

APPENDIX C

Response Function Survey



Highly Valued Resources and Assets (HVRA) Response Function Characterization Survey – Alpine County

In this survey, we ask survey participants to assign a "response function" or fire effects value to each of the HRVAs that have been identified for the project area. For each combination of HVRA and flame length, we ask that you determine whether a flame length category would be relatively:

- “beneficial” (+1 [slightly] to +3 [extremely]);
- “neutral” (0); or
- “detrimental” (-1 [slightly] to -3 [extremely]) to a HVRA

For the purposes of this survey, fire severity is defined as the amount of live vegetation killed in a fire. Low severity is generally <25% mortality, moderate is from 25-90% mortality, and high severity is >90% mortality. Examples of fire behavior are given for forested vegetation, but the general gradient applies to other vegetation types as well. We are using flame length as surrogate to fire intensity as follows:

Flame Length (ft)	Description of general fire behavior and effects
0-2	Scorch height 5-20'; typically, low severity; ground/surface fire in low fuel load and/or mild conditions. Fire burns surface fuels, small shrubs or seedlings.
2-4	Scorch height 10-40'; typically, low-to-moderate severity; ground/surface fire, moderate fuel load and/or moderate conditions. Fire burns surface fuels, shrubs and smaller trees.
4-6	Scorch height 20-60'; typically, moderate severity; ground/surface fire in moderate fuel and moderate-to-severe conditions. Fire burns surface fuels, shrubs and smaller trees, as well as individual mature trees.
6-8	Scorch height 30-80'; typically, moderate-to-high severity; some ground/surface fire transitioning to canopy fire in moderate-to-heavy fuel and moderate-to-severe conditions. Fire burns surface fuels, shrubs and smaller trees, and some smaller clumps of mature trees.
8-12	Scorch height 50-100'; typically, high severity; some ground/surface fire transitioning to canopy fire in moderate-to-heavy fuel load and moderate-to-severe conditions. Fire burns

	burns very hot, killing larger clumps of mature trees as well as consuming under-story and surface fuels.
>12	Scorch height exceeds tree height; high severity; crown/canopy fire in heavy fuel in moderate-to-severe conditions. Fire burns very hot, killing nearly all mature trees in a wider area, as well as consuming under-story and surface fuels.

For questions about this survey, please contact Scott Conway at: sconway@sig-gis.com

* 1. Your Name (Optional)

* 2. Agency or Institution

* 3. Position Description

4. Please use dropdowns to score each HVRA listed below in terms of their 'response function' (i.e., expected fire effects) to different flame length/fire intensities.

Description of response function scoring scheme

-3	Highly detrimental to HVRA
-2	Moderately detrimental to HVRA
-1	Slightly detrimental to HVRA
0	No beneficial or detrimental effect HVRA
1	Slightly beneficial to HVRA
2	Moderately beneficial to HVRA
3	Highly beneficial to HVRA
N/A	Unsure

For example, the result of your responses for each HVRA should look something like this - where a response function value is inserted for each combination of HVRA and fire severity level:

	Fire Severity						
HVRA:Sub-HVRA	Low: Flame	Low: Flame	Moderate: Flame	Moderate: Flame	Extreme: Flame	Extreme: Flame	Don't Know/Unsure

	Length 0-2ft	Length 2-4ft	Length 4-6ft	Length 6-8ft	Length 8-12ft	Length 12+ft	
Natural Resources/Open Space: Watersheds of Special Significance	3	2	0	-1	-3	-3	
Infrastructure/Utilities: Major Evacuation Corridors	0	-1	-2	-3	-3	-3	

	Low - Flame Length 0-2 ft.	Low - Flame Length 2-4 ft.	Moderate - Flame Length 4-6 ft.	Moderate - Flame Length 6-8 ft.	Extreme - Flame Length 8-12 ft.	Extreme - Flame Length 12+ ft.	Don't Know/Unsure
Community Structures: Residential Structures	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: Education facilities (e.g., daycare/schools/colleges)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: Recreational Facilities – campgrounds, RV parks (non-ski)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: Health and elder care facilities	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: Business and Public structures	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: Places of Worship	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: High-hazard Buildings	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Community Structures: Non-Habitable/Unknown Structures (barns/sheds)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Infrastructure/Utilities: Communication Infrastructure (cell towers, microwave towers, etc)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Infrastructure/Utilities: Potable water storage (e.g., tanks); snow making infrastructure	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Infrastructure/Utilities: Airport	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Infrastructure/Utilities: Major Evacuation Corridors (ingress and egress routes)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

	Low - Flame Length 0-2 ft.	Low - Flame Length 2-4 ft.	Moderate - Flame Length 4-6 ft.	Moderate - Flame Length 6-8 ft.	Extreme - Flame Length 8-12 ft.	Extreme - Flame Length 12+ ft.	Don't Know/Unsure
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Infrastructure/Utilities: Minor Evacuation Corridors (ingress and egress routes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infrastructure/Utilities: Community Evacuation/Refuge/Safe Zones/Areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cultural/Historic Resources: Cemeteries or significant resource buildings, areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural Resources/Open Space - Watersheds of special significance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural Resources/Open Space - Wildland Urban Interface - Defense	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Natural Resources/Open Space - Ski Area Terrain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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APPENDIX D

Relative Importance Survey



Highly Valued Resources and Assets (HVRA) Relative Importance Characterization Survey – Alpine County

Alpine County is applying “A Wildfire Risk Assessment Framework” (Scott et al. 2013 – USDA RMRS-GTR-315) across the County to help prioritize the implementation of forest fuels treatments. One of the steps in the process is to identify and rank the relative importance of a landscape’s ‘Highly Valued Resources and Assets’ (HVRA). Resources and assets are deemed ‘highly valued’ based on their utility in driving fire management decision making. For example, above-ground electrical utilities can be identified as a HVRA because this ‘infrastructure’ can be a source of wildfire ignitions, and their loss due to wildfire, could impact the power supply to a community.

For this step in the process, a HVRA scoring system has been designed to help you assign the ‘relative importance’ of different HVRAs identified by stakeholders for Alpine County (i.e., the project area). Four criteria are used to aid in assigning relative importance, including:

Uniqueness/Rarity/Endemism - a rating of the commonness or uniqueness of a HVRA to the project area.

