

Biological Evaluation



of

Potential Effects

of the

Moonlight and Wheeler Fires Recovery and Restoration Project

on

Threatened, Endangered, Candidate, and Sensitive Plant Species

Prepared for

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Table of Contents

1.0	INTRODUCTION	1
1.1.	FOREST SERVICE DIRECTION	1
1.2.	SPECIES TO BE ANALYZED	2
2.0	CURRENT MANAGEMENT DIRECTION.....	2
3.0	DESCRIPTION OF THE PROPOSED PROJECT	3
3.1.	ALTERNATIVE A – PROPOSED ACTION	3
3.2.	ALTERNATIVE B – NO ACTION	4
3.3.	ALTERNATIVE C – TRACTOR ONLY.....	4
3.4.	ALTERNATIVE D – 2001 SNFPA ROD CONSISTENT.....	4
3.5.	ALTERNATIVE E – ROADSIDE HAZARD	5
3.6.	COMPARISON OF ALTERNATIVES.....	5
4.0	METHODOLOGY FOR ASSESSING IMPACTS	5
4.1.	GEOGRAPHIC AREA.....	5
4.2.	SPECIES TO BE ANALYZED.....	7
4.3.	ANALYSIS METHODS	9
4.4.	TYPES AND DURATION OF IMPACTS	10
4.4.1.	<i>Types of Effects.....</i>	<i>10</i>
4.4.2.	<i>Duration of Impacts.....</i>	<i>11</i>
5.0	EFFECTS OF THE PROPOSED PROJECT	12
5.1.	EXISTING ENVIRONMENT AND SPECIES-SPECIFIC EFFECTS OF THE ALTERNATIVES	12
5.1.1.	<i>Existing Environment: Penstemon sudans (Susanville beardtongue).....</i>	<i>12</i>
5.1.2.	<i>Management Prescription.....</i>	<i>15</i>
5.1.3.	<i>Effects of Alternative A (Proposed Action).....</i>	<i>15</i>
5.1.4.	<i>Effects of Alternative B (NO ACTION).....</i>	<i>17</i>
5.1.5.	<i>Effects of Alternatives C, D & E.....</i>	<i>17</i>
6.0	DETERMINATION.....	17

1.0 Introduction

This Biological Evaluation was prepared for the proposed Moonlight and Wheeler Fires Recovery and Restoration Project, which is authorized, funded, and conducted on the Plumas National Forest, Mt Hough Ranger District, Plumas County, California. The project area is located northeast of Greenville, north of Taylorsville, and southwest of Antelope Lake in the Lights Creek and surrounding drainages. The legal description is all or portions of: sections 13, 23-27, 34-35, T28N, R10E; sections 13-14, 17-19, 23-24, 29-34, T28N, R11E; sections 19-20, 29-32, T28N, R12E; sections 1-2, 13-14, 23-25, T27N, R10E; sections 2-11, 13-15, 17, 19-22, 25, 35-36, T27N, R11E; sections 5, 8, 17-20, 29-32, T27N, R12E; sections 1-5, 9-12, 14-16, 21-23, and 26-27, T26N, R12E; sections 23 – 29 and 31 – 36, T27N, R12E; and sections 19, 20, and 30, T27N, R13E; Mount Diablo Meridian.

The purpose of this Biological Evaluation is to provide an analysis of the activities proposed and to determine whether they have the potential to affect any Federally Endangered, Threatened, and Candidate plant species or Forest Service Region 5 Sensitive plants.

The Moonlight and Wheeler Fires Recovery and Restoration Project was developed by the Mt Hough Ranger District of the Plumas National Forest and consists of harvesting fire-killed conifer trees (10,366 acres), including RHCAs; harvesting fire-killed and fire-injured trees along roadsides (4,389 acres, and planting native conifer tree seedlings (11,617 acres). The project would include 8,536 acres of ground-based, 872 acres of skyline, and 5,347 acres of helicopter logging systems. The project would start in the summer of 2009.

1.1. Forest Service Direction

It is Forest Service policy to review all activities or programs planned, funded, executed, or permitted for possible effects on federally endangered, threatened, proposed, or USFS sensitive species (FSM 2672.4, USDA Forest Service 2005). A Biological Evaluation (BE) provides the means to conduct this review and document the findings. Forest Service Manual 2672.4 (USDA Forest Service 2005) outlines the objectives of a BE, which are to:

- ensure that Forest Service actions do not contribute to loss of viability of any native or desired nonnative plant or animal species or trends toward Federal listing of any species.;
- ensure that Forest Service actions do not jeopardize or adversely modify critical habitat of Federally listed species; and
- provide a process and standard through which rare plant species receive full consideration throughout the planning process, reducing negative impacts on species and enhancing opportunities for mitigation.

1.2. Species to be analyzed

The first step in the biological evaluation process is the identification of all listed, proposed, and sensitive species that are known or with potential to occur within the project area (FSM 2672.43, USDA Forest Service 2005). To complete this step for the Moonlight and Wheeler Fires Recovery and Restoration Project, a geographic analysis area was delineated (known as the “Botany Analysis Area”) which encompassed all of the proposed treatment units, access roads to the treatment units, and the area within one mile of treatment unit boundaries.

This area was chosen to capture all rare plant species that occur (a) within the proposed treatment units or (b) have suitable habitat near the project treatment units as well as a “source” (potential for seed dispersal) population located within close proximity to the proposed activities.

Proposed project treatment units are surveyed to determine known species for the effects analysis. Existing information based on current and past surveys conducted over the last 25 years and State records (CNDDDB 2008) are used to determine species potentially affected in the analysis area outside of proposed treatment units. Surveys are considered current and valid for at least ten years. There is no Forest Service standard for the longevity of survey findings (USDA Forest Service 2007).

Species known from proposed treatment units or those known within the botany analysis area are considered to have the potential to be affected by project activities. All species known in the botany analysis area are analyzed in this biological evaluation (FSM 2672.43 Exhibit 01 Step 3) (USDA Forest Service 2005). If a species is not known within the botany analysis area it is considered unlikely that project activities will impact the species and it is not analyzed in detail.

