restoration projects for hardwood enhancement, riparian restoration; road closures, or noxious weed removal would occur under this project, leaving habitat conditions as they currently are in the short-term unless other opportunities arise to undertake these activities under other projects. Only pertinent current management practices such as fire suppression and public firewood cutting would take place in the project area at his time. The No Action Alternative is used as the baseline to measure effects of the action alternatives, and as such is assumed to have no direct, indirect, or cumulative effects associated with it.

Status
The Pacific fisher is designated as a sensitive species for the Eldorado National Forest. The SNFPA FEIS and FSEIS, Sierra Nevada Adaptive Monitoring Project-Appendix D and information from the USFWS Proposed Ruling for the Pacific Fisher summarize information for this species and are incorporated by reference (USDA Forest Service 2001: Vol.3, part 4.4, pages 2-6, USDA Forest Service 2004: Chapter 4, pgs. 242-253, Sweitzer et al. 2015a and 2015b, Federal Register 2014).

The SNFPA ROD standards and guidelines refer to the protection of den sites, and maintaining suitable habitat. There have been no known sightings of fisher within or adjacent to the project area, although specific surveys have not been conducted. Limited track plate surveys have occurred on the Placerville Ranger District with no detections in 1992, 1997, 2001, 2003, 2005 or 2011. All surveys have had negative results for fisher. In 2011, one of the survey plots occurred approximately 5 miles to the east of the Trestle Project boundary; however; no fisher was detected during the 2011 surveys as part of the Forest Carnivore Monitoring crew efforts (Hegg, S. 2011).

The Pacific Southwest research station conducted the majority of the work, in compliance with 1992/1993 Regional survey protocols, and surveyed sample points over a 10 km grid spacing aligned with National Forest Inventory vegetation sampling points across the forest (Zielinski et al. 1997). The sampling design for this survey effort was designed to provide information about regional distribution. Negative results of this survey provide further indication that fisher, if they occur on the Eldorado National Forest, are likely at very low densities. The nearest possible sighting (reported sighting was unconfirmed) was on the Georgetown Ranger District, over 50 miles away, in the Stumpy Meadows Reservoir area in 1995.

It has been conjectured that based upon the lack of recent sightings and results of limited systematic surveys, across the Sierra Nevada, that it is possible that fisher have been extirpated from the Sierra Nevada north of Yosemite National Park (Zielinski et al. 1997). The closest potential re-introduction site for fishers in the northern Sierra that was analyzed for minimal potential effects on marten was in central Placer/Nevada County (Zielinski et al. 2005b). In addition, the Davis et al. (2007) analysis of fisher survey data and habitat modeling, which included the Eldorado National Forest, displayed the absence of fisher. This may possibly be due to current low quality habitat in the northern and central Sierra Nevada (Davis et al. 2007).

Habitat

The current ENF LRMP as amended by the Sierra Nevada Framework has established old forest emphasis areas to address habitat for fisher and other old forest species, and more recent studies have provided additional information with which to evaluate the suitability of habitat for fisher (Zielinski et al. 2006). One of the goals of the old forest designation under the Sierra Nevada Framework is to "provide a network of large relatively contiguous landscapes distributed throughout the Sierra Nevada" (SNFP). The intent of this designation is to provide well-distributed habitat for old forest dependent species, such as the fisher over the long term.

Suitable habitat has been mapped for Pacific fisher on the forest. Key habitat areas are den sites and the surrounding 700 acres of best habitat. No key habitat has been identified on the Eldorado National Forest, as there have been no den sites located within the project or on the Forest. The presence of fisher is unlikely due to reasons mentioned above as well as high public use; high fragmentation; and high density of road areas; and private property comprised of urban development in the Trestle Project boundary. Riparian areas and ridges may provide movement areas for the fisher but also are heavily roaded and receive disturbance from a multitude of human users. In addition, both the USFWS Proposed Ruling (Federal Register 2014) and the Sierra Nevada Adaptive Management Project Appendix D: Fisher Team Final Report (Sweitzer et al 2015a) found that the two extant fisher populations occur in northwestern California and southern Sierra Nevada Mountains and not on the Eldorado National Forest.

As the project will not affect individuals since it is assumed that fisher do not occupy habitat in the central Sierra Nevada, the analysis for the Trestle Project will focus on habitat and not individuals. The analysis on habitat will focus on effects relative to future expansion and not based on any current occupancy.

Habitat characteristics for Pacific fisher has been defined for Region 5 based on a compilation of existing literature, knowledge of species experts, and current studies in the southern Sierra Nevada (Freel 1991, SNSR 1998, Lamberson et al. 2000, Sweitzer et al. 2015a and 2015b). Habitat for the fisher would also be similar to that described for the spotted owl.

A habitat network was mapped in 1994 on the Eldorado National Forest by identifying areas on the Forest that come closest to providing the amounts of mature forest habitat needed within potential fisher home range areas of 6,000 to 11,300 acres in size (USDA Forest Service 1994). This resulted in a total of 11 areas being mapped as potential "fisher use areas" (PFUAs). Potential Fisher Use Area (PFUA D), based on potential habitat, overlaps the project boundary. Movement corridors providing connectivity between PFUAs were then mapped using orthophotography. Movement corridors typically followed drainages and saddles. The widths of the corridors were 600 to 1,200 feet based on information in Freel (1991). The maps were created pre-Sierra Nevada framework and were utilized in analysis and management of potential fisher habitat before the completion of the Sierra Nevada Framework and Amendment (2001 and 2004). Since they are not currently utilized for management purposes, they currently do not require analysis.

Self and Kerns (2001 In USDA Forest Service 2001) found that fisher used stands having 25-40% canopy closure if there were some areas of high density canopy cover to provide for rest sites. Powell and Zielinski (1994 In USDA Forest Service 2001) suggested that habitat suitable for resting and denning sites (large trees and canopy cover of 80 to 90 percent) may be more limiting and that these habitats should be given more weight than foraging habitats when planning habitat management. Preferred resting, foraging, and denning habitat are generally characterized by older (>5M and 5D CWHR types), mesic, mixed conifer stands bordering riparian habitat. Canopy closure over 60% is important for the species, and fisher preferentially select home ranges to include high proportions of dense forested habitat (Zielinski et al. 2005a, Mazzoni 2002 In USDA Forest Service 2004), however, home ranges also included significant amounts (32-67%) of habitat with less than 50% canopy cover. Fisher generally avoided open habitats with no overstory or shrub cover (Buskirk and Powell 1994 In USDA Forest Service 2001).

Hardwoods

Fisher also utilize black oak habitat. Studies on home range characteristics in the southern Sierra Nevada showed that roughly 19% of the fisher's home range consisted of CWHR Montane Hardwood or Montane Hardwood Conifer types and that black oak may provide habitat components (cover and food) for female fishers, allowing them to utilize smaller home ranges

(Zielinski et al. 2004). Resting structures for fisher in the southern Sierra Nevada also occurred in large diameter black oak (Zielinski et al. 2006). Green (2007) found montane hardwood use by fisher, with this habitat type bordering chaparral or having extensive shrub cover in the understory. The study sites in the Sequoia and Kings Canyon National Parks also had a large proportion of sites with detections that contained a hardwood component (78%) and bordering a stream (78%), (Green 2007).

The SNFPA ROD provides hardwood management goals for species that utilize these habitat types as follows:

Goals for lower Westside forest ecosystems include establishing and maintaining (SNFP ROD page 35):
1. A diversity of structural and seral conditions in landscapes in proportions that are ecologically sustainable at the watershed scale.
2. Sufficient regeneration and recruitment of young hardwood ecosystems over time to replace mortality of older trees; and
3. Sufficient quality and quantity of hardwood ecosystems to provide important habitat elements for wildlife and native plant species.

Hardwood management direction that is pertinent to this project includes (SNFP ROD page 53):
1. Where possible, create openings around existing California black oak and canyon live oak to stimulate natural regeneration.
2. Manage hardwood ecosystems for a diversity of hardwood tree size classes within a stand such that seedlings, saplings, and pole-sized trees are sufficiently abundant to replace large trees that die.
3. Retain the mix of mast-producing species where they exist within a stand.
4. When planning prescribed fire or mechanical treatments in hardwood ecosystems: (1) consider the risk of noxious weed spread and (2) minimize impacts to hardwood ecosystem structure and biodiversity.
5. During mechanical vegetation treatments, prescribed fire, and salvage operations, retain all large hardwoods on the Westside except where: (1) large trees pose an immediate threat to human life or property or (2) losses of large trees are incurred due to prescribed or wildland fire. Large montane hardwoods are trees with a dbh of 12 inches or greater. Allow removal of larger hardwood trees (up to 20 inches dbh) if research supports the need to remove larger trees to maintain and enhance the hardwood stand.
6. Include hardwoods in stand examinations. Encourage hardwoods in plantations. Promote hardwoods after stand-replacing events. Retain buffers around existing hardwood trees by not planting conifers within 20 feet of the edge of hardwood tree crowns.

In addition to SNFP ROD goals and directions for hardwoods, an unpublished paper by Carrothers and MacFarlane (USDA Forest Service 2007) titled "Lessons Learned Regarding

Fisher Habitat Maintenance and Development" provided additional information in regards to fisher and hardwoods. "When the objective is to maintain the dark, closed canopy around a medium or large oak, retention of the smaller, competing trees may be warranted. Favored rest and den trees are utilized not just for the potential access to cavities they provide, but also by the high density of surrounding, adjacent trees. There may be something about the microsite that any removal of adjacent structure may render that oak less attractive for resting or denning. In addition, there is anecdotal evidence to suggest that female fisher may use these nearby trees to access the den tree so as to avoid leaving a direct scent trail to the den cavity, further reason to give full consideration to which oak management objective is appropriate at your particular site."

The GTR mentions that balance is needed when considering thinning around large cavitory oaks that currently are shaded by conifers. By removing shading, the oak may survive longer; but by removing the shading any rest structure habitat value for fisher may be eliminated. Researchers recommend that if several cavitory oaks exist within a stand, some may be targeted for conifer thinning whereas some are left as is to retain value as rest structures (North et al. 2009).

Road Density

Fisher also preferred areas with road densities less than one-half mile per square mile (USDA Forest Service 2001). The project area has a high level of road and trails and closures of these will aid in reducing density across the landscape. There is also a designated Off-Highway Vehicle Recreation Area (Elkins Flat), primarily within the Trestle boundary that is comprised of 69 miles of managed dirt trails and roads primarily for the use of off-road motorcycles (USDA Forest Service 2015b). Undesignated OHV routes also occur across the landscape and the number is difficult to determine accurately as user created routes can appear randomly on a given day and persist on the landscape until management opportunities are able to blend them back into the environment.