Replaceability - rating of how quickly an HVRA can be recovered, be replaced or restored after a wildfire disturbance.

Importance for safety or as critical infrastructure – a rating of systems and assets, whether physical or virtual, when incapacitated or destroyed would have a debilitating impact on security, economic security, public health or safety, or any combination thereof.

Participants are asked to score each HVRA from 1 to 5, for each of the above described criterion. If you are unsure of the relative importance of HVRA, select the "Don't Know/Unsure" option. After the survey has been completed by all participants, scores for each HVRA will be tallied, then ranked to determine their relative importance across survey participants. This survey will take approximately 10 to 15 minutes to complete.

Please contact Scott Conway (sconway@sig-gis.com) if you have questions about the survey.

Thank you for your participation.

* 1. Please enter your name (optional)

2. Agency, Institution, or Affiliation

* 3. Position Description

* 4. Please score the Uniqueness/Rarity/Endemism of the following HVRA at the project area

Score	Description
5	Only occurs within the project area - The resource or asset only occurs within the project area and nowhere else on. The asset's function, character, or architecture is unique to project area and nowhere else in the world.
4	Unique - A large proportion of the resource, or asset's function, character, or architecture, occurs within project area boundaries, with a smaller proportion represented outside the project area's boundaries, but within same region of the Sierra Nevada (e.g., within 50 miles of the project area boundary).
3	Moderately Unique - The resource or asset's function, character, or architecture, occurs within project area boundaries and occurs outside the boundaries, but is contained within the Sierra Nevada ecoregion.
2	Common - The resource or asset's function, character, or architecture, is within the project area boundaries and is common throughout California.
1	Very Common - The resource or asset's function, character, or architecture, is within the project area boundaries and is common throughout the United States.

	1 - Very common	2 - Common	3 - Moderately unique	4 - Unique	5 - Only at Project Area	Don't Know/Unsure
Community Structures: Business and Public structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Residential Structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 - Very common	2 - Common	3 - Moderately unique	4 - Unique	5 - Only at Project Area	Don't Know/Unsure
Community Structures: Education Facilities (Daycare/Schools/Colleges)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Recreational Facilities – campgrounds, RV parks (non-ski)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Places of Worship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Non-Habitable/Unknown Structures (barns/sheds)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Health and Elder Care Facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: High Hazard Buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Potable water storage (e.g., tanks); snow making infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Airport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Communication infrastructure (cell towers, microwave towers, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Major Evacuation corridors (ingress and egress routes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Minor Evacuation corridors (ingress and egress routes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Community Evacuation/Refuge/Safe Zones/Areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural/Historic Resources: Cemeteries or significant resource buildings, areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Resources/Open Space - Ski Area Terrain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Resources/Open Space - Wildland Urban Interface - Defense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Resources/Open Space - Watersheds of special significance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 5. Please score the Replaceability of the following HVRA at the project area**

Score	Description
5	Extremely difficult to replace or restore - The asset can be rebuilt at significant cost (>\$2 million), or resource is not replaceable (e.g., cultural), or will not likely recover (regardless of management intervention) to its pre-fire condition within 20 years.
4	Difficult to replace or restore - The asset can be rebuilt at substantial cost (\$500,000 to <\$2 million), or resource will likely recover with management intervention to its pre-fire condition within 15 years of fire.
3	Moderately difficult to replace or restore - The asset can be rebuilt at a cost of \$200,000 to <\$500,000, or resource will likely recover with some management intervention to its pre-fire condition within 10 years of fire.
2	Reasonably replaced or restored - The asset can be rebuilt at a cost of \$50,000 to <\$200,000, or resource will likely recover with little or no management intervention to its pre-fire condition within 5 years of fire.
1	Easily replaced or restored - The asset can be rebuilt at a cost of <\$50,000, or resource will likely recover with little or no management intervention to its pre-fire condition within 1 year of fire.

	1 - Easily replaced/restored	2 - Reasonably replaced/restored	3 - Moderately difficult to replace/restore	4 - Difficult to replace/restore	5 - Extremely difficult to replace or restore	Don't Know/Unsure
Community Structures: Business and Public structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Residential Structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Education facilities (e.g., daycare/schools/colleges)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: High-hazard Buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Health and elder care facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 - Easily replaced/restored	2 - Reasonably replaced/restored	3 - Moderately difficult to replace/restore	4 - Difficult to replace/restore	5 - Extremely difficult to replace or restore	Don't Know/Unsure
Community Structures: Non-Habitable/Unknown Structures (barns/sheds)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Recreational Facilities – campgrounds, RV parks (non-ski)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Places of Worship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Airport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Communication infrastructure (cell towers, microwave towers, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Potable water storage (e.g., tanks); snow making infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Major Evacuation corridors (ingress and egress routes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Minor Evacuation corridors (ingress and egress routes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Community Evacuation/Refuge/Safe Zones/Areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cultural/Historic Resources: Cemeteries or significant resource buildings, areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Resources/Open Space - Wildland Urban Interface - Defense	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Resources/Open Space - Watersheds of special significance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Natural Resources/Open Space - Ski Area Terrain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** 6. For the Community Structures and Infrastructure/Utilities , please score each HVRA for its importance for public safety or as critical infrastructure within the project area.**

Score	Description
5	Highest safety or infrastructure value - Asset is defined as 'Critical Infrastructure' Per 42 U.S. Code § 5195c. 'Critical Infrastructure' is defined per 42 U.S. Code § 5195c as "systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security,

	national economic security, national public health or safety, or any combination of those matters.”
4	Elevated safety or infrastructure value - Asset is not defined as ‘Critical Infrastructure’ Per 42 U.S. Code § 5195c but is critical to the project areas public safety and operations.
3	Moderate safety or infrastructure value - Asset is not defined as ‘Critical Infrastructure’ 42 U.S. Code § 5195c but is important to public safety and city government mission.
2	Low safety or infrastructure value - Asset has temporary or readily replaceable infrastructure value.
1	Little if any safety or infrastructure value - Asset has limited or no infrastructure value.