2.0 Current Management Direction

The 1988 Plumas National Forest Land and Resource Management Plan (USDA Forest Service 1988) provides management direction for all Plumas National Forest Sensitive plants; that direction is to “maintain viable populations of sensitive plant species” (USDA Forest Service 1988, page 4-34). The Forest Plan also provides forest-wide standards and guidelines to:

- protect Sensitive and Special Interest plant species as needed to maintain viability;
- inventory and monitor Sensitive plant populations on an individual project basis; and
- develop species management guidelines to identify population goals and compatible management activities / prescriptions that will maintain viability.

During project planning and implementation, known locations of sensitive plant species are to be avoided or the negative effects of the proposed actions mitigated. This direction implements the protections legislated in the National Forest Management Act and the Endangered Species Act. The Forest Service Manual (Section 2670.22), which

also provides policy for the protection of sensitive species, calls for the development and implementation of management practices to ensure that species do not become threatened or endangered because of Forest Service actions. This policy includes direction to review activities through a BE as part of the NEPA process, analyze the significance of potential adverse effects, and avoid or minimize negative impacts to species whose viability has been identified as a concern.

Management direction for sensitive plant species on the Plumas NF is also provided in the Herger-Feinstein Quincy Library Group (HFQLG) Forest Recovery Act Final Environmental Impact Statement (USDA Forest Service 1999) and the Sierra Nevada Forest Plan Amendment (SFPA) Final Supplemental Environmental Impact Statement (USDA Forest Service 2004). The standards and guidelines provided in the SFPA include conducting field surveys, minimizing or eliminating direct and indirect impacts from management activities, and adherence to the Regional Native Plant Policy (USDA Forest Service 2004).

Individual species conservation strategies, or species management guidelines, for the Plumas National Forest have not been completed for most of the Forest's Sensitive species. Until these conservation strategies have been completed, the Plumas National Forest has developed Interim Management Prescriptions (USDA Forest Service 2007a) that will be followed (Madrid 1996). These species-specific prescriptions are provided in section 5 of this document.

3.0 Description of the Proposed Project

A brief description of the proposed action is provided in this section. The proposed action and other alternatives are described in detail in Chapter 2 of the DEIS.

3.1. Alternative A – Proposed Action

The proposed action includes four groups of activities: salvage timber harvest, roadside hazard timber harvest, construction of temporary roads and landings for access, and reforestation.

Salvage Timber Harvest: Fire-killed conifer trees would be felled and removed (up to 10,366 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within treatment units. Refer to the map specific to alternative A located in envelope on the back cover of the revised RFEIS.

Roadside Hazard Timber Harvest: Fire-killed and fire-injured conifer trees would be felled and removed (up to 4,389 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within 150 feet from the road prism.

Access: Approximately 13 miles of new temporary roads (6 miles of temporary roads exist) would be constructed to access the treatment units; these temporary roads would be constructed according to current standards for short-term use. Approximately 30 acres of new temporary helicopter landings (14) would be constructed.

Reforestation: Reforestation includes site preparation and planting of native conifer seedlings in areas of moderately high and high vegetation burn severity, up to 16,006 acres.

3.2. Alternative B – No Action

Under the no action alternative, current management plans would continue to guide management of the project area. Under the no action alternative, there would be no removal of fire-killed trees, construction of temporary roads and landings, or planting of tree seedlings, except for Burned Area Emergency Rehabilitation (BAER) activities. The following ongoing activities would occur: firewood cutting, fire suppression, Christmas tree cutting, right-of-way maintenance for telephone and power lines, road use and maintenance, mining operations, and recreational use. The no action alternative could be viewed as passive management as described by Beschta and others (2004).

3.3. Alternative C – Tractor Only

Alternative C includes four groups of activities: salvage timber harvest, roadside hazard timber harvest, construction of temporary roads and landings for access, and reforestation. Alternative C does not include harvest, access, or reforestation activities within the areas designated in alternative A for skyline or helicopter logging systems.

Salvage Timber Harvest: Merchantable trees would be felled and removed (up to 4,147 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within treatment units.

Roadside Hazard Timber Harvest: Fire-killed and fire-injured conifer trees would be felled and removed (up to 4,389 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within 150 feet from the road prism.

Access: Approximately 12 miles of new temporary roads (6 miles of temporary roads exist) would be constructed to access the treatment units; these temporary roads would be constructed according to current standards for short-term use.

Reforestation: Reforestation includes site preparation and planting of native conifer seedlings in areas of moderately high and high vegetation burn severity, up to 9,306 acres.

3.4. Alternative D – 2001 SNFPA ROD Consistent

Alternative D is consistent with the 2001 SNFPA ROD and avoids the Old Forest Emphasis (OFE) land allocation (including California spotted owl Home Range Core Areas (HRCAs) and California spotted owl Protected Activity Centers (PACs). All standards and guidelines consistent with the 2001 SNFPA and ROD and those amended by the HFQLG FEIS and ROD (1999, 2003) will be incorporated into this alternative.

Salvage Timber Harvest: Fire-killed conifer trees would be felled and removed (up to 1,267 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within treatment units. Alternative D does not include harvest or access activities within the areas designated in alternative A for skyline or helicopter logging systems. Alternative D identifies the same areas as alternative A for reforestation.

Roadside Hazard Timber Harvest: Fire-killed and fire-injured conifer trees would be felled and removed (up to 4,389 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within 150 feet from the road prism.

Access: Approximately 3 miles of new temporary roads would be constructed to access the treatment units; these temporary roads would be constructed according to current standards for short-term use.

Reforestation: Reforestation includes site preparation and planting of native conifer seedlings in areas of moderately high and high vegetation burn severity, up to 16,006 acres.

3.5. Alternative E – Roadside Hazard

Alternative E includes roadside hazard timber harvest and reforestation. Alternative E does not include salvage timber harvest or access activities. No new roads, skid trails, or landings would be constructed. Alternative E identifies the same areas alternative A for reforestation plus roadside hazard timber harvest areas.