Suitable Habitat within the Project

Using the 2005 Forest Vegetation Inventory data and modeling of fisher habitat using CWHR, Table V.5.1 displays fisher habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh. The analysis of effects is based upon habitat provided by NFS lands only. No attempts to correct the habitat condition attributes on private lands were made.

Table V.5.1 - Fisher CWHR 4M, 4D, 5M, 5D Habitat in the Trestle Project Boundary

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total
Forest Service	1,343	9,537	14	4,547	15,441
Private	182	644	0	64	890
Project Boundary	1,525	10,181	14	4,611	16,331

Alternative Conclusion

Alternative One will have no effect from project activities on the Pacific fisher and therefore no consultation with the USFWS is required.

ALTERNATIVE TWO

Direct and indirect effects:

The effects on fisher habitat from treatments following the SNFPA standards and guidelines are analyzed in the SNFPA FEIS and FSEIS and that analysis is incorporated by reference (USDA Forest Service 2001: Chapter 3, part 4.4, pgs. 6-18, USDA Forest Service 2004: Chapter 4, pgs. 242-253). Table III.3 displays activities under Alternative Two that could affect fisher habitat in the project area. Additional effects of treatments on fisher habitat, is described previously under the spotted owl section as the species use similar habitat.

Hardwood stands and individual trees will be protected during project thinning implementation. Hardwoods will not be removed, except for hardwoods that are hazards to public and forest worker safety. Enhancement of oaks along ridgetops and protection and restoration of riparian areas contribute to improvement of potential movement corridors for the fisher. Understory thinning will increase the vigor of residual trees and may provide future benefits to the fisher by increasing the amount of canopy cover provided by large trees. The proposed conifer thinning will not affect large hardwoods, and may actually improve conditions around scattered individual oaks by reducing competition and increasing the hardwood component within the stands. An exception would be thinning around cavitory hardwoods which could degrade potential denning habitat for fisher by removal of security cover and access routes to the cavity. Marking guidelines have incorporated retaining conifers around cavitory oaks which will minimize impacts to these habitat features. The development of sustainable habitat with a larger hardwood component in Alternative Two could better improve habitats for recovery efforts in the future for fisher in regards to black oak.

Prescribed burning may result in some consumption of down logs. The use of ignition techniques to reduce effects to large down logs that could provide hiding cover or den sites will be incorporated into the burn plan. In general, burning within these mature and late-seral stands would decrease the risk of losing the stands to wildfire through reduced ground and ladder fuels, and the restoration of fire as a natural process in the ecosystem. This addresses one of the threats to the continued existence of the fisher in the Sierra Nevada (Lamberson et al. 2000).

Table III.3 displays activities under Alternative Two that could affect fisher habitat in the project area. Table V.5.2 displays fisher habitat (CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh.

Table V.5.2 - Fisher Habitat Acres in Trestle Project Alternative Two Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	423	3,086	0	614	4,123
% of Habitat Treated	31%	32%	0%	14%	27%

Cumulative Effects:
Refer to the Trestle EIS for detailed list of projects considered for cumulative projects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads), reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands (timber harvest plans, road right of ways, and continued recreational and residential development).

Habitat for fisher overlaps that mentioned for the spotted owl. Habitat effects across the landscape in the project boundary as well as cumulative effects to fisher habitat (CWHR 4M, 4D, 5M, and 5D) would be the same as described for the spotted owl as the two species utilize similar habitat.

Risk factors to the continued existence of fisher in the Sierra Nevada include the risk of habitat loss through catastrophic fire and habitat fragmentation impeding movement and re-colonization (SNSR 1998, Lamberson et al. 2000, Sweitzer et al. 2015a and 2015b). Past management activities such as historic fire salvage, clearcutting and overstory removal in the Trestle Project cumulative effects analysis area, likely negatively impacted habitat for the fisher. Habitat alteration is listed as one of the factors that have led to the possible extirpation of fisher in the central Sierra (USDA Forest Service 2001). The main forest roads through the area may also have impacted fisher by removing habitat, creating openings, and providing access for disturbance from dispersed recreation.

Some of the higher quality habitat for fisher occurs within spotted owl PACs and northern goshawk PACs that are dispersed throughout the cumulative effects analysis area, and do not have any proposed project activities that will result in significant vegetative changes or reduced habitat quality. These areas will have prescribed burning so reduction of ground cover, understory, existing snags, down logs, and mature oaks may be reduced or removed in localized areas.

The importance of protecting mature forest conditions from loss as a result of wildfire is exacerbated for fisher, as they are known to avoid open canopy areas. It could be over 100 years to re-develop quality habitat for this species should habitat be lost from fire. Alternative Two will augment the other fuels reduction activities that have occurred within the cumulative effects analysis area in establishing prescribed burning treatments to reduce the risk of habitat loss from wildfire.

Alternative Conclusion
Alternative Two may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the Pacific fisher.

This determination is based upon the following factors:

- There is low risk of disturbance to fisher, as the species is believed to be extirpated from the Forest.
- Alternative Two utilizes harvest prescriptions consistent with the SNFPA guidelines. By potentially reducing wildfire through thinning and fuels treatments, it is expected to make habitat more sustainable over time.
- An increase of hardwoods within stands will improve habitat for fisher, in regards to black oak in relation to denning, nesting and prey habitat.
- Improvement of riparian habitat will improve travel corridors and prey habitat.
- Reduction in road density and improved management of vehicle travel and/or dispersed recreation use will reduce disturbance, as well as mortality from vehicles.
- Habitat components in the form of large trees, canopy, down logs, snags and hardwoods are being maintained and/or enhanced for continued persistence of fisher habitat on the landscape should future expansion or relocation efforts occur.

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Alternative Four was developed to aid in maintaining habitat components on the landscape for the California spotted owl. Effects to fisher habitat (4M/D and 5M/D) would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted PAC and HRCA acreage. Alterations to harvest prescriptions in the majority of the units proposed under Alternative Four would primarily focus on understory trees contributing to fuel loading; and maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the fisher.

Stands containing CWHR 4M, 4D, 5M or 5D habitat and having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory, will not be intentionally removing medium to large diameter trees; retaining the integrity of the existing CWHR classification of these stands as they currently are classified. This alternative will serve to retain large diameter trees, dense canopy and reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

Table III.3 displays activities under Alternative Four that could affect fisher habitat in the project area. Table V.5.3 displays fisher habitat (defined as CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have thinning prescriptions up to 29.9" dbh.

Table V.5.3 - Fisher Habitat Acres in Trestle Project Alternative Four Commercial Thinning Units

CWHR Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	271	1,725	0	308	2,304
% of Habitat Treated	20%	18%	0%	7%	15%

Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. There are 308 acres of 5D (as compared to 614 acres in Alternative Two) having trees up to 29.9" removed within treatment units. There are 1,725 acres of 4D (compared to 3,086 acres under Alternative Two) and 271 in acres of 4M (423 acres under Alternative Two) being thinned.

Alternative Conclusion

Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the Pacific fisher.

This determination is based on the same factors provided under the Alternative Two Conclusion.

ALTERNATIVE FIVE

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Five that could affect fisher habitat in the project area. Effects to fisher habitat (4M/D and 5M/D) would be similar to spotted owls as the majority of this habitat type across the landscape falls within spotted PAC and HRCA acreage. The unit treatments are focusing on thinning trees 4-12" in dbh in a large portion of the units. These stands will be having understory trees removed to reduce fuel ladders within the understory. These size trees will be able to re-establish in the understory, conditions permitting within a few years and contribute to a multi-story stand.

Stands containing 4M, 4D, 5M or 5D habitat and having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory, will not be intentionally removing medium to large diameter trees; retaining the integrity of the existing CWHR classification of these stands as they currently are classified. This alternative will serve to retain large diameter trees, dense canopy and reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands.

Table V.5.4 displays fisher habitat (defined as CWHR 4M, 4D, 5M and 5D types) that occurs in project units that have thinning prescriptions up to 29.9" dbh.

Table V.5.4 - Fisher Habitat Acres in Trestle Project Alternative Five Commercial Thinning Units

Habitat	4M Acres	4D Acres	5M Acres	5D Acres	Total Suitable Habitat
FS acres in Boundary	1,343	9,537	14	4,547	15,441
Acres in Units	310	2,487	0	387	3,184
% of Habitat Treated	23%	26%	0%	9%	21%

Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. There are 387 acres of 5D (as compared to 614 acres in Alternative Two and 308 acres in Alternative Four) having trees up to 29.9" removed within treatment units. There are 2,487 acres of 4D (as compared to 3,086 acres under Alternative Two and 1,725 under

Alternative Four) and 310 in acres of 4M (as compared to 423 acres under Alternative Two and 271 acres under Alternative Four) being thinned (Tables V.5.2 and V.5.4).

Alternative Conclusion
Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the Pacific fisher.

This determination is based on the same factors provided under the Alternative Two Conclusion.

V.6 Pallid Bat, Townsend's Big-Eared Bat and Fringe-tailed Bat

ALTERNATIVE ONE (No Action)

Direct, indirect and cumulative effects:
The following describes the current condition, also known as the No Action Alternative. There are no activities related to this project, therefore, there will be no indirect or direct effects to pallid, big-eared Townsend's or fringed-tailed bats or their habitat. No activities related to fuels management, forest health, or road maintenance objectives would occur under this alternative. No habitat restoration projects for hardwood enhancement, riparian restoration; road closures, or noxious weed removal would occur under this project, leaving habitat conditions as they currently are in the short-term unless other opportunities arise to undertake these activities under other projects. Only pertinent current management practices such as fire suppression and public firewood cutting would take place in the project area at his time. The No Action Alternative is used as the baseline to measure effects of the action alternatives, and as such is assumed to have no direct, indirect, or cumulative effects associated with it.

Status and Habitat
The pallid, big-eared Townsend's and fringed-tailed-bats are designated as sensitive species for the Eldorado National Forest. No species specific surveys for the three bat species have been conducted in the project area, and the distribution of these species on the Forest is unknown with the exception of 2001 and 2002 bat inventories conducted by the Sierra Nevada Framework monitoring crew, recent abandoned mine surveys on the Forest (2010-2012), and incidental sightings during spotted owl surveys (2012). No Townsend's big-eared bats were captured or observed during any of the survey efforts or incidental sighting detections.