	1 - Little or no	2 - Low	3 - Moderately	4 - Elevated	5 - High	Don't Know/Unsure
Community Structures: Business and Public structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Residential Structures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: High Hazard Buildings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Health and elder care facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Non-Habitable/Unknown Structures (barns/sheds)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Recreational Facilities – campgrounds, RV parks (non-ski)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Education Facilities (Daycare/Schools/Colleges)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community Structures: Places of Worship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Airport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Communication infrastructure (cell towers, microwave towers, etc)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Potable water storage (e.g., tanks); snow making infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Major Evacuation corridors (ingress and egress routes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	1 - Little or no	2 - Low	3 - Moderately	4 - Elevated	5 - High	Don't Know/Unsure
Infrastructure/Utilities: Minor Evacuation corridors (ingress and egress routes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infrastructure/Utilities: Community Evacuation/Refuge/Safe Zones/Areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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APPENDIX B

Biological Resources Assessment Report

Biological Assessment: Alpine County Wildfire Risk Mitigation Plan

October, 2020

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Biological Assessment: Alpine County Wildfire Risk Mitigation Plan

October, 2020

1 Introduction

Priority areas at the Alpine County wildland-urban interface have been chosen for wildfire fuel reduction treatment funded by an April 2019 California Department of Forestry and Fire Protection (Calfire) Local Fire Prevention Grant, at 1) a satellite housing area west of the Markleevillage urban center (“Markleevillage”), 2) the development fringe where housing meets steeply rising slopes of the Sierra Nevada range at Woodfords (“Manzanita”), and 3) the western portion of Bear Valley, a higher-elevation resort-based community (“Bear Valley”). This report documents biological resources as they occurred within the Markleevillage, Manzanita, and Bear Valley fuel reduction project areas in July-August 2020, as well as the potential for forestry practices that the project will employ to negatively impact sensitive plants, animals, and habitats. Potential project-level and site-specific measures that can be taken to avoid or minimize those potential environmental impacts of the project are identified to aid further development of appropriate mitigations to be included in the project planning document, “Alpine County Wildfire Risk Mitigation Plan” (Alpine County Community Development Department, *in prep.*) and/or California Environmental Quality Act (CEQA) environmental review document (Alpine County Community Development Department, *in prep.*).

The Markleevillage and Manzanita project areas are located similarly on the eastern flank of the Sierra Nevada, west of the East Fork Carson River where it exits mountainous terrain (Figure 1). They occur within four miles of each other, at elevations lower than the Bear Valley area (Table 1). The climate at Markleevillage and Manzanita is relatively xeric, due to the rain shadow effect caused by high mountains to the immediate west, yet both areas feature perennial stream flows that are tributary to the East Fork Carson River. Upland forest and scrub plant communities at each are interrupted briefly at scattered seeps and springs that seasonally to perennially flow on the surface and recharge local shallow groundwater. Correspondingly, the Markleevillage and Manzanita habitats and native species that will be affected by the project are often alike, as are the steps that can be taken to minimize adverse impact. But there are also important differences in characteristics of the habitats that are available, non-native plant prominence, and historical land use that warrant a separate analysis approach.

The Bear Valley site (Figure 1) is situated west of the Sierra Nevada crest, near the headwaters of Bear Creek. Winter precipitation is abundant and reliable enough to support a nearby ski resort operation. However, in contrast to Markleevillage and Manzanita, no perennial streams occur within the Bear Valley project limits. Steeply falling channels that cross through Bear Valley conduct snowmelt flows that while energetic, are ephemeral to at most weakly seasonal at the beginning of the growing season for plants. There are few areas where seeps and springs provide surface flows, and these flows are small and rarely perennial. Based upon the review of available literature, and on-site study in July – August 2020, Bear Valley clearly differs from Markleevillage and Manzanita with regard to the potential for harboring special status plant and animal populations, and the risk of project-induced non-native plant population spread.