Roadside Hazard Timber Harvest: Fire-killed and fire-injured conifer trees would be felled and removed (up to 4,389 acres) and would be harvested from Riparian Habitat Conservation Areas (RHCAs) within 150 feet from the road prism.

Reforestation: Reforestation includes site preparation and planting of native conifer seedlings in areas of moderately high and high vegetation burn severity, up to 16,006 acres.

3.6. Comparison of Alternatives

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

Table 1. Comparison of Activities.

Activity	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Acres of ground-based salvage	4,147	0	4,147	1,267	0
Acres of skyline salvage	872	0	0	0	0
Acres of helicopter salvage	5,347	0	0	0	0
Acres of roadside hazard harvest	4,389	0	4,389	4,389	4,389
Miles of temporary road construction	19	0	18	3	0
Acres of planting	16,006	0	9,306	16,006	16,006

4.0 Methodology for Assessing Impacts

4.1. Geographic Area

The area analyzed in this document is referred to as the “Botany Analysis Area” and encompasses approximately 90,585 acres and consists of all proposed treatment units,

access roads to the treatment units, and the area within 1 mile of treatment unit boundaries (Figure 1). This area was chosen to capture all rare plants and noxious weed species that occur (a) within the proposed Treatment Units or (b) have suitable habitat within the Moonlight and Wheeler Fires Recovery and Restoration Project Area as well as a “source” (potential for seed dispersal) population located within close proximity to the proposed activities.

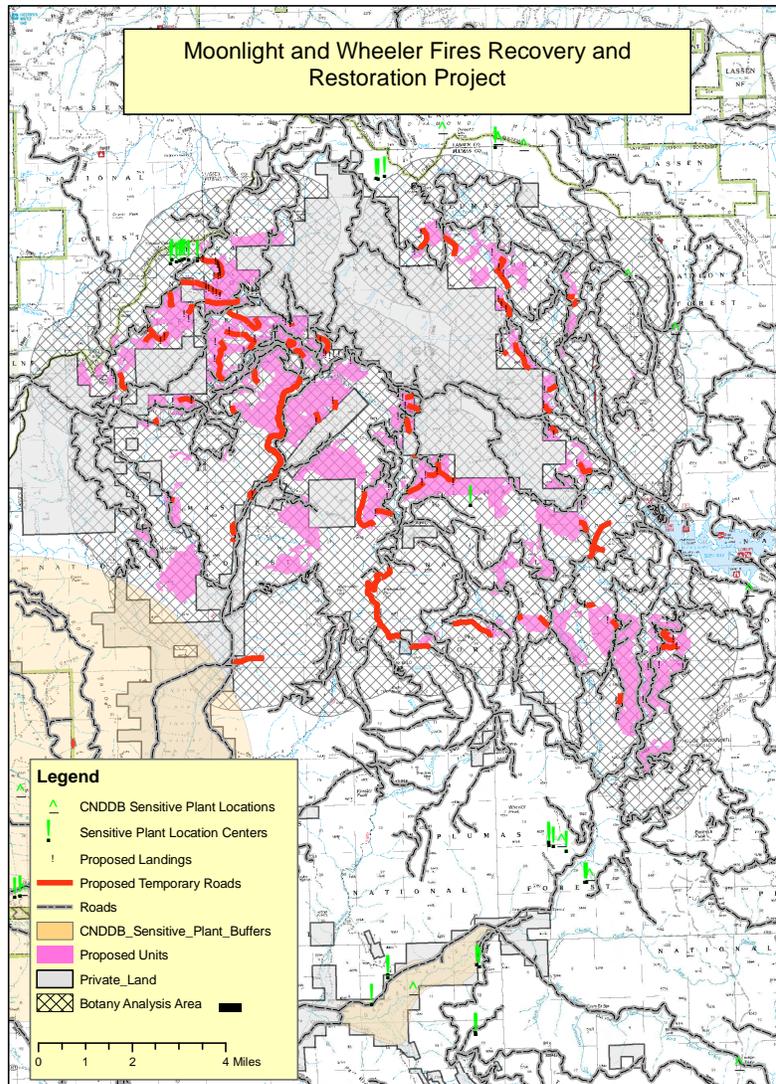


Figure 1. The botany analysis area for the Moonlight and Wheeler Fires Recovery and Restoration Project including proposed treatment units, landings, temporary roads, haul routes and sensitive plant locations.

4.2. Species to be Analyzed

Species known from proposed treatment units or those known within the botany analysis area are considered to have the potential to be affected by project activities. All species known in the botany analysis area are analyzed in this biological evaluation (FSM 2672.43 Exhibit 01 Step 3) (USDA Forest Service 2005). If a species is not known within the botany analysis area it is considered unlikely that project activities will impact the species and it is not analyzed.

Proposed project treatment units are surveyed to determine known species for the effects analysis. Existing information based on past surveys and State records are used to determine species potentially affected in the analysis area outside of proposed treatment units. Of the 90,585 acre analysis area, about 19,875 acres (21.9%) are private land, 3,166 acres (3.5%) is Lassen National Forest or private land outside the Plumas National Forest boundary, and 67,545 acres (74.6%) are Plumas National Forest land. About 42,635 acres (54.2%) of the analysis area has been surveyed since 2000.

Proposed treatment units were surveyed for the Moonlight and Wheeler Fires Recovery and Restoration Project (2008), Diamond (2005), Stream (2002), or Cold (2001 & 2000) projects. No Threatened, Endangered, or Candidate species were located during these surveys. One Sensitive species, *Penstemon sudans*, was located during these surveys. Potential project effects to *Penstemon sudans* are analyzed in this document.