Protective closures; typically, in the form of gates, enhance bat habitat and aid in public safety when abandoned mines are closed. Mine workings, particularly adits and shafts provide roosting habitat for a variety of species throughout the year or during portions of the year. Mine surveys in 2010, at Artic Mine, in the project boundary, detected two individual bats but identification could not be verified. Based on suitable bat habitat and occupancy this feature was fitted with a bat friendly gate to maintain current bat species and provide habitat for other bat species that may find the protected site suitable for roosting. Mine surveys in 2011, within ½ mile west of Henrys Diggins, outside the project boundary, detected two species - big brown and *California*

myotis. As these areas provide suitable bat habitat based on occupancy by bats; it could also serve as potential roost habitat for fringe-tailed, pallid and Townsend's big-eared bats. Pallid bats have been captured in mist nets along the Silver Fork of the American River as a result of monitoring efforts on a different part of the Forest. They have also been observed flying in the Trestle Project during spotted owl surveys east of Tony's Gulch, within Sierran mixed conifer habitat with large black oaks (Yasuda, pers. observ. 2012).

- ***Pallid Bat***

Throughout California, the pallid bat is usually found in low to middle elevation habitats below 6,000 feet (Philpott 1997); however, the species has been found up to 10,000 in the Sierra Nevada (Sherwin 1998). Pallid bats are most common in open, dry habitats that contain rocky areas for roosting. They are a yearlong resident in most of their range and hibernate in winter near their summer roost (Zeiner et al. 1990). Day roosts may vary but are commonly found in rock crevices, tree hollows, mines, caves and a variety of human-made structures. Tree roosting has been documented in large conifer snags, inside basal hollows of redwoods and sequoias, and bole cavities in oaks (Sherwin 1998).

There is a strong association with roosting in black oak cavities (Pierson 1996) for pallid bats. Maternal roosts are typically colonies (usually between 20 to several hundred individuals). Breeding occurs between May and July, with young weaned in mid-late August (Sherwin 1998 In USDA Forest Service 2008) and maternity colonies breaking up by mid-October (Barbour and Davis 1969 In USDA Forest Service 2008). Little is known about the winter habits of this species although it is thought to winter near the summer roost sites (Ibid). Pallid bats forage near and at ground level. Pallid bats are known to feed predominately on ground-dwelling arthropods, such as scorpions and Jerusalem crickets (USDA Forest Service 2001). Foraging occurs over open ground, where pallid bats are more often found along edges and open stands, particularly hardwoods (USDA Forest Service 2001).

- ***Townsend's Big-Eared Bat***

The Townsend's big-eared bat occurs throughout the west, and is distributed from the southern portion of British Columbia south along the Pacific Coast to central Mexico and east into the Great Plains (Sherwin in USDA 2008). In California, the species is typically found in low desert to mid elevation montane habitats, although sightings have been reported up to 10,800 feet (Philpott 1997, Sherwin 1998 In USDA Forest Service 2008). Habitat associations include desert, native prairies, coniferous forests, mid-elevational mixed conifer, mixed hardwood-conifer forests, riparian communities, active agricultural areas and coastal habitat types (Kunz and Martin 1982, Brown 1996, Sherwin 1998 In USDA 2008). Populations have incurred serious declines over the past 40 years in parts of California (Brown 1996 In USDA 2008).

Foraging usually begins well after dark (Kunz and Martin 1982 In USDA 2008). Foraging associations include edge habitats along streams and areas adjacent to and within a variety of wooded habitats (Sherwin 1998 In USDA 2008). In California, the species is shown to forage

preferentially in association with native vegetation (Brown 1996 In USDA Forest Service 2008). Flight is slow and maneuverable, with the species capable of hovering (Zeiner et al. 1990) and gleaning insects off foliage (Brown 1996 In USDA Forest Service 2005). The Townsend's big-eared bat is a moth specialist, with over 90% of its diet composed of lepidopterans (Sherwin 1998 In USDA 2008).

- ***Fringe-Tailed bat***

The species was added to the sensitive species list for Region 5 in 2013 and as such has not had specific management direction associated with it at this time. The following information on this species is taken from the 2013 Angerer and Pierson species account (USDA Forest Service 2013). In California, the species is found throughout the state, from the coast to greater than 5,900 feet in elevation in the Sierra Nevada. The species occurs in open habitats with nearby dry forest and open water (Keinath 2004 In Angerer and Pierson 2013). It occurs in pinyon-juniper, valley foothill, hardwood, and hardwood-conifer habitats. The species has been documented from mist net captures, utilizing secondary streams. Roosts utilized are crevices in rocks, cliffs, buildings, underground mines, bridges and large decadent trees (Weller 2005 In Angerer and Pierson 2013).

The fringe-tailed bat may migrate short distances to lower elevations; however; winter records show it does not migrate long distances and may also become active intermittently in CA, during winter months (O'Farrell and Studier 1980 In Angerer and Pierson 2013). The species primarily forages on beetles but will also eat other flying insects.

Mating occurs in the fall after maternity colonies have dissolved. Nursery colonies are formed mainly in early to mid-decay stage large diameter snags from 23" to 66" dbh (Weller and Zabel 2001 In Angerer and Pierson 2013). May to July, primarily the later end of the season in California, is when young are born.

Suitable Habitat in the Project Area

Hardwoods in the form of individual trees and scattered clumps occur within the project area. Bridges, mines, rock features, and scattered historical and current-use wooden buildings in the project area also provide potential habitat. All three bat species are assumed to be present based on suitable habitat provided by mines, riparian habitat, black oak, structures, and large snags in the area. Riparian Conservation Areas (RCAs) containing snags, black oaks and open water also occur within the project area.

There are 165 acres of montane hardwood comprised of (145 acres NF, 20 acres private), and 374 acres of montane hardwood conifer habitat (347 acres NF, 27 private) for a total of 539 acres (492 NF, 47 private) of oak-associated hardwoods and hardwood/conifer typed out as CWHR MHC/MHW habitats within the project boundary. Oaks also occur within stands designated as Sierran Mixed Conifer (SMC).

Using the 2005 Forest Vegetation Inventory data, Table V.6.1 displays areas of potential roosting and foraging habitat acres within the project boundary. Additional areas within the project area, not displayed in the table, may serve as foraging habitat dependent on shrub cover and associated invertebrate prey base. For this project, 4D and 5D CWHR categories weren't considered as roosting, (though they provide trees large enough to accommodate roosting bats) based on the 60-100% canopy closure which may impede a black oak component which is favored by the pallid, fringe-tailed and Townsend's big-eared bats for roosting.

Table V.6.1 – CWHR Habitat Acres for Pallid, Townsend's Big-Eared and Fringe-tailed Bats in Trestle Project Boundary

CWHR Habitat	Roosting Acres 4M, 4P, 5M, 5P*	Foraging Acres 3M, 3P, 3S, 2P, 2S, 2X, 1X	Total Habitat Acres
Forest Service	1,679	2,092	3,771
Private	214	199	413
Project Boundary	1,893	2,291	4,184

Alternative Conclusion

Alternative One will have no effect from project activities on the pallid bat, Townsend's big-eared bat or the fringed-tailed bat.

ALTERNATIVE TWO

Direct and indirect effects:

Table III.3 displays activities under Alternative Two that could affect bat habitat in the project area. Activities associated with Alternative Two may disturb individuals that could be roosting in hardwoods, snags, or mines within or adjacent to treatment units. Snags are not being targeted for removal, unless they are a hazard, reducing this risk to localized areas. The average snags per acre are three based on stand exams (2014 Silvicultural Report), and loss of more late decay snags would reduce this habitat element further on the landscape. However; recent insect mortality; particularly in 2015 and 2016, has increased the number of early decay snags across the landscape. Live and dead black oaks are thought to provide important roosting sites for the pallid bat (USDA Forest Service 2001) and oaks along with cavities in conifers, will aid in providing habitat for all three bat species.

There are 57 acres of CWHR MHC and 19 acres of CWHR MHW for a combined total of 76 acres of hardwood habitat in treatment units. Acres have been rounded up for this analysis. Large diameter conifer removal around oaks will be less under this alternative than other alternatives as thinning prescriptions are under 12" dbh. Alternative effects to oaks will primarily come from prescribed burning.

Acres within units that overlap RCAs are variable due to noncontiguous deciduous tree component, however, RCA objectives will aid in protecting roosting and foraging habitat for all three species. Roosting and maternity sites in mines, caves and old buildings will be protected

through mitigations that protect heritage resources and abandoned mine improvements as applicable for bat species.

Since prescribed burns occur during the day, they could cause displacement of bats and possibly increase risk of mortality due to predation and exposure. Smoke from prescribed burning may disturb and displace roosting bats during active burning (Dickinson et al. 2010). The health effects of smoke on bats are unknown, but the duration, intensity and frequency of exposure from this project is not expected to be substantial. Design criteria for Artic Mine and prescribed burning will aid in reducing or avoiding impacts to known roosting populations of bats within this mine. Artic Mine has been recently retrofitted with a bat gate as part of the Forest's abandoned mine closure program.

Prescribed burning and understory thinning may improve foraging habitat for bats by removing "clutter" that can impair echolocation. A dense understory has more structure to bounce sound off thereby masking prey species. A thinned understory would have less "clutter" and would improve foraging conditions for bats. Removing small trees between the ground and 8 feet may allow access to additional foraging areas within the project, which will improve foraging opportunities over the short and long term, provided prey habitat is maintained or enhanced (i.e. shrubs, herbaceous growth).

Understory thinning adjacent to individual roost sites may change the microclimate around individual roost trees. The effect of understory thinning and prescribed burning on favored prey species is unknown. There may be short term effects on prey availability in treatment areas, particularly where shrubs are removed. Leaving pockets of untreated areas and prescribed burning with a mosaic pattern allowing unburned islands to remain will reduce this effect. Timing of brush treatments may impact larvae preferred by Townsend's big-eared bats, particularly in May and June when large quantities were observed during spotted owl surveys, throughout the project area in shrub habitat; including alongside roadways (Yasuda 2012 and 2013, pers. observation).

Table III.3 displays activities under Alternative Two that could affect bat habitat in the project area. Table V.6.2 displays bat habitat that occurs in project units that have commercial thinning prescriptions up to 29.9" dbh.

Table V.6.2 –Pallid Bat, Townsend's Big-Eared Bat, and Fringe-tailed Bat Habitat Acres in Trestle Project Alternative Two Commercial Thinning Units

CWHR Habitat	Roosting Acres 4M, 4P, 5M, 5P*	Foraging Acres 3M, 3P, 3S, 2P, 2S, 2X,1X	Total Habitat Acres
FS Acres in Boundary	1,679	2,092	3,771
Acres in Units	471	535	1,006
% of Habitat Affected	28%	26%	27%

*For this project, 4D and 5D CWHR categories weren't considered as roosting based on the 60-100% canopy closure which may impede a black oak component which is favored by the pallid and Townsend's big-eared bat for roosting.