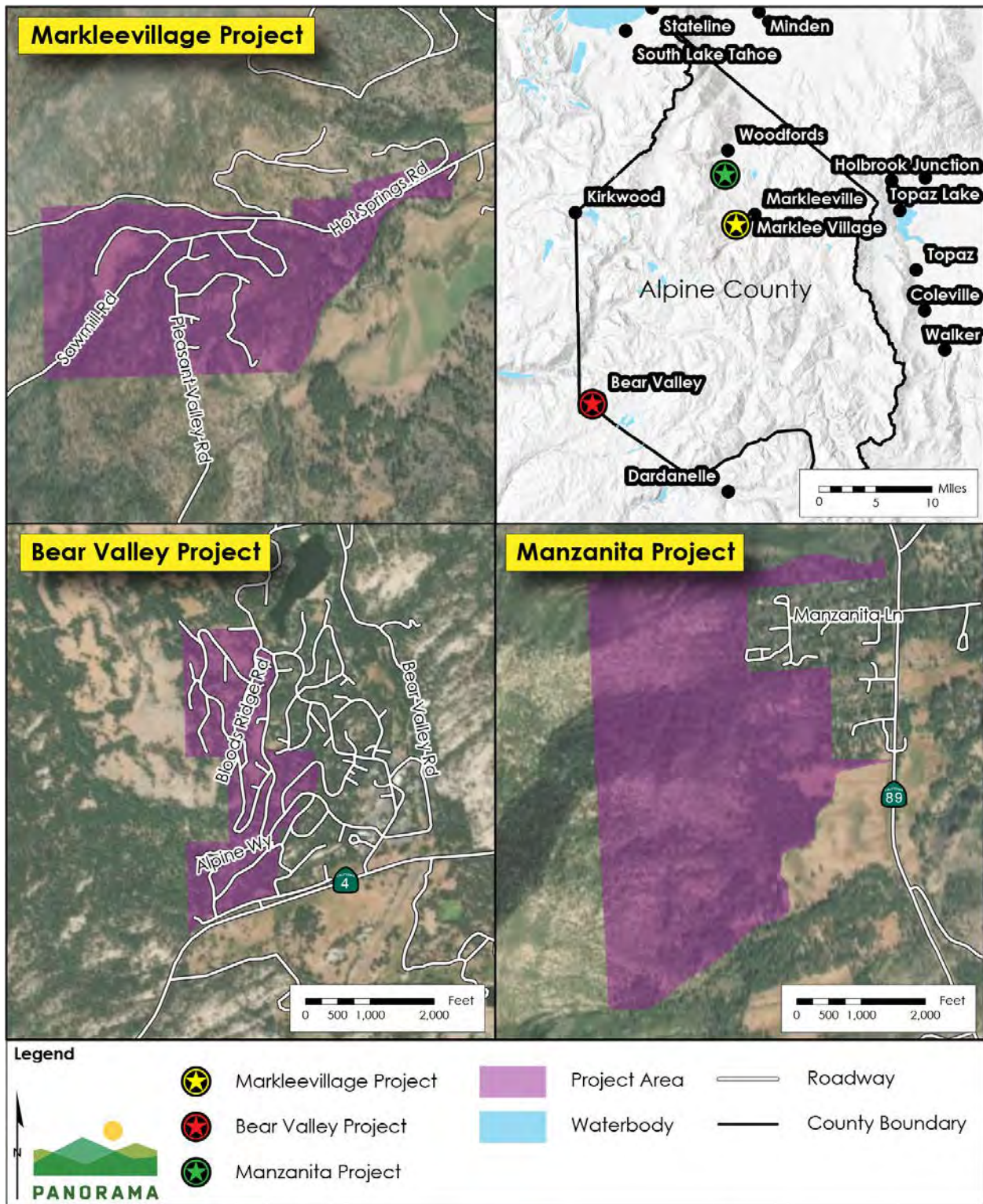


Figure 1. Markleevillage, Manzanita, and Bear Valley biological resource project areas. Studies were performed at each area in 2020 in support of development of the Alpine County Wildfire Risk Mitigation Plan.

2 Methods

2.1 Habitat Characterization

Vegetation types present within the project area were inventoried during visits to each site during the months of July and August 2020. Vegetation types provided the primary basis for developing characterizations of the habitats available for potentially occurring special status plants and animals. Site visits also provided an opportunity to directly search for sensitive plant community occurrence. A total of 890 acres within populated and adjacent marginal areas of Alpine County were inventoried (Table 1).

Table 1. Project area names used in this report. Approximate total area and elevation of each project area is given.

2020 Study Area	Acres	Elevation Range (feet)
Markleevillage	300	5600 - 5850
Manzanita	460	5750 - 6950
Bear Valley	130	7170 - 7700

Based upon initial visits to the study areas in July 2020, community boundaries were mapped onto aerial imagery (Sept. 2019, color with 1-meter resolution), generating 273 community type polygons. In August 2020, 260 (95%) of tentatively assigned vegetation type polygons were subsequently visited to ground-truth vegetation community boundaries. The most prominent native plant species were identified, in order to classify the dominant alliances. The survey was frequently limited to viewing from public roads and adjoining public lands; however, access for more thorough characterizations were allowed at many representative polygons for each plant community type at each project area. While suitable for recording visual estimates of the dominant species' relative frequencies in each vegetation stratum, this level of survey does not meet U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Wildlife (CDFW) rigor standards for determining rare species presence or absence (USFWS, 1996, CDFW, 2018). Similarly, rigorous inventory of occurring non-native plant species was possible throughout the occurring plant community types in some but not the majority of the privately owned parcels included in the study.

Occurring plant species were identified using nomenclature that is presented by Baldwin, *et al.*, (2012), as updated by Jepson Flora Project (2020). Vegetation was assigned to community type using the naming system developed by Holland (1986) and Sawyer, *et al.*, (2009), a classification system that uses physiographic landscape position in part to distinguish types. The occurring alliance types, as defined by CDFW (2019), were identified in order to more precisely distinguish site-specific habitats by dominant plant species. At this level of classification, the presence of relatively specific physiographic features can be inferred from the habitat requirements of alliance dominants, and CDFW (2019) community status as "Sensitive" can be determined.

The plant lists that were developed for each study area (Appendix A) are records of the prominent species, including the canopy or sward dominant species that were used for alliance type assignments, and non-native presence late in the 2020 growing season. Lack of access at some large Manzanita site properties would allow for plant community mis-assignment error, as there may be subtle transitions in species dominance, or small, embedded plant communities that were not visible from roadways or clearly depicted on the aerial imagery. As mapped, habitat extents (and the reported acreages) were in some places subject to interpretation of where to draw boundaries between broadly grading communities. Within the three Alpine County project areas, broad ecotones are most commonly indicated at boundaries between upland plant community types. Those between potential wetlands and the adjacent uplands vegetation types consistently proved to be relatively abrupt and visually distinct.

2.2 Potentially Occurring Special Status Species

Lists of special status plant and animal species that potentially could occur at the three project areas were compiled. Literature describing the life histories of each species was reviewed in order to highlight those species that potentially could use the habitats available at the project. These species lists (Appendix B) were produced by reviewing regional data (California Native Plant Society (CNPS) 2001, 2020, CalFlora 2020, CDFW 2020a-d, Consortium of California Herbaria, 2020), regional floras (Baldwin, *et al.*, 2012, Jepson Flora Project, 2020), reporting of biological resource surveys in preparation of local environmental documents (Cardo-Entrix, 2014, BLM, 2020), and personal communications with local agency biologists. In addition, July 2020 searches of the California Natural Diversity Database (CNDDDB) records (CDFW, 2020e-g) for nine quadrangles surrounding each project area (Table 2) were conducted.

Table 2. USGS quadrangles included in a July 2020 query of the CNDDDB.

Project Area	USGS Quads
Markleevillage	Markleeville, Woodfords, Freel Peak, Carson Pass, Pacific Valley, Ebbetts Pass, Wolf Creek, Heenan Lake, Carters Station
Manzanita	Woodfords, Minden, South Lake Tahoe, Freel Peak, Carson Pass, Markleeville, Heenan Lake, Carters Station
Bear Valley	Tamarack, Mokelumne Peak, Bear River Reservoir, Calaveras Dome, Boards Crossing, Liberty Hill, Donnell Lake, Spicer Meadows Reservoir, Pacific Valley

Potentially occurring species were considered to be “Special Status” if they

- have state or federal status as rare, threatened or endangered (CDFW 2020a, 2020c),
- are listed in the CNDDDB lists of special plants and wildlife (CDFW 2020b, 2020d),
- meet the definitions of rare or endangered wildlife species under the California Environmental Quality Act (Section 15380 CEQA Guidelines),

- are listed by CNPS in their inventory of sensitive California plants (CNPS 2001, 2020), or
- are included in the most recent sensitive plant lists or watch lists prepared by U.S. Forest Service – Stanislaus and Humboldt-Toiyabe National Forests (USFS, 2013), or Bureau of Land Management, Mother Lode Office sensitive species lists (BLM, 2015).