Two Federally Threatened plant species that have potential to occur on the Plumas National Forest are *Orcuttia tenuis* (slender Orcutt grass) and *Senecio layneae* (Layne's butterweed) (USFWS 2008). *Orcuttia tenuis* is limited to relatively deep vernal pools or vernal pool type habitat with clay soil. *Senecio layneae* grows in open rocky areas on serpentine-derived soils that are 650–3,300 feet in elevation. Another species that is listed as potentially occurring on the Plumas National Forest is *Ivesia webberi* (Webber's ivesia), which is considered to be a Candidate species by the U.S. Fish and Wildlife Service. *Ivesia webberi* is found in open areas of sandy volcanic ash to gravelly soils in sagebrush and eastside pine. California Natural Diversity Database records indicate a historical record, which is presumed extirpated, of *Ivesia webberi* in Indian Valley. Due to the uncertainty of the presence and location (5 mile accuracy) spatial records overlap with a portion of the analysis area. No Threatened, Endangered, or Candidate Species are considered likely to occur in the Botany Analysis Area.

Table 2 lists all Federally Threatened, Candidate, and Region 5 Sensitive plant species that are known or thought to have potential to occur on the Plumas National Forest. The rare species analyzed in detail in this document (i.e. those that fall within the Botany Analysis Area) are also indicated in the table below.

Table 2. Threatened, Endangered, Candidate and Sensitive species known within proposed treatment units or the Botany Analysis Area.

Species	Common Name	Listing Status	Known within the Treatment Units	Known within the Analysis Area
<i>Allium jepsonii</i>	Jepson's onion	Sensitive	No	No
<i>Arabis constancei</i>	Constance's rock cress	Sensitive	No	No

Species	Common Name	Listing Status	Known within the Treatment Units	Known within the Analysis Area
<i>Astragalus lemmonii</i>	Lemmon's milkvetch	Sensitive	No	No
<i>Astragalus lentiformis</i>	lens-pod milkvetch	Sensitive	No	No
<i>Astragalus pulsiferae</i> var. <i>coronensis</i>	Pulsifer's milkvetch	Sensitive	No	No
<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i>	Suksdorf's milkvetch	Sensitive	No	No
<i>Astragalus webberi</i>	Webber's milkvetch	Sensitive	No	No
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	Big scale balsamroot	Sensitive	No	No
<i>Botrychium ascendens</i>	upswept moonwort	Sensitive	No	No
<i>Botrychium crenulatum</i>	scalloped moonwort	Sensitive	No	No
<i>Botrychium lineare</i>	moonwort	Sensitive	No	No
<i>Botrychium lunaria</i>	common moonwort	Sensitive	No	No
<i>Botrychium minganense</i>	Mingan moonwort	Sensitive	No	No
<i>Botrychium montanum</i>	western goblin	Sensitive	No	No
<i>Botrychium pinnatum</i>	northwestern moonwort	Sensitive	No	No
<i>Bruchia bolanderi</i>	Bolander's bruchia	Sensitive	No	No
<i>Buxbaumia viridis</i>	Bug-on-a-stick	Sensitive	No	No
<i>Calycadenia oppositifolia</i>	Butte County calycadenia	Sensitive	No	No
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i>	Butte County morning-glory	Sensitive	No	No
<i>Clarkia biloba</i> ssp. <i>brandegeae</i>	Brandege's clarkia	Sensitive	No	No
<i>Clarkia gracilis</i> ssp. <i>albicaulis</i>	white-stemmed clarkia	Sensitive	No	No
<i>Clarkia mildrediae</i> ssp. <i>mildrediae</i>	Mildred's clarkia	Sensitive	No	No
<i>Clarkia mosquinii</i>	Mosquin's clarkia	Sensitive	No	No
<i>Cypripedium fasciculatum</i>	clustered lady's-slipper	Sensitive	No	No
<i>Cypripedium montanum</i>	mountain lady's-slipper	Sensitive	No	No
<i>Eleocharis torticulmis</i>	Twisted spike rush	Sensitive	No	No
<i>Eriogonum umbellatum</i> var. <i>ahartii</i>	Ahart's buckwheat	Sensitive	No	No
<i>Fissidens aphelotaxifolius</i>	brook pocket moss	Sensitive	No	No
<i>Fissidens pauperculus</i>	minute pocket moss	Sensitive	No	No
<i>Fritillaria eastwoodiae</i>	Butte County fritillary	Sensitive	No	No
<i>Helodium bandowii</i>	Blandow's bog moss	Sensitive	No	No
<i>Hydrothyria venosa</i>	veined water lichen	Sensitive	No	No
<i>Ivesia aperta</i> var. <i>aperta</i>	Sierra Valley ivesia	Sensitive	No	No
<i>Ivesia sericolueca</i>	Plumas ivesia	Sensitive	No	No
<i>Ivesia webberi</i>	Webber's ivesia	Federal Candidate, Sensitive	No	Presumed extirpated from analysis area

Species	Common Name	Listing Status	Known within the Treatment Units	Known within the Analysis Area
<i>Lewisia cantelovii</i>	Cantelow's lewisia	Sensitive	No	No
<i>Lewisia kelloggii ssp kelloggii</i>	Kellogg's lewisia	Sensitive	No	No
<i>Lewisia kelloggii ssp. hutchisonii</i>	Hutchison's lewisia	Sensitive	No	No
<i>Lomatium roseanum</i>	Adobe lomatium	Sensitive	No	No
<i>Lupinus dalesiae</i>	Quincy lupine	Sensitive	No	No
<i>Meesia longiseta</i>	long-seta hump-moss	Sensitive	No	No
<i>Meesia triquetra</i>	three-ranked hump-moss	Sensitive	No	No
<i>Meesia uliginosa</i>	broad-nerved hump-moss	Sensitive	No	No
<i>Mielichhoferia elongata</i>	Elongate copper moss	Sensitive	No	No
<i>Monardella follettii</i>	Follett's monardella	Sensitive	No	No
<i>Monardella stebbinsii</i>	Stebbin's monardella	Sensitive	No	No
<i>Orcuttia tenuis</i>	slender Orcutt grass	Federally Threatened	No	No
<i>Oreostemma elatum</i>	Plumas alpine-aster	Sensitive	No	No
<i>Packera eurycephalus</i> var. <i>lewisrosei</i>	cut-leaved ragwort	Sensitive	No	No
<i>Penstemon personatus</i>	closed-throated beardtongue	Sensitive	No	No
<i>Penstemon sudans</i>	Susanville beardtongue	Sensitive	Yes	Yes
<i>Pyrocoma lucida</i>	sticky pyrrocoma	Sensitive	No	No
<i>Sedum albomarginatum</i>	Feather River stonecrop	Sensitive	No	No
<i>Senecio layneae</i>	Layne's butterweed	Federally Threatened	No	No