Cumulative Effects:
Refer to the Trestle EIS for detailed list of projects considered for cumulative effects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads), reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands (timber harvest plans, road right of ways, and continued recreational and residential development).

Given the changes in forest vegetation that have been described within the Sierra Nevada over the last 100 years, it is likely that there are less mature hardwoods and denser conifer vegetative conditions between 0 and 8 feet high within mid-elevation stands than there were historically. This would suggest a historic reduction in foraging habitat availability and quality. It is unclear what the cumulative effect of past actions may have been on sensitive bat species in the Trestle Project analysis area; particularly past insect salvage sales.

Timber harvest may have removed existing and future snags that could have been utilized by bats for roosting, and may have also opened the understory up for foraging opportunities, as well as reducing the risk of habitat loss from wildfire. Forest openings may have benefited bats as they are found foraging more often in edges and open stands. This and other projects in the area with the primary prescription of understory thinning and prescribed burning will likely improve habitat across the landscape for bats by improving foraging opportunities, provided adequate prey habitat (shrubs, etc.) and roosting habitat (snags, mature oaks) are retained. The reduction in risk of future wildfires, promotion of future hardwood habitat, and maintenance of open understory over the long term meets several of the conservation measures suggested for bats in the SNFPA (USDA Forest Service 2004).

Alternative Conclusion
Alternative Two may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the pallid bat, Townsend's big-eared bat or the fringe-tailed bat.

This determination is based upon the following factors:

- Alternative Two utilizes harvest prescriptions consistent with the SNFPA guidelines. By potentially reducing wildfire through thinning and fuels treatments, it is expected to make habitat more sustainable over time.
- Alternative Two maintains habitat characteristics believed to be important for the pallid bat, Townsend's big-eared bat and fringe-tailed bat. Prescriptions in Alternative Two are designed to retain and improve the current and future number of large diameter trees, as well as enhance and protect riparian corridors.

- Treatment of understory brush through prescribed burning as well as piling will alter invertebrate prey habitat (host plants), primarily that of lepidopterans for Townsend's big-eared bat.
- An increase of hardwoods within stands will improve habitat, primarily pallid bat and fringe-tailed bat, in regards to black oak improvement.
- Closure of roads utilized by bats as flight paths for foraging will decrease potential vehicle strikes and increase prey habitat as road beds become established with shrubs and other vegetation.
- Timber harvest and smoke from prescribed burning may result in disturbance or temporary displacement of bats roosting in stands.
- Hand and dozer lines for prescribed fire implementation may reduce habitat quality through site specific green tree, snag and down log removal; prey alteration including potential habitat fragmentation; and potential increase from encroachment and disturbance from dispersed recreation use including OHV use and campfire use (increased risk of fire).
- Hazard tree removal will reduce late decay snag levels.

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Four that could affect bat habitat in the project area. Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Alternative Four was developed to aid in maintaining habitat components on the landscape for the California spotted owl. Alterations to harvest prescriptions in the majority of the units proposed under Alternative Four would primarily focus on understory trees contributing to fuel loading; and maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the spotted owl.

There is a combined total of 58 acres of hardwood habitat in treatment units. Numbers have been rounded up for this analysis. Thinning prescriptions under Alternative Two include areas that receive both thinning up to 12" dbh and thinning up to 29.9" dbh. Thinning of conifers in association with hardwood communities will reduce competition for resources particularly in areas of heavy conifer encroachment. Alternative Four enhances hardwoods less than Alternatives Two and Five. Prescribed burning acres are similar resulting in effects mentioned under Alternative Two.

This alternative will have a large portion of the treatment units having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory. This alternative will serve to retain large diameter trees which will serve as future recruitment snags. It will also reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy snags and live trees in the stands. The removal of dense understory tree thickets will also enhance foraging for bats by removing "clutter" that may

interfere with their foraging attempts. Table V.6.3 displays habitat within treatment units for the pallid, Townsend's big-eared and fringe-tailed bat species.

Table V.6.3 – Pallid Bat, Townsend's Big-Eared Bat, and Fringe-tailed Bat Habitat Acres in Trestle Project Alternative Four Commercial Thinning Units

CWHR Habitat	Roosting Acres 4M, 4P, 5M, 5P*	Foraging Acres 3M, 3P, 3S, 2P, 2S, 2X,1X	Total Habitat Acres
FS Acres in Boundary	1,679	2,092	3,771
Acres in Units	311	404	715
% of Habitat Affected	19%	19%	19%

*For this project, 4D and 5D CWHR categories weren't considered as roosting based on the 60-100% canopy closure which may impede a black oak component which is favored by the pallid and Townsend's big-eared bat for roosting.

Alternative Conclusion

Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the pallid, Townsend's big-eared or fringed-tailed bat.

This determination is based on the same factors provided under the Alternative Two Conclusion.

ALTERNATIVE FIVE

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Five that could affect bat habitat in the project area. Table V.6.4 displays habitat within treatment units for the pallid, Townsend's big-eared and fringe-tailed bat species. Thinning prescriptions under Alternative Five include areas that receive both thinning up to 12" dbh and thinning up to 29.9" dbh. Thinning of conifers in association with hardwood communities will reduce competition for resources particularly in areas of heavy conifer encroachment. There is a combined total of 49 acres of hardwood habitat in treatment units. Numbers have been rounded up for this analysis.

Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Alternative Five enhances hardwoods less than Alternative Two but more than Alternative Four. Prescribed burning acres are similar resulting in effects mentioned under Alternative Two. Alterations to harvest prescriptions in the majority of the units proposed under Alternative Five would primarily focus on understory trees contributing to fuel loading; maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the spotted owl; and producing volume for an economically viable alternative as compared to Alternative Two.

This alternative will serve to retain large diameter trees which will serve as future recruitment snags. It will also reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy snags and live trees in the stands. The removal of dense understory tree thickets will also enhance foraging for bats by removing "clutter" that may interfere with their foraging attempts.

Table V.6.4– Pallid Bat, Townsend's Big-Eared Bat, and Fringe-tailed bat Habitat Acres in Trestle Project Alternative Five Commercial Thinning Units

CWHR Habitat	Roosting Acres 4M, 4P, 5M, 5P*	Foraging Acres 3M, 3P, 3S, 2P, 2S, 2X,1X	Total Habitat Acres
FS Acres in Boundary	1,679	2,092	3,771
Acres in Units	349	421	770
% of Habitat Affected	21%	20%	20%

*For this project, 4D and 5D CWHR categories weren't considered as roosting based on the 60-100% canopy closure which may impede a black oak component which is favored by the pallid and Townsend's big-eared bat for roosting.

Alternative Conclusion

Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the pallid, Townsend's big-eared or fringed-tailed bat.

This determination is based on the same factors provided under the Alternative Two Conclusion.

V.7 American Bald Eagle

ALTERNATIVE ONE (No Action)

Direct, indirect and cumulative effects:

The following describes the current condition, also known as the No Action Alternative. There are no activities related to this project, therefore, there will be no indirect or direct effects to bald eagle or their habitat. No activities related to fuels management, forest health, or road maintenance objectives would occur under this alternative. No habitat restoration projects for hardwood enhancement, riparian restoration; road closures, or noxious weed removal would occur under this project, leaving habitat conditions as they currently are in the short-term unless other opportunities arise to undertake these activities under other projects. Only pertinent current management practices such as fire suppression and public firewood cutting would take place in the project area at his time. The No Action Alternative is used as the baseline to measure effects of the action alternatives, and as such is assumed to have no direct, indirect, or cumulative effects associated with it.

Status

The American bald eagle is designated as a sensitive species for the Eldorado National Forest. There are no known bald eagle nests in the Trestle Project area. The closest nesting pair of bald eagles is over five miles north of the Trestle Project boundary, at Jenkinson Lake/Sly Park Reservoir. Jenkinson Lake is part of an annual mid-winter bald eagle count and also includes follow-up nest monitoring.

Habitat

Habitat relationships for the bald eagle are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial

vertebrates (CWHR 2005). The CWHR model was adjusted for the ENF by increasing the suitability of ponderosa pine, Jeffrey pine, montane hardwood-conifer and red fir types to be equivalent to similar stages in the Sierra mixed conifer and white fir vegetation types since this appeared to better represent documented habitat use on the ENF.

Suitable Habitat within the Project

Using the 2005 Forest Vegetation Inventory data, Table V.7.1 displays suitable bald eagle habitat acres found within the Trestle Project boundary.

Table V.7.1 - CWHR 4P, 4M, 5D, 5P and 5M Habitat for the Bald Eagle in the Trestle Project Boundary

CWHR Habitat	Size and Stage Class w/Moderate Suitability 4M, 4P, 5D	Size and Stage Class w/High Suitability 5M, 5P	Total Acres
Forest Service	6,172	54	6,226
Private	278	0	278
Project Boundary	6,450	54	6,504

Alternative Conclusion

Alternative One will have no effect from project activities on the American bald eagle.

ALTERNATIVE TWO

Direct and indirect effects:

Table III.3 displays activities under Alternative Two that could affect bald eagle habitat in the project area. The LRMP specifies that bald eagle populations will be monitored to determine use of available habitat and ensure that Plan direction has been followed. Direct counts and surveys, including winter survey reports coordinated with the State, are to occur annually at lakes and reservoirs with wintering or nesting bald eagles. There are no known eagle nests in the project area. However, should eagles occupy the area, they will be protected by the Eagle Act and appropriate mitigations to prevent disturbance will be put in place. Table V.7.2 displays high and moderate capability habitat within the Trestle treatment units.

Table V.7.2 - Bald Eagle Habitat Acres in Trestle Project Alternative Two Commercial Thinning Units

Habitat	Size and Stage Class w/ Moderate Suitability 4M, 4P, 5D	Size and Stage Class w/ High Suitability 5M, 5P	Total Acres
FS acres in Boundary	6,172	54	6,226
Acres in Units	1,085	0	1,085
% of Habitat Affected	18%	0%	17%

Cumulative Effects

Refer to the Trestle EIS for detailed list of projects considered for cumulative projects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads), reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands

(timber harvest plans, road right of ways, and continued recreational and residential development).

The project will not substantially contribute to adverse cumulative effects on bald eagle in combination with any past, present, or reasonably foreseeable future projects. Thinning prescriptions will not remove potential nest trees near waterways, based upon large diameter tree retentions, and will reduce future potential cumulative effects to the extent that the potential of a future large wildfire is reduced. Other cumulative effects are similar to those described for the spotted owl.

Alternative Conclusion

Alternative Two may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the American bald eagle.