3 Potentially Occurring Special Status Plants and Animals

3.1 Overview

No plant species listed by USFWS as Endangered or Threatened under the federal Endangered Species Act (FESA) are known to occur within 20 miles of these study areas (Appendix B). Tahoe yellow cress (*Rorippa subumbellata*), an aquatic plant whose known distribution is confined to shoreline habitat at Lake Tahoe (CDFW, 2020f, Jepson Flora Project, 2020), is the only plant species that is listed under the California Endangered Species Act (CESA) and known to occur within 20 miles. Tahoe yellow cress occurrence within the project is considered very unlikely because no habitats there resemble Lake Tahoe shorelines (Appendix B2). Potential project impacts upon special status plants would be limited to populations of species that are currently regarded by USFS, BLM, or CDFW as regionally rare or sensitive (Table 3), but not listed under FESA or CESA. It is possible that populations of one or more of these species is entirely encompassed by the project, for example populations whose distributions or viable seed banks are restricted to the smallest wetlands and potential wetlands habitat occurrences. Isolated special status plants with populations so limited to scattered, very small habitats may be at risk of extirpation due to project forestry practices, specifically practices associated with mechanized, self-propelled mastication and piling, and pile burning, which could locally disturb the soil profile, change the seasonal moisture regime in the rooting zone, substantially reduce overcanopy shading, or cause the introduction of invasive non-native plants. Specific impacts that for each species could unintentionally result in extirpation of a population are discussed below in the separate contexts of the project areas.

Table 3. Special status lichen, bryophyte and vascular plant species that potentially occur in habitats that were mapped within the Markleevillage (MV), Manzanita (MZ), and Bear Valley (BV) project areas are indicated (√). Hydrophytic status and growth habit are given, codes defined below.

Family	Species	Status	Habit	MV	MZ	BV
Peltigeraceae	<i>Peltigera gowardii</i>		lichen			√
Bruchiaceae	<i>Bruchia bolanderi</i>		bryophyte		√	
Meesiaceae	<i>Meesia uliginosa</i>		bryophyte		√	
Helodiaceae	<i>Helodium blandowii</i>		bryophyte	√	√	
Ophioglossaceae	<i>Botrychium ascendens</i>	FAC	fern/PH	√	√	√
	<i>Botrychium crenulatum</i>	FACW	fern/PH		√	√
	<i>Botrychium minganense</i>	FAC	fern/PH		√	√
	<i>Botrychium montanum</i>	FAC	fern/PH			√
Apiaceae	<i>Lomatium stebbinsii</i>	UPL	PH			√
Asteraceae	<i>Crepis runcinata</i> ¹	FACU	PH	√	√	

Family	Species	Status	Habit	MV	MZ	BV
Boraginaceae	<i>Cryptantha crymophila</i>	UPL	PH			√
Brassicaceae	<i>Draba praealta</i>	FAC	PH			√
Montiaceae	<i>Claytonia umbellata</i>	UPL	PH	√	√	
Onagraceae	<i>Epilobium howellii</i>	FACW	PH	√	√	
	<i>Epilobium palustre</i>	OBL	PH	√	√	
Phrymaceae	<i>Erythranthe carsonensis</i>	FAC	AH	√	√	
Polygonaceae	<i>Eriogonum luteolum</i>	UPL	AH	√	√	
Violaceae	<i>Viola purpurea ssp. aurea</i>	UPL	PH	√	√	
Alliaceae	<i>Allium tribracteatum</i>	UPL	PGL			√
Cyperaceae	<i>Carex davyi</i>	FACW	PGL	√	√	√
	<i>Carex hystericina</i>	OBL	PGL	√		
	<i>Carex petasata</i>	FAC	PGL	√	√	
	<i>Carex vallicola</i>	FAC	PGL	√	√	
	<i>Schoenoplectus subterminalis</i>	OBL	PGL	√		
Poaceae	<i>Agrostis humilis</i>	FACW	PG	√	√	
Potamogetonaceae	<i>Potamogeton robbinsii</i>	OBL	PH	√		

1. syn. *Crepis runcinata ssp. hallii*

Growth habit codes: A = annual species, P = perennial, G = grass, GL = grass-like growth, H = herbaceous growth

Hydrophytic Status Codes (USACE, 2012 Arid West Region, NRCS, 2014):

Code	Status	Designation	Comment
OBL	Obligate Wetland	Hydrophyte	Almost always occur in wetlands
FACW	Facultative Wetland	Hydrophyte	Usually occur in wetlands, but may occur in non-wetlands
FAC	Facultative	Hydrophyte	Occur in wetlands and non-wetlands
FACU	Facultative Upland	Nonhydrophyte	Usually occur in non-wetlands, but may occur in wetlands
UPL	Obligate Upland	Nonhydrophyte	Almost never occur in wetlands

There exists some possibility that the maintenance of one or more local special status wildlife populations (Table 4) may be substantially dependent on the continued presence of habitats that are available where the project will be implemented. Occurring individuals may reside, pass or migrate through, forage, roost, den, breed, nest, or raise their young in the available habitats. They may rely on this habitat availability perennially, seasonally, during migration, or during one critical stage of their lives. An example of the latter would be a (long-lived) bald eagle (*Haliaeetus leucocephalus*) pair that loyally returns to a specific nest tree within their breeding habitat. Bald eagle and willow flycatcher (*Empidonax trailii*) are listed as Endangered by the State of California under CESA. The rarely seen Sierra Nevada Red Fox (*Vulpes necator necator*) is listed as Threatened under CESA. Western bumblebee (*Bombus occidentalis*) has been rapidly declining across its range in recent years, and is now a Candidate for listing under CESA. There are no critical habitat designations that currently intersect the project.