4.3. Analysis Methods

The analysis of effects on rare plants and noxious weed species is a three step process (FSM 2672.43). First, all listed or proposed rare plant and noxious weed species that are known or are believed to have potential to occur in the Project Area are identified. This list is developed by reviewing the following:

- U.S. Fish and Wildlife List for the Plumas National Forest
- USDA Forest Service Region 5 Sensitive Species List and Plumas National Forest Special Interest Species List
- Plumas National Forest rare plant and noxious weed records
- Plumas National Forest vegetation maps
- California Natural Diversity Database records

The second step is field reconnaissance surveys. Proposed treatment units were surveyed for the Moonlight and Wheeler Fires Recovery and Restoration Project (2008), Diamond (2005), Stream (2002), or Cold (2001 & 2000) projects. These surveys were designed around the flowering period and ecology of those rare plant species and noxious weeds identified in step one. The surveyors compiled a comprehensive list of all species observed and reviewed it for rare species and noxious weeds. For each rare plant and

noxious weed site found, information was collected that described the size of the occurrence and habitat characteristics and identified any existing or potential threats. Location information was collected using a Global Positioning System (GPS).

This information was used in step three of the analysis, conflict determination. For rare species, data were imported into a Global Information System (GIS) and used to analyze proximity to treatment units, identify detrimental treatment activities, and designate control areas. It is important to note that much of the analysis presented in this document is qualitative. This is due to the fact that too little is known about the specific habitat requirements and life history characteristics of those rare species being analyzed to make a meaningful quantitative analysis.

4.4. Types and Duration of Impacts

Basic information on life history and ecology such as lifespan of individuals, pollination ecology, fecundity, seed germination, and disturbance tolerance for Susanville beardtongue is lacking. Anecdotal evidence, such as where the plant grows and what disturbance is evident near individuals, is used as the basis for habitat requirements and disturbance tolerance because published scientific studies are not available. Scientific ecological studies would allow for evaluation of probable project impacts with greater certainty.

4.4.1. Types of Effects

Direct Effects—Direct effects occur when plants are physically impacted. Examples of management activities that have the potential to directly affect rare plants include fire, timber falling, crushing by vehicles or equipment, skid trail ripping, temporary road construction, and landing construction. These actions can result in death, altered growth, or reduced seed set through physically breaking, crushing, burning, scorching, or uprooting plants.

Indirect Effects—Indirect effects on rare species are effects that are separated from an action in either time or space. These effects, which can be beneficial or detrimental to rare species, may include changes in vegetation composition, developmental pathways of vegetation, fire regimes, or the distribution and abundance of noxious weeds. Adverse indirect effects are more likely to occur to those species that are intolerant of disturbance and tend to occupy interior forest habitats with high canopy cover. In contrast, for those species that tolerate or are dependent upon some level of disturbance and inhabit gaps and forest openings, treatments may have beneficial indirect effects. Burning hand or machine piles can also alter soil biotic and chemical properties for a number of years (Korb et al. 2004), which in turn greatly influences the degree and type of plant colonization into the fire-scarred site.

Cumulative Effects—A cumulative effect can result from the incremental effect of the current action when added to the effects of past, present, and reasonably foreseeable future actions. These effects are considered regardless of what agency or person undertakes the other actions and regardless of land ownership on which the other actions occur. An individual action when considered alone may not have a significant effect, but when its effects are considered in sum with the effects of other past, present, and

reasonably foreseeable future actions, the effects may be significant (40 CFR 1508.7 and 1508.8 and FSH 1909.15 section 15.1).

One crucial step in assessing cumulative impacts on a particular resource is to compare the current condition of the resource (rare plants) and the projected changes as a result of management activities to the natural variability in the resources and processes of concern (MacDonald 2000). This assessment is particularly difficult for rare plant species because long-term data are often lacking. In addition, the habitats in which many rare plant species are presently found have a long history of disturbance, making an undisturbed reference difficult to find. For some rare plants, particularly those that do not tolerate disturbance or are found under dense canopy conditions, minimizing on-site change is an effective way of reducing the potential for larger-scale cumulative impact (MacDonald 2000). If the greatest impact on a rare species is both local and immediate, then this is the scale at which the effect is easiest to detect (MacDonald 2000). For other species, particularly those that are tolerant of disturbance or are fire followers, minimizing on-site changes could result in an adverse effect. Thus, the response of rare plant species to different management activities is species dependent.

Undeniably, past, present, and future activities have and will continue to alter rare plant populations and their habitats to various degrees. These activities include grazing, timber harvest, wildfire, fire suppression, prescribed fire, mining, recreational use, road construction, and noxious weed infestation. However, the approach taken in this analysis is that, if direct and indirect adverse effects on rare plant species in the analysis area are minimal or would not occur, then they would not contribute substantially to cumulative effects on the species. In addition, the effects of future projects would likely be minimal or similar to those described in this analysis if existing management guidelines (such as field surveys, protection of known rare species locations, and noxious weed mitigations) remain in place.

4.4.2. Duration of Impacts

It is not known when the effects of the proposed treatments would no longer be altering the life history dynamics (such as germination, growth time necessary to reach sexual maturity, quantity of viable seed produced in a lifetime) of the rare species considered in this analysis. One method to estimate duration of effects is to assume that the effects of the action alternatives last as long as they are, singly or in combination with other anticipated effects, distinguishable from the effects of the no-action alternative. Using this method is difficult for this project because of the intensity and scale of the Moonlight and Wheeler fires. Natural regeneration of stands after large fires is variable and unpredictable giving factors such as pockets of unburned stands, seed trees, chance seed dispersal, and potential for future fires. The fires of 2007 have permanently changed the vegetation pattern across the botany analysis area.