This determination is based upon the following factors:

- No nests occur in or within 10 miles of the project area. There are no to low anticipated effects from project activities to bald eagles should they be wintering along the major streams and rivers.
- Alternative Two utilizes harvest prescriptions consistent with the SNFPA guidelines. By potentially reducing wildfire through thinning and fuels treatments, it is expected to make habitat more sustainable over time. This will aid in retaining large trees, as well as recruitment snags and down logs (from existing large green trees) reducing the impact on habitat quality in units receiving commercial treatments.
- Understory thinning will improve foraging habitat conditions by opening the overstocked stands (in units with these site conditions) sufficiently to allow flight through the stands for foraging bald eagles.
- Riparian restoration work, road closure work and other restoration work that will result in reduced sedimentation to fisheries will improve prey habitat for the bald eagle.
- Stand altering activities would occur adjacent to suitable wintering habitat, resulting in simplified canopy layers, and a short-term reduction in canopy closure from commercial harvest units.
- Prescribed fire may reduce canopy closures in specific treatment units where post-harvest canopy closure is down to 50%.
- Hand and dozer lines for prescribed fire implementation may reduce habitat quality through site specific canopy reduction; green tree, snag and down log removal; prey alteration including potential fragmentation; and potential increase from encroachment and disturbance from dispersed recreation use including OHV use; impacts to water quality from sedimentation and/or riparian habitat impacts; and campfire use (increased risk of fire).
- Hazard tree removal will remove existing large diameter late decay snags.

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Four that could affect bald eagle habitat in the project area. Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Alternative Four was developed to aid in maintaining habitat components on the landscape for the California spotted owl. Internal and external issues revolving on canopy closure needs for spotted owls resulted in this alternative being developed. Alterations to harvest prescriptions proposed under Alternative Four would primarily focus on understory trees contributing to fuel loading; and maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the bald eagle.

These units will be having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory. This alternative will serve to retain large diameter trees, and dense canopy. It will also reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands. Table V.7.3 displays the acres of bald eagle habitat within treatment units that could be effected by thinning.

Table V.7.3 - Bald Eagle Habitat Acres in Trestle Project Alternative Four Commercial Thinning Units

CWHR Habitat	Size and Stage Class w/ Moderate Suitability 4M, 4P, 5D	Size and Stage Class w/ High Suitability 5M, 5P	Total Acres
FS acres in Boundary	6,172	54	6,226
Acres in Units	617	0	617
% of Habitat Affected	10%	0%	10%

Alternative Conclusion

Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the American bald eagle.

This determination is based on the same factors provided under the Alternative Two Conclusion.

ALTERNATIVE FIVE

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Five that could affect bald eagle habitat in the project area. Alterations to harvest prescriptions proposed under Alternative Five as compared to Alternative Two would primarily focus on understory trees contributing to fuel loading; and maintaining more, larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the bald eagle.

These units will be having understory trees (4-12" dbh) removed to reduce fuel ladders within the understory. This alternative will serve to retain large diameter trees, and dense canopy. It

will also reduce the risk of wildfire by removing small diameter trees that may be contributing to ladder fuels; particularly adjacent to and near large diameter legacy trees in the stands. Table V.7.4 displays the acres of bald eagle habitat within treatment units that could be affected by thinning.

Table V.7.4 - Bald Eagle Habitat Acres in Trestle Project Alternative Five Commercial Thinning Units

Habitat	Size and Stage Class w/ Moderate Suitability 4M, 4P, 5D	Size and Stage Class w/ High Suitability 5M, 5P	Total Acres
FS acres in Boundary	6,172	54	6,226
Acres in Units	736	0	736
% of Habitat Affected	12%	0%	12%

Alternative Conclusion

Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the American bald eagle.

This determination is based on the same factors provided under the Alternative Two Conclusion.

V.8 Western Bumblebee

ALTERNATIVE ONE (No Action)

Direct, indirect and cumulative effects:

The following describes the current condition, also known as the No Action Alternative. There are no activities related to this project, therefore, there will be no indirect or direct effects to western bumblebee or their habitat. No activities related to fuels management, forest health, or road maintenance objectives would occur under this alternative. No habitat restoration projects for hardwood enhancement, riparian restoration; road closures, or noxious weed removal would occur under this project, leaving habitat conditions as they currently are in the short-term unless other opportunities arise to undertake these activities under other projects. Only pertinent current management practices such as fire suppression and public firewood cutting would take place in the project area at his time. The No Action Alternative is used as the baseline to measure effects of the action alternatives, and as such is assumed to have no direct, indirect, or cumulative effects associated with it.

Status

The western bumblebee was added to the Regional Forester's sensitive species list in 2013. The Region 5 Biological Evaluation Template for western bumblebee *(Bombus occidentalis)* provides a species account for the species of which information is included here (USDA Forest Service 2013b). *Bombus occidentalis* currently occurs in all states adjacent to California. Historically, the species was broadly distributed across western North America along the Pacific Coast and westward from Alaska to the Colorado Rocky Mountains (Thorp and Shepard 2005, Koch et al. 2012). Historically, *B. occidentalis* was one of the most broadly distributed bumble bee species

in North America (Cameron et al. 2011). Currently, the western bumble bee is experiencing severe declines in distribution and abundance due to a variety of factors including diseases and loss of genetic diversity (Tommasi et al. 2004, Cameron et al. 2011, and Koch et al. 2012).

There are 94 collection records for the western bumble bee *Bombus occidentalis* on 11 national forests of the PSW Region, in California (Hatfield 2012): The Angeles (one record), Eldorado (2), Klamath (15), Lake Tahoe Basin Management Unit (7), Lassen (8), Modoc (3), Plumas (21), Sequoia (1), Shasta-Trinity (25), Six Rivers (5) and Tahoe (6). There are only three collection records from national forest lands since 2000: two are on the Plumas, and one is on the Lake Tahoe Basin Management Unit.

Habitat

Queens overwinter in the ground in abandoned rodent (i.e. mouse, chipmunk or vole) nests at depths from 6-18 inches and typically emerge about mid-March. The queen then lays fertilized eggs and nurtures a new generation. She first creates a thimble-sized and shaped wax honey pot, which she provisions with nectar-moistened pollen for 8-10 individual first-generation workers when they hatch. The larvae will receive all of the proteins, fats, vitamins and minerals necessary for growth and normal development from pollen. Eventually all the larvae will spin a silk cocoon and pupate in the honey pot. The workers that emerge will begin foraging and provisioning new honey pots as they are created to accommodate additional recruits to the colony. Individuals emerging from fertilized eggs will become workers that reach peak abundance during July and August.

Foraging individuals are largely absent by the end of September. Those that emerge from unfertilized eggs become males, which do not forage and only serve the function of reproducing with newly emerged queens. During the season, a range of 50 to hundreds of individuals may be produced depending on the quantity and quality of flowers available. When the colony no longer produces workers, the old queen will eventually die and newly emerged queens will mate with males and then disperse to found new colonies. During this extended flight that may last for up to two weeks she may make several stops to examine the ground for a suitable burrow.

Unlike all other bees, bumble bees are large enough to be capable of thermoregulation, which allow them to maintain their foraging activities for longer periods of the day, but also to occupy regions with more extreme latitudes and temperatures compared to other bees (Heinrich 1979). Bumble bees may continue to forage when temperatures are below freezing even in inclement weather (Heinrich (1979). Queens end the year by locating a sheltering burrow, where they may spend the winter months under cover.

Western bumble bees have a short proboscis or tongue length relative to other co-occurring bumble bee species, which restricts nectar gathering to flowers with short corolla lengths and limits the variety of flower species it is able to exploit. Western bumble bees have been observed taking nectar from a variety of flowering plants, including *Aster* spp., *Brassica* spp., *Centaurea* spp., *Cimicifuga arizonica*, *Corydalis caseana*, *Chrysothamnus* spp., *Cirsium* spp., *Cosmos* spp.,

Dahlia spp., *Delphinium nuttallianum, Erica carnea, Erythronium grandiflorum, Foeniculum* spp., *Gaultheria shallon, Geranium* spp., *Gladiolus* spp., *Grindelia* spp., *Haplopappus* spp., *Hedysarum alpinum, Hypochoeris* spp., *Ipomopsis aggregata*, *Lathyrus* spp., *Linaria vulgaris, Lotus* spp., *Lupinus monticola, Mentha* spp., *Medicago* spp., *Melilotus* spp., *Mertensia ciliata, Monardella* spp., *Nama* spp., *Origanum* spp., *Orthocarpus* spp., *Pedicularis capitata, P. kanei,* and *P. langsdorfii, P. groenlandica, Penstemon procerus, Phacelia* spp., *Prunus* spp., *Raphanus* spp., *Rhododendron* spp., *Salix* spp., *Salvia* spp., *Solidago* spp., *Symphoricarpos* spp., *Tanacetum* spp., *Taraxacum* spp., *Trifolium dasyphyllum, Trichostema* spp., *Trifolium* spp. and *Zea* spp. (Evans et al. 2008).

Suitable Habitat within the Project
Suitable habitat occurs randomly within the project boundary where forage and nesting substrate occur.

Alternative Conclusion
Alternative One will have no effect from project activities on the western bumblebee.

ALTERNATIVE TWO
Direct and indirect effects:
Bumble bees need habitat for foraging (flowering plants), nesting, and overwintering (Hatfield et al. 2012). Protecting existing habitat and maintaining new habitat are immediate and productive steps in conserving bumble bees on the landscape (Hatfield et al. 2012). Table III.3 displays activities under Alternative Two that could affect bumblebee habitat in the project area.

"Bumble bee are threatened by many kinds of habitat alterations that may fragment or reduce the availability of flowers that produce the nectar and pollen they require, and decrease the number of abandoned rodent burrows that provide nest and hibernation sites for queens. The Pollinator Friendly document provided Best Management Practices (BMPs) for managing pollinators on Federal land with emphasis on providing habitat needs through:

- protecting, enhancing, or restoring wildflower-rich foraging habitat
- providing hive site locations and nest sites for native bees
- providing overwintering refuge

Pollinators need protection from severe weather and predators and require sites for nesting and roosting. Most bees overwinter in the nest. Cavity-nesting bumble bees provide an important exception, with queens needing soft humus, loose soil, or protected underground holes and tunnels within which to overwinter.

Site-specific prescriptions should be developed to enhance or protect the habitat elements necessary to successfully nest or overwinter. For example, deep-soil disturbance near nest sites should be minimized, shrubs with pithy or hollow stems should be planted/protected, dead limbs,

logs, and snags should be maintained whenever possible and some areas of bare soil for ground-nesting bees should be left.