Bald eagle, willow flycatcher, and most other birds are further protected when nesting. The breeding period for birds is reasonably defined at Markleevillage and Manzanita as occurring March 1 through August 31, and at Bear Valley as April 1 through August 31. Migratory Bird Treaty Act (MBTA) provisions prohibit direct destruction of nests or project activities that indirectly would threaten nesting success. Active nests are protected resources under Fish and Game Code Sections 3503, 3503.5, 3511, and 3513, and raptor nests may be protected from destruction even when inactive. If work must be initiated during the breeding period, potential negative impacts would be direct, associated with mechanized vegetation treatments, and with standing tree, snag, or downed bole removal, regardless of habitat type. Possible indirect impacts are discussed separately (see below) for each project area.

Table 4. Sensitive wildlife species that potentially occur in the habitats mapped within the Markleevillage (MV), Manzanita (MZ), and Bear Valley (BV) project areas in August 2020 are indicated (√). The specific habitats where these species may potentially occur are summarized separately in the analyses for each project area.

Taxonomic Group	Species		MV	MZ	BV
Insects	<i>Bombus occidentalis</i>	Western bumblebee	√	√	
	<i>Euphydryas editha monoensis</i>	Mono checkerspot butterfly	√	√	
Fish	<i>Catostomus platyrhynchus</i>	mountain sucker	√	√	
	<i>Prosopium williamsoni</i>	mountain whitefish	√	√	
Amphibians	<i>Ambystoma macrodactylum sigillatum</i>	southern long-toed salamander	√	√	√
Birds	<i>Accipiter striatus</i> (nesting)	sharp-shinned hawk			√
	<i>Empidonax traillii</i> (nesting)	willow flycatcher	√		
	<i>Haliaeetus leucocephalus</i> (nesting)	bald eagle	√	√	
	<i>Pandion haliaetus</i> (nesting)	osprey			√
Mammals	<i>Aplodontia rufa californica</i>	Sierra Nevada mountain beaver	√	√	
	<i>Lepus townsendii townsendii</i>	western white-tailed jackrabbit	√	√	
	<i>Taxidea taxus</i>	American badger	√	√	√
	<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	√	√	

3.2 Habitats for Special Status Plants and Wildlife

Available habitats at each project area can be broadly grouped into 1) uplands, 2) disturbed or ruderal (recovering), and 3) wetlands including flowing streams and springs and adjacent seasonally to perennially wetted zones. Most of the potentially occurring special status plant and animal species, if present within the project, would be expected to occur within one of these broad habitat groupings and not in all. As described in detail in Chapter 4, below, community mapping that was performed in 2020 demonstrated that there is currently a substantially greater habitat availability within each project area for potentially occurring special status species that are adapted to upland habitats.

3.2.1 Habitats for Plants

Upland Habitats

Upland habitat extents in the project area are defined by their predominantly non-hydrophytic vegetation types. Upland forest and shrublands soils are seasonally moistened by snowmelt and rainfall during the February to May period (Markleevillage and Manzanita) or March to May period (Bear Valley). Uplands soils can be ephemerally moistened during the July-September annual summer drought by less dependable monsoonal thunderstorm activity. Among the 26 plant species that have some possibility of occurring (Table 3), only seven (both of the annual species, and five perennial species) have some likelihood of being found in project uplands.

The potentially occurring special status perennials of upland habitats would be generally expected only in areas with relic or fairly intact native vegetation (CDFW, 2020e-g, Jepson Flora Project, 2020). None are shrubs or trees; rather, these species are low-growing, relatively inconspicuous herbs that will not be directly targeted during project vegetation treatments. Three-bracted onion (*Allium tribracteatum*), which arises from an underground bulb, could conceivably survive episodic aboveground devegetation, but it is unlikely that Stebbins' lomatium (*Lomatium stebbinsi*), subalpine cryptantha (*Cryptantha crymophila*), Great Basin claytonia (*Claytonia umbellata*), or golden violet (*Viola purpurea* ssp. *aurea*) individuals would persist at project areas where the native vegetation has been substantially, repeatedly, or permanently removed. In contrast to the project's disturbed habitats, and the consistently small and scattered waters, wetlands, and potential wetland habitats that are discussed below, upland habitats are extensive and interconnected. Correspondingly, if special status annual or perennial plants do occur at the project, their uplands populations would be expected to be relatively diffuse and spread over greater areas of available upland habitat. It is unlikely that the project will result in loss of uplands populations, because the scales of limited project areas where the native vegetation may be substantially, repeatedly, or permanently removed (for example, firebreaks, burn piles) will not approach the much greater extents of the available uplands habitats.

Disturbed Habitats

Presence of Carson Valley monkeyflower (*Erythranthe carsonensis*) and Jack's wild buckwheat (*Eriogonum luteolum* var. *saltuarium*), species that exhibit a relatively ephemeral, annual growth habit (Table 3), may be restricted to the seed bank in some years. Furthermore, populations of these plants are the only that might occur entirely within roadsides, devegetated lots, and other ruderal settings (CDFW, 2020e, 2020f, Jepson Flora Project, 2020). Direct, mechanical impacts that would substantially

threaten or remove a population of these annual species would be unlikely, unless the topsoil seed bank (where their viable seeds reside) is eliminated. The project does not include topsoil removal, but small habitats could be sterilized by pile burning. Also, small areas presumably at roadsides may be intensively and repeatedly used to store and stage equipment and transfer materials. Annual populations narrowly adapted to such roadside strips, if any occur, may be lost if seed bank restocking is prevented.

Waters, Wetlands and Potential Wetland Habitats

Wetlands and potential wetlands are dependent upon seep zones and perennial springs, or narrowly follow riparian corridors. Despite being minor site components in terms of extent, potential wetland habitats throughout the project area clearly function to support relatively higher diversity of plants (Appendix A) and presumably wildlife occurrence and population maintenance. Wetland habitats and their seasonally drying margins provide relatively greater suitability for the majority of potentially occurring special status plant populations, compared to upland settings, in all three of the project areas. Among the 22 higher plant taxa highlighted as potentially occurring, 15 are considered hydrophytes that are unlikely or very unlikely to occur unless the soil habitat's condition is dependably moist, wet or submerged during a substantial portion or all of the growing season (Table 3). Potentially occurring special status lichen and bryophyte species similarly would be restricted to relatively wet habitats (Appendix B).