The additive effects of past actions (such as wildfires, wildfire suppression, timber harvest, mining, nonnative plant introductions, and ranching) have shaped the present landscape and corresponding populations of rare plants. However, data describing the past distribution and abundance of rare plant species is extremely limited, making it impossible to quantify the effects of historic activities on the resources and conditions that are present today. Undoubtedly, some plant species have always been rare due to

particular ecological requirements or geographic isolation. It is also likely that past actions have caused some species to become rarer and encouraged others to become more common. Within the Botany Analysis Area, documentation of rare plant surveys began in the early 1980s; therefore, the baseline used for the effects analysis of past activities is 25 years. The documentation of noxious weed species in this area did not begin until much later. Aside from an occasional appearance on a plant list, the first targeted noxious weed survey on file for this area was in 2002.

5.0 Effects of the Proposed Project

5.1. Existing Environment and Species-Specific Effects of the Alternatives

5.1.1. Existing Environment: *Penstemon sudans* (Susanville beardtongue)

Susanville beardtongue is known from 39 occurrences in California, most of which occur on land managed by the Bureau of Land Management in the vicinity of Susanville, California (CNDDDB 2008 and Plumas National Forest records) (Table 3). Three occurrences are known from the Plumas National Forest. The number of plants at known occurrences varies from fewer than 50 to more than 1,000. Although often abundant where it occurs, Susanville beardtongue is restricted to a relatively small area in Lassen and Plumas counties, California, and adjacent Nevada.

Table 3. A comparison of Susanville beardtongue abundance across global, statewide, forest wide, and project scales.

Species	Global Rank	Number of Occurrences		
		CNDDDB	Plumas NF	Botany Analysis Area
<i>Penstemon sudans</i>	G2G3	36	3	2
Note: CNDDDB data does not include the 3 occurrences on the Plumas NF so this analysis considers there to be 39 occurrences in CA.				
G1 = critically imperiled; less than 6 viable occurrences, OR less than 1,000 individuals, OR less than 2,000 acres.				
G2 = imperiled; 6-20 viable occurrences, OR 1,000 to 3,000 individuals, OR 2,000 to 10,000 acres.				
G3 = vulnerable to extirpation or extinction; 21 to 80 occurrences, OR 3,000 to 10,000 individuals, OR 10,000 to 50,000 acres				
G4 = apparently secure; factors exist to cause concern such as limited habitat or population threat.				

This species is found on open sagebrush (Great Basin Scrub) or woodland dominated (pinyon / juniper woodland or lower coniferous forests) rocky slopes on volcanic or other igneous substrates, and sometimes roadsides (NatureServe 2008, CNPS 2008). Apparently, suitable habitat is widespread in northeastern California, and the factors restricting the range of Susanville beardtongue are unknown. Threats to this species include noxious weed spread, grazing, road construction, and logging.

Two occurrences (PESU10_001 and 003) are known in the Botany Analysis Area. A portion of occurrence 001 is in a proposed Roadside Hazard Unit (Table 4, Figure 2). The plants in occurrence 001 are found in a Great Basin Scrub plant community on volcanic outcrops and gravelly, moderately steep slopes, in areas with low plant cover and high bare soil/rock cover (up to 60% bare). The occurrence continues upslope and to the west out

of unit 21 (Figure 2). The plants in occurrence 003 are on a steep talus and rocky slope in an eastside pine and sagebrush community (Figure 3).

Table 4. *Penstemon sudans* locations in proposed treatment units.

Species	Occurrence	Listing	Rare Plant Acres	Unit #	Alt A System	Alt C System	Unit Acres
<i>Penstemon sudans</i>	1G	Sensitive	0.185	21	Helicopter	out	75.1