BMPS for pollinators will aid in managing bumblebee habitat elements for long-term productivity. The Pollinator Friendly document provides six managed habitat categories (with associated BMPS) of which four apply to the Trestle Project:

- Forests: Thinning and understory shrub control
- Roadsides: Promoting native plant communities for pollinators
- Riparian areas: Maintaining forb diversity
- Wildlife openings: Managing to improve and sustain pollinator habitat

The following is taken from the Pollinator Friendly document as it applies to the Trestle Project.

Thinning and understory shrub control

Forest stands with understories of dense shrubs are poor habitat for pollinators. Forest stands with open canopies through which sunlight reaches the forest floor are beneficial for bees. To increase pollinator abundance and diversity:

- Evaluate stands for thinning and shrub control.
- Thin stands in a manner that minimizes wounding of residual trees and at appropriate times to reduce the risk of disease.
- Clean equipment to prevent movement of invasive species between sites.
- Roadsides along treatment blocks or stands infested with invasive plant species should be treated beforehand to minimize spread into the forest.
- Evaluate the site after restoration to determine if seeding of native plants beneficial to pollinators is needed.

Promoting Native Plant Communities along Roadsides for Pollinators

Roadsides can be managed to provide nectar, pollen, and nesting habitat for ground-nesting bees. Roadsides serve as corridors for movement between habitat patches for some pollinator species. Most bees prefer open habitats and benefit from some disturbance that prevents shrub and tree encroachment and maintains flowering herbaceous plants. To improve and increase pollinator abundance and diversity along roadsides:

- Select sections of roads with exposure to good sunlight for extended periods, accessibility, and ease of management. Some tree removal along roads to increase sunlight will favor both plant growth and bee nesting and butterfly habitat.
- Native pollinators evolved with and are adapted to native plants. Roadsides that contain monocultures of nonnative plant species can be managed to provide canopy openings for native species to establish.
- If necessary, initially mow closely, and possibly couple with light soil disturbance, to prepare a seedbed, and expose soil for seed germination and seedling growth. Eliminating nonnative species with herbicide application may be necessary after light soil disturbance or close mowing.

- Use collected seeds from forest openings with diverse native wildflower populations as a source of material for roadside plantings.
- Select areas for tree removal to provide more sunlight to promote herbaceous plant growth and flowering in places where subsequent management to maintain the roadside will be possible.
- Select trees that flower at different times of the year to provide pollen and nectar throughout the growing season.
- Removing wind-pollinated trees and favoring animal-pollinated ones will provide more flower resources.
- Remove additional trees at the edges of intersections and other large forest openings to provide additional sunlight and better growing conditions for herbaceous flowering plants.

Riparian Areas: Maintaining Forb Diversity

Riparian areas contain a high diversity of herbaceous plants, including many needed for nectar and pollen.

- Maintain hydrologic function within watersheds to enhance water-holding capacity and maintain water-dependent native plant communities.
- Reduce wetland drainage and conversions that reduce the size and extent of riparian plant communities.
- Use site-adapted native seed in riparian restoration to promote pollinator-preferred plant species.
- Maintain vegetative structure in riparian areas including grass and herbaceous structure for pollinator nesting and cover needs.
- Control the introduction and spread of nonnative invasive species.

Managing Wildlife Openings to Improve and Sustain Pollinator Habitat

Wildlife openings are ideal for bees as they thrive in sunny habitats with diverse native plant communities that bloom from spring through fall. This is important since many bee species are active for only a short time each year and because others require access to flowers throughout the season. These sunny openings provide both foraging and nesting habitat for bees. Wildlife openings can be managed to benefit bumblebees by:

- Remove undesirable woody species to create sunny, meadow-like openings, replacing nonnative trees, shrubs, grasses, or herbaceous plants with native species. Fire (when possible), in combination with mowing, may be needed to maintain wildlife openings.
- Seed, as needed, to establish native plant communities. Native wildflower mixes that bloom during different times of the year and in different flower colors should be given the highest preference.
- Select a diversity of native woody species suited to the site, and avoid those already common in a forest

- Plant animal-pollinated trees along field margins, which can provide long-term stable floral resources for pollinators and require less management. These trees also provide flowers at different heights.
- Use repeated disturbance to maintain wildlife openings and keep woody species from encroaching. Timing (winter, spring, and fall) and frequency (annual, biennial) should be varied to determine the optimum method to benefit both pollinators and wildlife in different regions.

Prescribed Burning

Prescribed fire can play an important role in the long-term maintenance of pollinator habitat, but it can have negative effects on pollinator populations in the short term, unless the needs of pollinators are considered in project design.

- Conduct prescribed burns in a manner that protects pollinator health. Fires that are too frequent, widespread, or intense can eliminate pollinator populations.
- Determine the types of pollinators using the project area, and assess potential impacts. Consider specific needs of pollinators that are at-risk or of concern at a site to determine if other management techniques should instead be implemented to reach goals.
- Burn only 30% of a site during one prescribed burn. If possible, leave small unburned patches within the burned areas
- Allow adequate recovery of pollinator populations between controlled burns in one area (dependent on the ecosystem and specific management goals).
- Implement prescribed burns outside the blooming period in foraging habitat (i.e., burn in late fall to early spring and early or late in the day).

Cumulative Effects:

Refer to the Trestle EIS for a detailed list of projects considered for cumulative effects for the project area. Activities have included tree removal through commercial and non-commercial timber harvest, salvage of insect killed trees, thinning in plantations, and hazard tree removal for trails and roads), reforestation, prescribed burning, mechanical piling and burning, firewood collecting, herbicides, recreation trail use, wildfires and activities on adjacent private lands (timber harvest plans, road right of ways, and continued recreational and residential development).

Earlier timber and fire salvage harvest on the Eldorado National within the cumulative effects area that had plantations as an outcome potentially provide shrub habitat capable of producing flowering plants and shrubs for forage. They also provided early seral habitat with open ground cover with rodent burrows (squirrels and gophers), bunchgrasses and remnant small woody debris for nesting and overwintering. The reduction of shrub ground cover and ground disturbance from mastication, piling and burning will reduce habitat quality for bumble bees. The remaining shrubland habitat could be altered to younger stages of shrub from prescribed burning primarily due to the large acreage being considered for treatment. However; mosaic burn prescriptions may aid in retaining patches of flowering shrub where it currently exists.

Prescribed burn plans should take into consideration, the distance between flowering plants; particularly shrub species, preferred by the bumble bee to avoid habitat fragmentation and disruption of dispersal and foraging patterns.

Other major threats that alter landscapes and habitat required by bumble bees include pesticides, agriculture and urban development. In the absence of fire, native conifers encroach upon meadows, which also decrease foraging and nesting habitat available for bumble bees.

Pollination of native plants by bumblebees provides an important source of seeds, fruits, and plants for wildlife to forage on or seek shelter in (Hatfield et al. 2012). Loss of pollinators could in turn affect habitat for other TES species or their prey.

Alternative Conclusion

Alternative Two may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the western bumble bee.

This determination is based upon the following factors:

- Creating gaps and promoting flowering plant growth in the understory of stands will aid in creating nesting, overwintering and foraging habitat.
- Creating openings along roadsides by removing dense brush will create openings for new flowering plants to establish aiding in movement corridors for the bee.
- Retention of down woody debris and improvement of riparian areas, especially meadows will benefit and expand potential habitat.
- Invasive weed control is part of the project.
- Prescribed burning will aid in opening up stands and enabling other forest flowering understory plants to develop.
- Protection measures as needed will be added to design criteria; especially burn plans, plantation treatment, and post-harvest fuels treatment (piling, etc.) to be able to retain bumblebees on the landscape as well as provide replacement queens for immediate and adjacent areas.
- Project activities occur at the same time of year bumble bees are active.
- Ground disturbance can destroy underground nests and overwintering habitat of bumblebees.
- Burning and piling can remove substrate on the ground utilized by bumblebees for nesting (bunchgrasses, etc.)
- Shrub and understory plant removal (burning, piling) that bumblebees may forage on can impact both individual bees and developing bee larvae.

ALTERNATIVE FOUR

Direct, indirect and cumulative effects:

Alternative Four was developed to aid in maintaining habitat components on the landscape for the California spotted owl. Internal and external issues revolving on canopy closure needs for

spotted owls resulted in this another alternative being developed. Alterations to harvest prescriptions proposed under Alternative Four would primarily focus on understory trees contributing to fuel loading; and maintaining larger diameter trees that are contributing to a dense canopy which is favored by late seral dependent species such as the spotted owl.

Table III.3 displays activities under Alternative Four that could affect bumblebee habitat in the project area. Alternative Four has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Less disturbance would occur from 1) reduction in road miles having brush treatment; and 2) reduced road reconstruction miles, retaining more nesting, overwintering and foraging habitat where current conditions allow based on reduced ground disturbance.

Alternative Conclusion

Alternative Four may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the western bumble bee.

This determination is based on the same factors provided under the Alternative Two Conclusion.

ALTERNATIVE FIVE

Direct, indirect and cumulative effects:

Table III.3 displays activities under Alternative Five that could affect bumblebee habitat in the project area. Alternative Five has similar indirect, direct and cumulative effects as Alternative Two with the following exceptions. Less disturbance would occur from 1) reduction in road miles having brush treatment; and 2) Reduced road reconstruction miles, retaining more nesting, overwintering and foraging habitat where current conditions allow based on reduced ground disturbance. In comparison to other action alternatives, Alternative Five has fewer impacts to the bumble bee than Alternative Two but more than Alternative Four, based on acreage affected in the project area.

Alternative Conclusion

Alternative Five may affect individuals, but is not likely to lead to a trend towards federal listing or loss of viability for the western bumble bee.

This determination is based on the same factors provided under the Alternative Two Conclusion.

VI. DETERMINATIONS

Alternative One –No Action

1. Based on the analysis conducted in this biological evaluation and assessment, implementation of Alternative One will have no effect from project activities on the following federally threatened, candidate or Region 5 sensitive terrestrial wildlife species potentially occurring on the Forest and therefore no consultation with the USFWS is required.

American bald eagle	Willow flycatcher	California wolverine
Pacific fisher	American marten	Great gray owl
California spotted owl	Northern goshawk	Pallid bat
Townsend's big-eared bat	Fringe-tailed bat	Western bumblebee
Valley elderberry longhorn beetle	Sierra Nevada red fox	

Alternative Two –Proposed Action

1. Based on the analysis conducted in this biological evaluation and assessment, implementation of Alternative Two will have no effect from project activities on the following federally threatened, candidate or Region 5 sensitive terrestrial wildlife species potentially occurring on the Forest and therefore no consultation with the USFWS is required.