Fiddleleaf hawksbeard (*Crepis runcinata*), a FACU species in the Arid West Region (USACE, 2012), occurs near Markleevillage at a seasonally drying meadow (Cardno-Enrix, 2014), and regionally is known only from meadows and other potential wetland areas (CDFW, 2020c, *pers. obs.*). Based upon descriptions of known populations (CDFW, 2020e-g, CNPS, 2020, Consortium of California Herbaria, 2020), it is believed that this species and all other potentially occurring FAC, FACW, and OBL wetlands-adapted, special status plants (Table 3) would be restricted to "waters", "riparian", and "wetlands and potential wetlands" portions of the project areas. Specific riparian, wetlands, and potential wetlands plant communities that possibly provide suitable habitats were identified for each species, throughout the Markleeville, Manzanita, and Bear Valley areas (see maps and discussions below for each project site). It is very unlikely that populations of any of these could occur in project upland habitats.

Project activities associated with mechanized, self-propelled mastication and piling, and pile burning, could locally disturb the soil profile, change the seasonal moisture regime in the rooting zone, substantially reduce overcanopy shading, or cause the introduction of invasive non-native plants. If implemented within any waters (riparian), wetlands, or and potential wetlands plant community types, these activities have some potential to negatively affect aquatic felt lichen (*Peltigera gowardii*), the bryophytes Blandow's bog moss (*Bruchia bolanderi*), broad-nerved hump moss (*Meesia uliginosa*), Blandow's bog moss (*Helodium blandowii*), and plant species Carson Valley monkeyflower, fiddleleaf hawksbeard, upswept moonwort (*Botrychium ascendens*), scalloped moonwort (*B. crenulatum*), Mingan moonwort (*B. minganense*), western goblin (*B. montanum*), tall draba (*Draba praealta*), subalpine fireweed (*Epilobium howellii*), marsh willowherb (*E. palustre*), Davy's sedge (*Carex davyi*), porcupine sedge (*C. hystericina*), Liddon's sedge (*C. petasata*), western valley sedge (*C. vallicola*), water bulrush (*Schoenoplectus subterminalis*), mountain bent grass (*Agrostis humilis*), and Robbins' pondweed

(*Potamogeton robbinsii*). Loss of wetland-dependent populations should be considered a significant impact due to the increased threat of species extinction.

3.2.2 Habitats for Wildlife

Upland and Disturbed Habitats

Based upon published habitat requirements and CNDDDB descriptions of current or historically known occurrences within 20 miles of the project area (Appendix B), it is possible that the occupied ranges of up to 13 special status wildlife species currently extend into available project area habitats (Table 4). Western bumblebee (*Bombus occidentalis*), Mono checkerspot butterfly (*Euphydryas editha monoensis*), sharp-shinned hawk (*Accipiter striatus*), bald eagle, osprey (*Pandion haliaetus*), western white-tailed jackrabbit (*Lepus townsendii townsendii*), American badger (*Taxidea taxus*), and Sierra Nevada red fox may nest or den in the upland habitats where project treatments will be implemented. Specific upland forest and shrubland plant communities that possibly provide suitable habitats were identified for each species, throughout the Markleeville, Manzanita, and Bear Valley areas (see maps and discussions below for each project site). Project uplands generally have developed or retained a high degree of natural character. They provide quiet, often unlighted connectivity to the surrounding landscape, tree and shrub canopy shading, and resources for wildlife foraging and concealment.

Conversion to roads and single-family housing has occurred almost exclusively in uplands; however, widespread upland habitats loss and fragmentation due to development was mapped in 2020 at Bear Valley only. Within the 130-acre Bear Valley, conversion was mapped at 34 acres (26%), with an even distribution. Development at Markleevillage (10%) and Manzanita (1%) has been in contrast focused or concentrated, so that large undeveloped tracts of upland forest and shrublands remain in a relatively undisturbed condition that resembles adjacent forest and shrublands administered by Humboldt-Toiyabe National Forest. Siting of roads and fences that function as linear barriers to wildlife movement, and other losses of habitat connectivity, were widely observed only among the developed housing tracts in August 2020. Overall, should special status wildlife occur within the Markleeville, Manzanita, and Bear Valley project areas, the potential for sustained population maintenance likely remains very good at upland habitats.

The developed portions of each project area include habitat characteristics that are potentially attractive to wildlife. Landscaping vegetation and irrigation, canals and flowing ditches, and common behaviors such as careless handling of trash, provision of bird feeders, and other deliberate feeding to attract wildlife contribute to the overall carrying capacity for some species, including predators that were once considered relatively uncommon in Alpine County (*e.g.*, ravens). These and other presumable habitat alterations in the urbanized portion of the project area, including long-term loss of surface and groundwater quality, mortality due to domestic pets, subsidized predators and introduced trout, and nuisance removal of individuals, would likely diminish historically occurring special status populations.

Waters, Wetlands and Potential Wetland Habitats

Naturally occurring surface waters at Bear Valley are less prominent and more seasonal compared to those occurring at Markleevillage and Manzanita. The riparian corridors supported by

Markleevillage and Manzanita perennial streams, canals, and springs are associated with assemblages that are primarily native in character and plant species composition. They have retained connectivity to the surrounding landscape, stratified canopies, and ecotonal vegetation transitions – particularly upland to riparian community type transitions – that maintain the highest plant species diversity and cover resources for wildlife foraging and concealment found anywhere in the project area. There is some likelihood that relic, and possibly isolated populations requiring wetland habitats are present, including special status species, given the overall low disturbance that was found in 2020 at riparian and spring-fed areas where vegetation types dominated by hydrophytes, in all three project areas.

Project activities associated with mechanized, self-propelled mastication and piling, and pile burning, could locally disturb the soil profile, directly trample individuals or trample shut occupied dens and neonatal nests, substantially reduce overcanopy shading, or degrade surface water quality. If implemented within any waters, riparian, wetlands, or and potential wetlands plant community types, these activities have some potential to negatively affect southern long-toed salamander (*Ambystoma macrodactylum sigillatum*), mountain sucker (*Catostomus platyrhynchus*), mountain whitefish (*Prosopium williamsoni*), Sierra Nevada mountain beaver (*Aplodontia rufa californica*), nesting willow flycatcher, or nesting bald eagle.