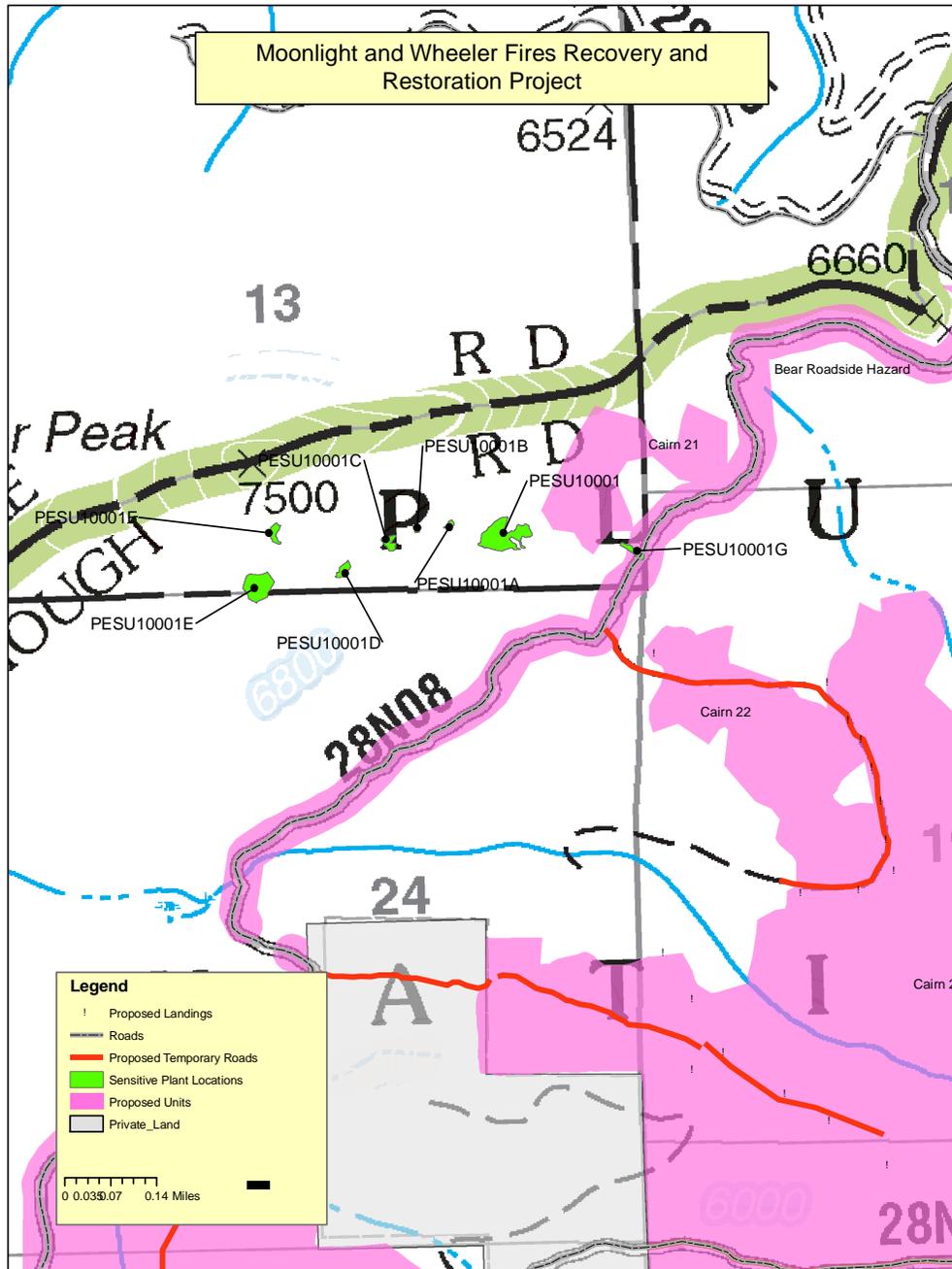


Figure 2. Known locations of Susanville beardtongue in and near unit 21.

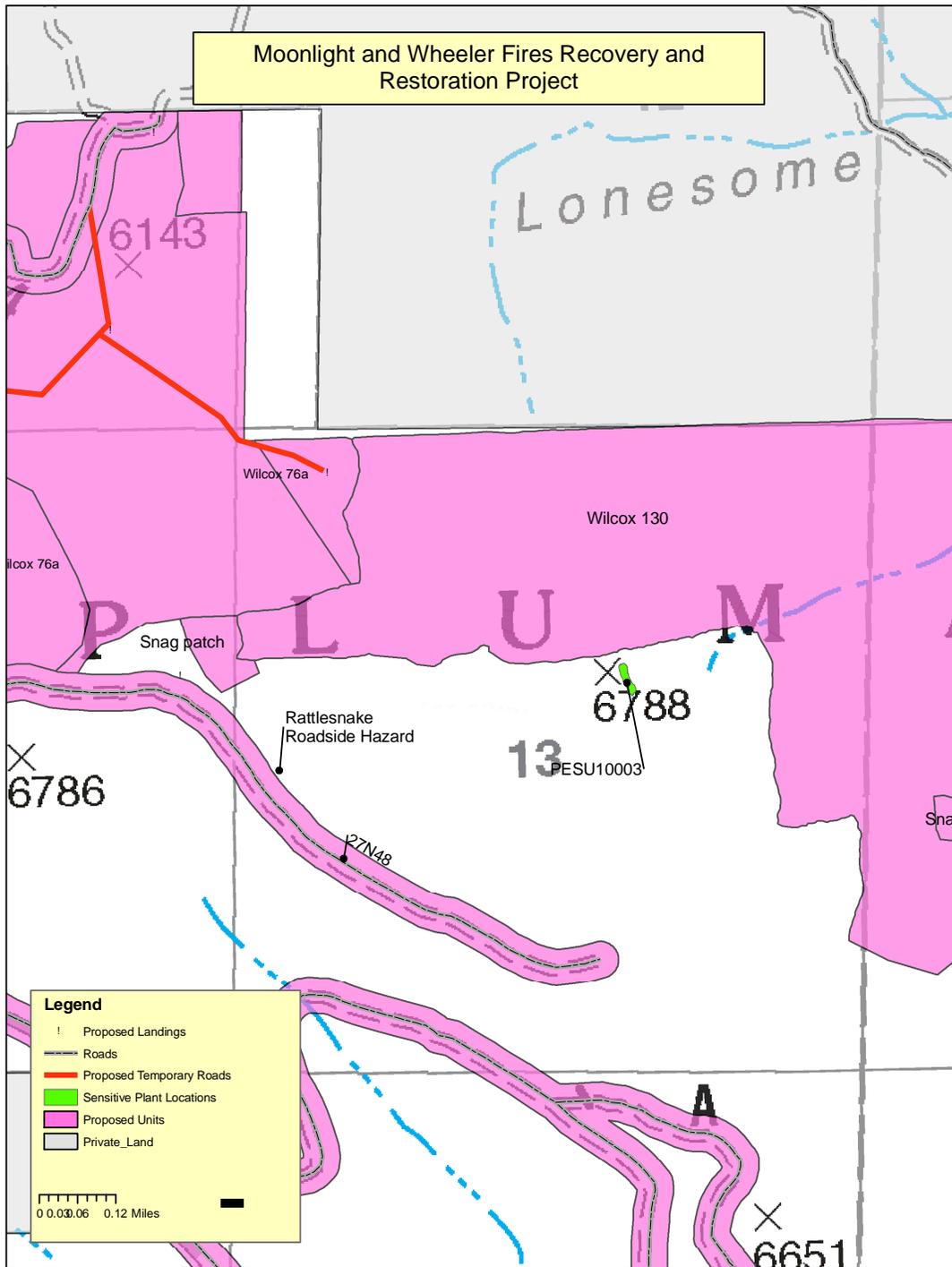


Figure 3. Known locations of Susanville beardtongue in unit 53a.