Valley elderberry longhorn beetle	Willow flycatcher	Sierra Nevada red fox
California wolverine	American marten	

2. Based on the analysis conducted in this biological evaluation and analysis, implementation of Alternative Two may affect individuals or habitat, but is not likely to result in a trend toward Federal listing or loss of viability for the following Forest Service sensitive terrestrial wildlife species:

Great gray owl	Northern goshawk	American bald eagle
Fringe-tailed bat	Townsend's big-eared bat	Pallid bat
California spotted owl	Pacific fisher	Western bumblebee

Alternative Four

1. Based on the analysis conducted in this biological evaluation and assessment, implementation of Alternative Four will have no effect from project activities on the following federally threatened, candidate or Region 5 sensitive terrestrial wildlife species potentially occurring on the Forest and therefore no consultation with the USFWS is required.

Valley elderberry longhorn beetle	Willow flycatcher	Sierra Nevada red fox
California wolverine	American marten	

2. Based on the analysis conducted in this biological evaluation and analysis, implementation of Alternative Four may affect individuals or habitat, but is not likely to result in a trend toward Federal listing or loss of viability for the following Forest Service sensitive terrestrial wildlife species:

Great gray owl	Northern goshawk	American bald eagle
Fringe-tailed bat	Townsend's big-eared bat	Pallid bat
California spotted owl	Pacific fisher	Western bumblebee

Alternative Five

1. Based on the analysis conducted in this biological evaluation and assessment, implementation of Alternative Five will have no effect from project activities on the following federally threatened, candidate or Region 5 sensitive terrestrial wildlife species potentially occurring on the Forest and therefore no consultation with the USFWS is required.

Valley elderberry longhorn beetle	Willow flycatcher	Sierra Nevada red fox
California wolverine	American marten	

2. Based on the analysis conducted in this biological evaluation and analysis, implementation of Alternative Five may affect individuals or habitat, but is not likely to result in a trend toward Federal listing or loss of viability for the following Forest Service sensitive terrestrial wildlife species:

Great gray owl	Northern goshawk	American bald eagle
Fringe-tailed bat	Townsend's big-eared bat	Pallid bat
California spotted owl	Pacific fisher	Western bumblebee

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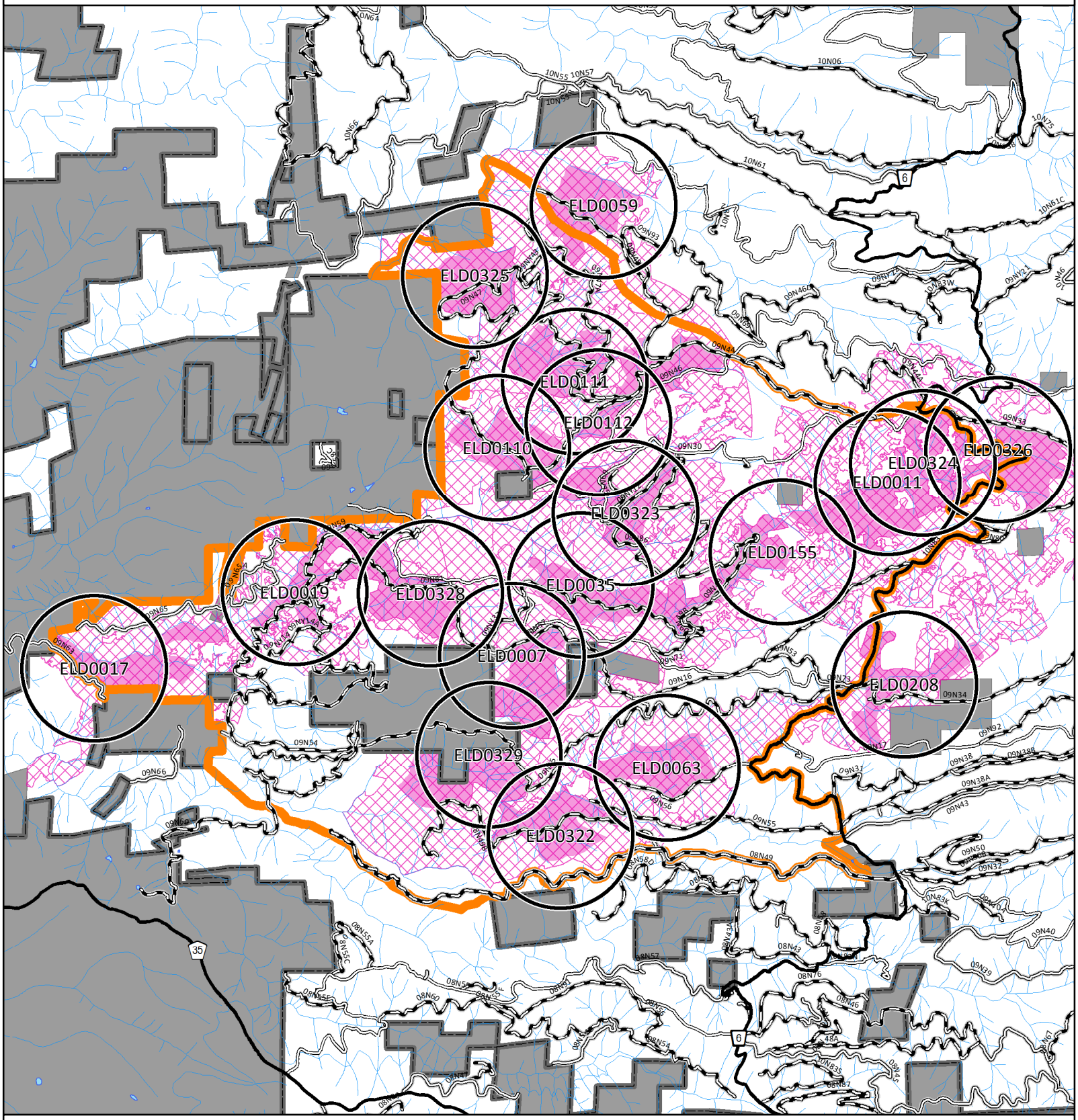
Appendix A - Terrestrial Wildlife Biological Assessment and Evaluation



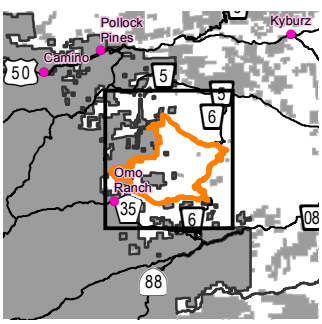
Eldorado National Forest
Placerville Ranger District

Trestle
Forest Health Project
Alternative 1
No Action

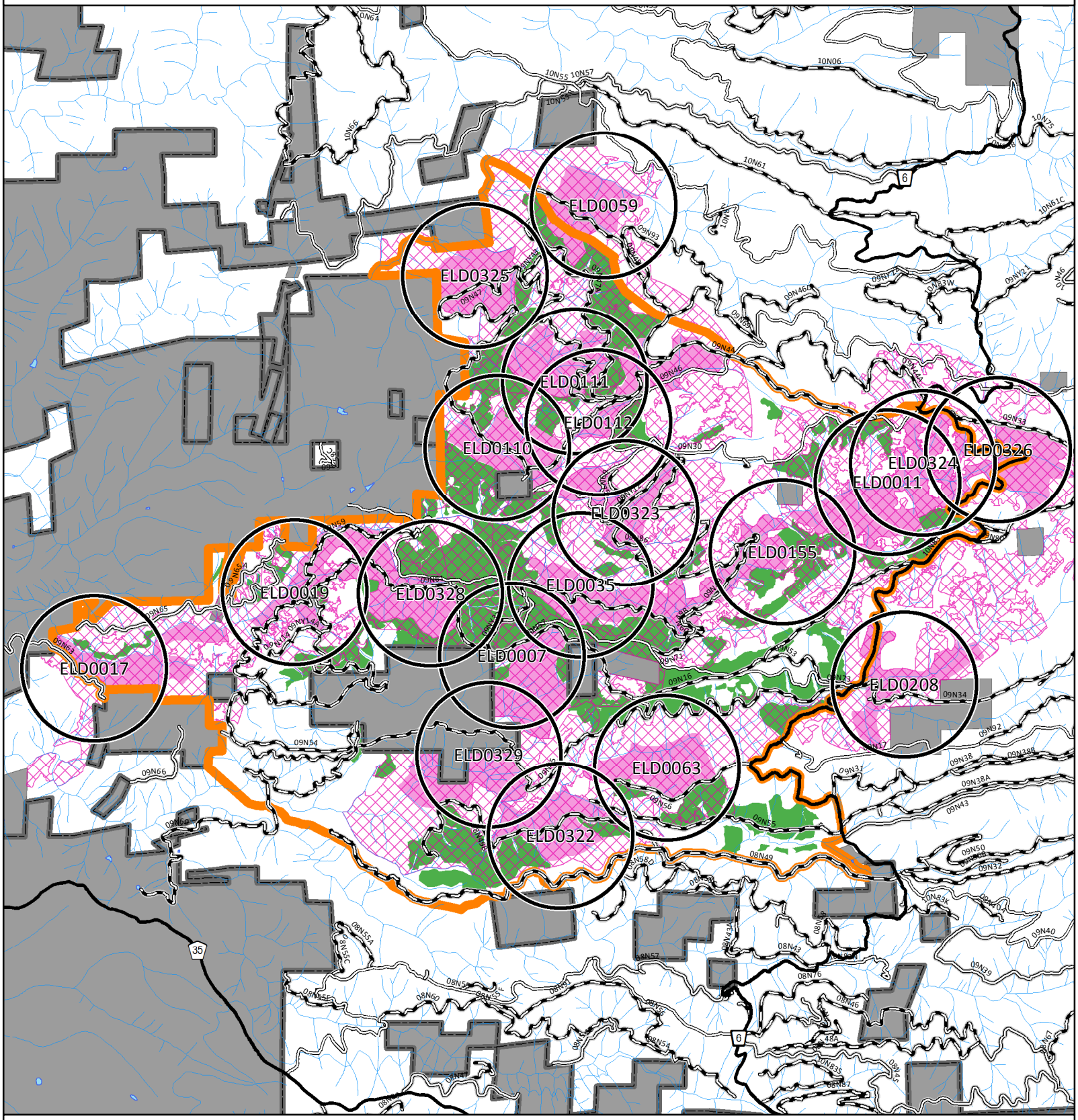
0 0.5 1 2
Miles

Date: 5/25/2016

- Project Area
- California Spotted Owl Territory
- California Spotted Owl HRCA
- California Spotted Owl PAC
- River or Stream
- Major Route
- Roads Open to All Vehicles, Yearlong
- Roads Open to All Vehicles, Seasonal
- Roads Open to Highway Legal Vehicles Only, Yearlong
- Roads Open to Highway Legal Vehicles Only, Seasonal
- Eldorado NF Administrative Boundary
- Forest Service Land
- Non-Forest Service Land