5.1.2. Management Prescription

Protect all occurrences from ground disturbance. Evaluate other activities based on species abundance, population size, geographic distribution, and known species ecology (USDA Forest Service 2007). For the Moonlight and Wheeler Fires Recovery and Restoration Project do not replant within 100 ft of known locations.

5.1.3. Effects of Alternative A (Proposed Action)

Direct Effects. No direct effects on Susanville beardtongue (*Penstemon sudans*) are anticipated because the known locations would be flagged for avoidance. No project activities, including reforestation, would occur within flagged areas.

Indirect Effects. The indirect effects of the proposed action would likely be negligible to slightly beneficial. Susanville beardtongue is found in dry, naturally open areas with little or no canopy or vegetative cover. Because this species it is found in open habitats, the proposed action as modified through the incorporation of the management prescription may increase the amount of suitable habitat for this species across the landscape by removing dead trees.

This project is likely to spread weeds (see Noxious Weed Risk Assessment). Weed infestations reduce the quality of sensitive plant habitat through competition for resources and alterations of ecological processes (e.g. fire frequency). Current weed infestations are spatially separated from sensitive plant locations. Project activities may spread weeds closer to sensitive plant locations. The likelihood of weed spread and reducing weed spread as a result of this project are fully addressed in the Noxious Weed Risk Assessment for this project.

Cumulative Effects. The direct and indirect effects on this species from alternative A would be negligible to slightly beneficial, so there would likely be a low risk of cumulative effects. There are no known specific and documented direct and indirect effects on this species from past activities because this species was discovered in the area in 2004 and added to the Sensitive species list in 2006. A query of the Forest Service Activity Tracking System (FACTS) and subsequent overlay with Susanville beardtongue locations in proposed units reveals 6 past activities (Table 5).

Table 5. Past activities that overlap with known locations of Susanville beardtongue in proposed treatment units.

Sensitive Plant Location	Activity Polygon ID	Activity
<i>Penstemon sudans</i> 001	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001A	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001B	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001C	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001D	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001E	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001F	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001G	051102201001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 003	051102206001000000	Moonlight Fire 2006
<i>Penstemon sudans</i> 001	051102201003600000	Unnamed Sanitation Salvage 1990

Sensitive Plant Location	Activity Polygon ID	Activity
<i>Penstemon sudans</i> 001G	0511022010901000000	Indicator SSTS Sanitation Salvage 1992
<i>Penstemon sudans</i> 001	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001A	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001B	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001C	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001D	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001E	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001F	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 001G	0511022010903000000	Borderline III Insect SSTS Sanitation Salvage 1994
<i>Penstemon sudans</i> 003	0511022060902000000	Highwire Helicopter Insect Salvage Resale 1993
<i>Penstemon sudans</i> 003	0511022110901000000	North Mud Insect SSTS 1990

These past projects have likely had some negative effect to Susanville beardtongue because project activities were not mitigated. The extent, degree, and duration of the effects can not be quantified because the plant was added to the Plumas NF Sensitive plant list in 2006 and no project data exists before the 2005. Furthermore, no scientific literature exists documenting the ecology or life history of the species so we do not know the potential impacts of past projects (USDA Forest Service 2008). Some negative effects are likely because the species was not managed for or recognized as a management concern.

The effects of the Moonlight Fire appear to be negligible. The locations in the Bear Roadside Hazard (occurrence 001G) and near unit 21 were monitored during the summer of 2008 (Figure 2). Each location had about the same number of plants as recorded before the fire.

It is not possible for the effects of the Indicator, Borderline III, Highwire, North Mud, or Hungry projects to be fully assessed because no pre-project data exists. Although the Hungry project was completed in 2007 NEPA for the project was completed much earlier.

Grazing has likely had some impact on the plants in these locations. PESU10_003 and PESU10_001G are in the Lone Rock Allotment. PESU10_001, 001A, 001B, 001C, 001D, 001E, 001F are in the Lights Creek Allotment.

No other projects in Appendix B of the EIS are likely to contribute to the direct, indirect, or cumulative effects of *Penstemon sudans* in the botany analysis area.

If existing management guidelines, such as rare plant surveys and protection of known rare species locations remain in place, the effects of the proposed and future projects would likely be minimal or similar to those described in the analysis of the action alternatives.

5.1.4. Effects of Alternative B (NO ACTION)

Direct Effects. No direct effects are anticipated because no project related activities would occur.

Indirect Effects. The indirect effects of the no action would likely be negligible. Susanville beardtongue is found in dry, rocky, naturally open areas with little or no canopy or vegetative cover.

Cumulative Effects. Because the direct and indirect effects of this project are expected to be negligible to minor, they would not substantially contribute to the effects from past, present, and future activities.

The effects of other projects have been described under the proposed action above. The effects of those projects are the same for this alternative.

5.1.5. Effects of Alternatives C, D & E

Direct Effects. No direct effects would occur to occurrence 001G in the Bear roadside hazard unit because it would be flagged for avoidance. The other locations of Susanville beardtongue would not be impacted because units 21 and 130 are not included in these alternatives so they are not in or near treatment units.

Indirect Effects. The indirect effects of these alternatives would be the same as those of Alternative A.

Cumulative Effects. Because the direct and indirect effects of this project are expected to be negligible to minor, they would not substantially contribute to the effects from past, present, and future activities.

The effects of other projects have been described under the proposed action above. The effects of those projects are the same for these alternatives.

6.0 Determination

It is my determination that the Moonlight and Wheeler Fires Recovery and Restoration Project action alternatives (A, C, D, & E) and no action alternative (B) may affect individuals, but is not likely to result in a trend toward Federal listing or loss of species viability for *Penstemon sudans*. This determination is based on the above analysis, the potential impacts to suitable habitat, and the potential for weed spread to impact suitable habitat. For *Penstemon sudans*, the flag and avoid management of alternatives A and C has the same effect as the no action of alternative B.

It is my determination that the Moonlight and Wheeler Fires Recovery and Restoration Project action alternatives (A, C, D, & E) and no action alternative (B) will not affect any other Region 5 Sensitive species or any Threatened, Endangered, or Candidate species.