Appendix B - Terrestrial Wildlife Biological Assessment and Evaluation



Eldorado National Forest
Placerville Ranger District

Trestle
Forest Health Project
Alternative 2
Proposed Action

- Project Area
- Alternative 2 - Commercial Thinning (Natural Stands)
- California Spotted Owl Territory
- California Spotted Owl HRCA
- California Spotted Owl PAC
- River or Stream
- Major Route
- Roads Open to All Vehicles, Yearlong
- Roads Open to All Vehicles, Seasonal
- Roads Open to Highway Legal Vehicles Only, Yearlong
- Roads Open to Highway Legal Vehicles Only, Seasonal
- Eldorado NF Administrative Boundary
- Forest Service Land
- Non-Forest Service Land

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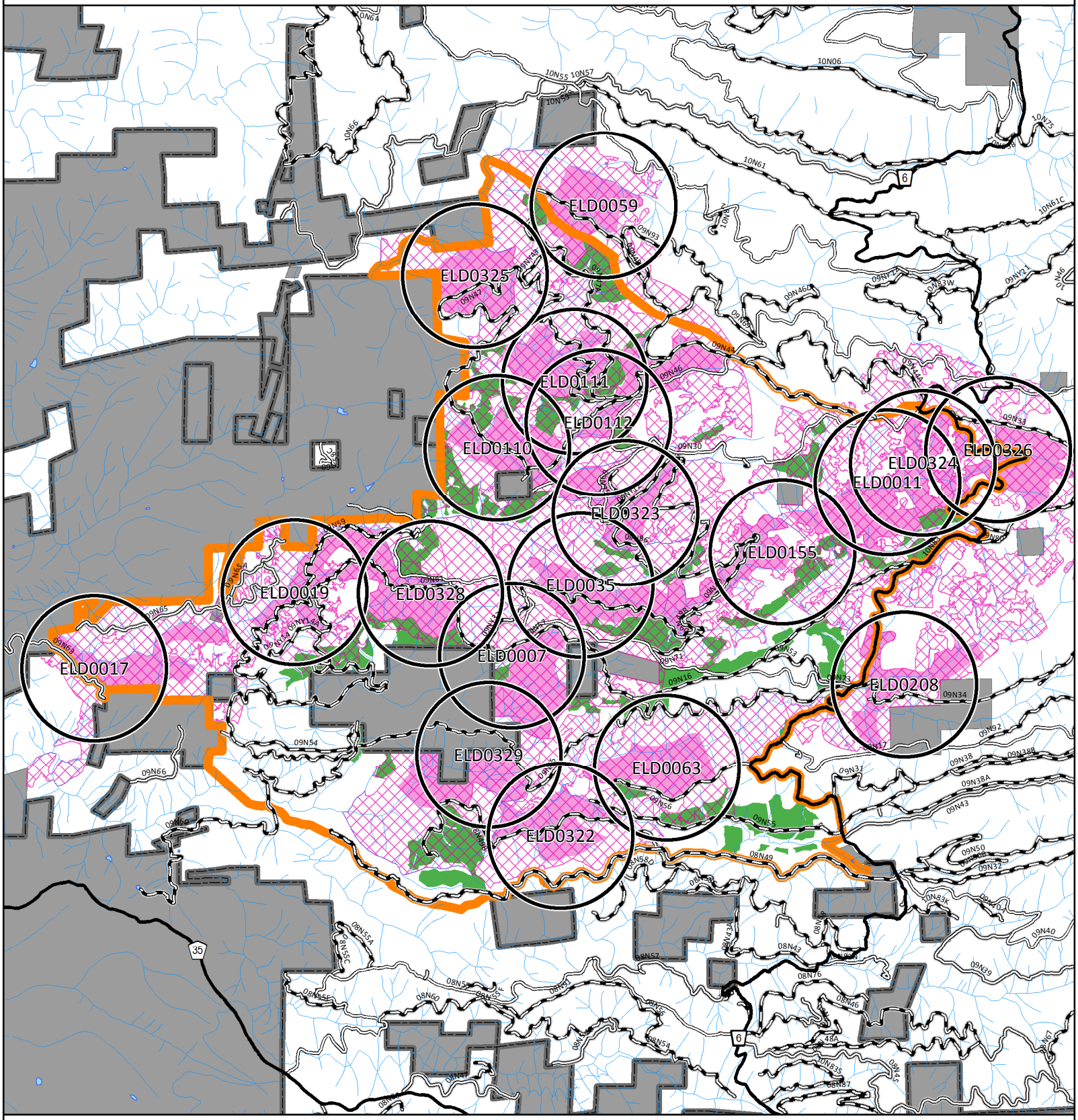
Miles

N

Date: 3/20/2017

Appendix C - Terrestrial Wildlife Biological Assessment and Evaluation

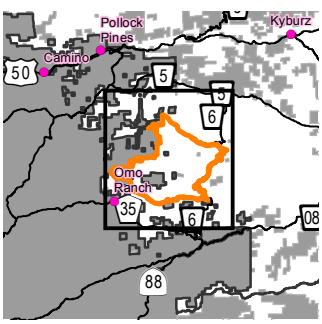


Eldorado National Forest
Placerville Ranger District

Trestle
Forest Health Project
Alternative 4

Project Area
Alternative 4 - Commercial Thinning
(Natural Stands)
California Spotted Owl Territory
California Spotted Owl HRCA
California Spotted Owl PAC
River or Stream

Major Route
Roads Open to All Vehicles, Yearlong
Roads Open to All Vehicles, Seasonal
Roads Open to Highway Legal Vehicles Only, Yearlong
Roads Open to Highway Legal Vehicles Only, Seasonal
Eldorado NF Administrative Boundary
Forest Service Land
Non-Forest Service Land



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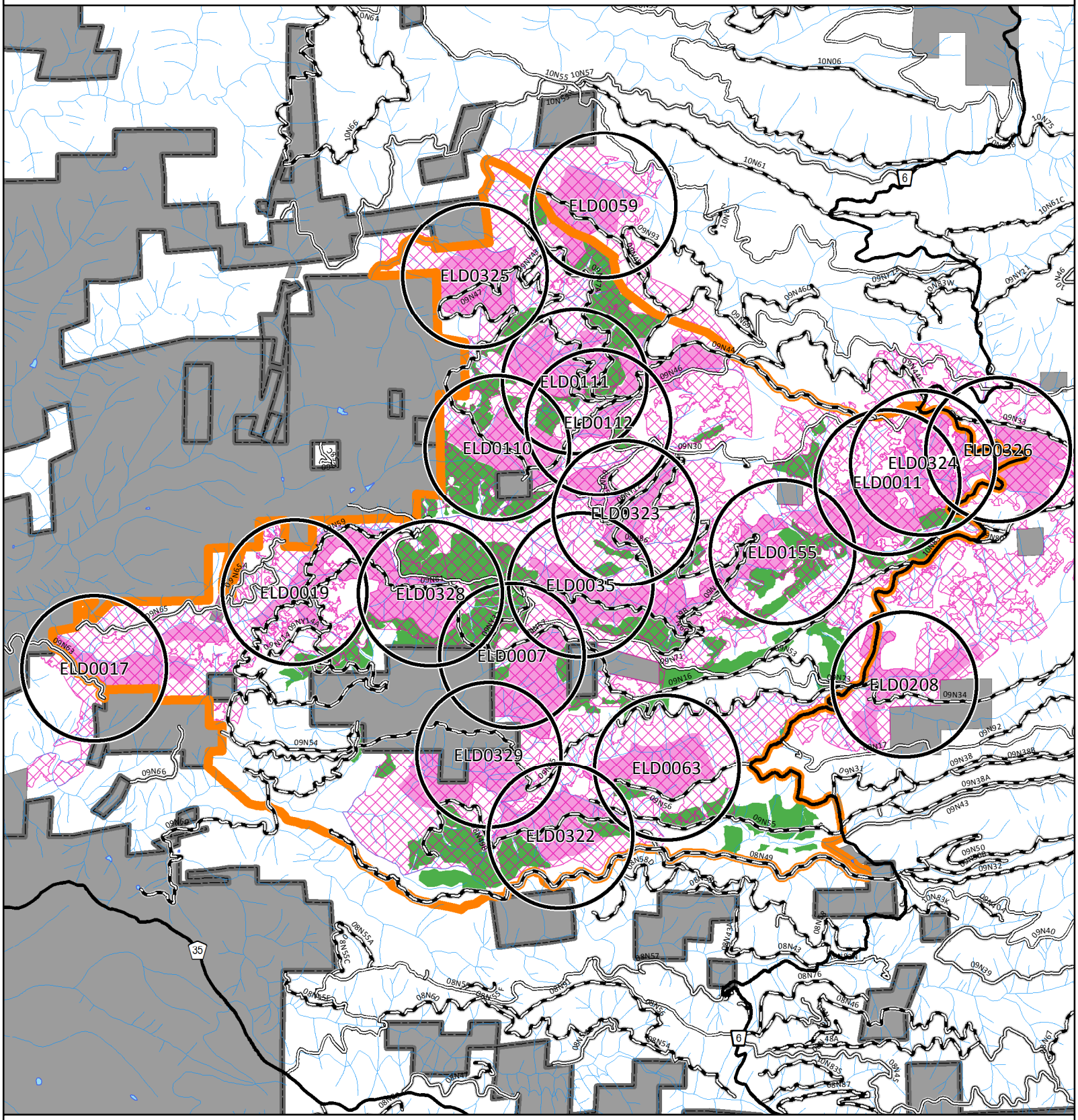
Appendix D- Terrestrial Wildlife Biological Assessment and Evaluation



Eldorado National Forest
Placerville Ranger District

Trestle
Forest Health Project
Alternative 5

- Project Area
- Alternative 5 - Commercial Thinning (Natural Stands)
- California Spotted Owl Territory
- California Spotted Owl HRCA
- California Spotted Owl PAC
- River or Stream
- Major Route
- Roads Open to All Vehicles, Yearlong
- Roads Open to All Vehicles, Seasonal
- Roads Open to Highway Legal Vehicles Only, Yearlong
- Roads Open to Highway Legal Vehicles Only, Seasonal
- Eldorado NF Administrative Boundary
- Forest Service Land
- Non-Forest Service Land

0 0.5 1 2
Miles

N

Date: 3/20/2017