Avoidance of significant impacts to occurring special status wildlife, including nesting birds, is practical only by avoiding the habitats in which they occur, or by planning based upon the result of surveys conducted by qualified biologists at a time just prior to the start of work. A similar reasoning applies to smaller, isolated populations of special status plants, should any occur. Habitat avoidance, which is restricting all entry by project personnel or in some cases requiring that hand crews rather than machinery be employed, could be adopted as part of the project at wetlands and potential wetlands, which altogether comprise 70 of 820 acres (8%) of the project area. Exclusion of these habitats would reasonably assure avoidance of impacts to special status species including 15 of 22 potentially occurring plants, all potentially occurring lichen and bryophytes, and five of 13 potentially occurring wildlife species. In addition, the exclusion of these habitats abrogates any responsibility to perform pre-disturbance investigations into the extents that these habitats qualify as federal or state jurisdictional waters and wetlands under Clean Water Act legislation, and avoid potential delay associated with agency permitting of project treatments in those areas.

4 Risk of Non-Native Plant Population Spread

Prominent invasions by non-native plant species were observed at each project area during the 2020 reconnaissance-level surveys. While the results were not floristically exhaustive, these surveys did include walking nearly all disturbed roadsides, and crossing repeatedly through many representative examples of each community type. Populations of 28 non-native species (“weeds”) were found within the project limits, and there was substantially greater assemblage loading apparent at Markleevillage and Manzanita (Table 5). Cheat grass (*Bromus tectorum*) is rated by California Invasive Plant Council (Cal-IPC) as High with regard to invasiveness. Cal-IPC recognizes several other occurring annual herbs and grasses, and three wetlands-adapted perennials as Moderate or Limited (Table 5), signifying that they are invasive and ecologically damaging, but to a lesser degree.

Perennial herb and grass species (Table 5) appear to be limited to colonizing potential wetland habitats throughout the project area, with few exceptions. Yellow salsify (*Tragopogon dubius*), curlycup gumweed (*Grindelia squarrosa*), sheep fescue (*Festuca trachyphylla*), and bulbous bluegrass (*Poa bulbifera* ssp. *vivipara*) were the only species found to have populations extending into or completely encompassed by upland habitat types (Appendix A). Yellow salsify and sheep fescue are consistently the most widespread perennial weeds in upland habitats, and among the most prominent in the project in regards to total area already infested. They currently can be found in widely scattered distributions at all disturbed and relatively undisturbed upland forest and shrublands, and at roadsides. Both are similarly pervasive in wetlands and potential wetland habitats, especially at their seasonally drying margins. Project activities will not further spread of yellow salsify or sheep fescue as they currently are locally naturalized everywhere. Curlycup gumweed and bulbous bluegrass population extents were not found beyond the roadsides where they currently occur. Disturbed/maintained road edges have been patchily colonized by curlycup gumweed at State Hwy 89 (Manzanita) and Hot Springs Rd (Markleevillage), and by bulbous bluegrass at Pleasant Valley Road (Markleevillage). The likely greatest potential for project-related spread of perennial weeds, specifically curlycup gumweed and bulbous bluegrass, into treated uplands environments will be realized if disturbed soil habitat is created using equipment that has been staged or has crossed through infested road shoulders at Markleevillage and Manzanita.

Table 5. Non-native plant population observed at the Markleevillage (MV), Manzanita (MZ), and Bear Valley (BV) project areas in August 2020 are indicated (√). Cal-IPC weed ratings are defined below.

Species		Cal-IPC	MV	MZ	BV
Herbaceous Perennials					
<i>Grindelia squarrosa</i>	curlycup gumplant			√	
<i>Hypericum perforatum</i>	Klamathweed				√
<i>Plantago major</i>	common plantain			√	
<i>Rumex acetosella</i>	sheep sorrel				√
<i>Tragopogon dubius</i>	yellow salsify		√	√	√
<i>Trifolium repens</i>	white clover		√	√	
Herbaceous Annuals					
<i>Capsella bursa-pastoris</i>	Shepherd's purse		√		
<i>Lactuca serriola</i>	prickly lettuce		√		
<i>Melilotus albus</i> ¹	white sweetclover		√	√	
<i>Melilotus officinalis</i> ¹	yellow sweetclover		√		
<i>Ranunculus testiculatus</i>	tubercled buttercup		√		
<i>Salsola tragus</i>	Russian thistle	Limited	√	√	
<i>Sisymbrium altissimum</i> ¹	tumble mustard		√		
<i>Spergularia rubra</i>	red sand spurrey				√
<i>Verbascum thapsus</i> ¹	woolly mullein	Limited	√	√	

Species		Cal-IPC	MV	MZ	BV
Perennial Grasses					
<i>Agrostis gigantea</i>	redtop bentgrass		√	√	√
<i>Dactylis glomerata</i>	orchard grass	Limited	√	√	√
<i>Elymus hispidus</i>	intermediate wheatgrass		√		
<i>Elymus repens</i>	quackgrass		√		
<i>Festuca trachyphylla</i>	sheep fescue		√	√	
<i>Holcus lanatus</i>	common velvet grass	Moderate		√	
<i>Phleum pratense</i>	common timothy		√	√	
<i>Poa bulbosa</i> var. <i>vivipara</i>	bulbous bluegrass		√		
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky bluegrass	Limited	√	√	
Annual Grasses					
<i>Bromus commutatus</i>	hairy chess				√
<i>Bromus hordeaceus</i>	soft chess	Limited	√		
<i>Bromus tectorum</i>	cheat grass	High	√	√	
<i>Hordeum murinum</i> ssp. <i>glaucum</i>	smooth barley	Moderate	√		

Cal-IPC weed ratings (California Invasive Plant Council, 2020):

High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate – These species have substantial and apparent-but generally not severe-ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Annual weeds in contrast are more prominent and present greater risk of invasive spread into upland species assemblages. Mitigating the risk of annual weed spread into suitable habitat for species that have not already established ubiquitous presence is likely to be difficult, given these species' adaptations to rapidly increase abundance at habitats where the soil has been mechanically disturbed. Cheat grass (*Bromus tectorum*), the only annual found to have current established presence throughout entire project areas (Markleevillage and Manzanita), is also the most undesirable species in regards to future fire dynamics where it occurs. Cheat grass is an effective competitor for soil moisture (Sawyer, et al., 2009). Its presence increases the likelihood and frequency of wildfire and facilitates burning with greater intensity and uniformity (Cal-IPC, 2020). While cheat grass swards were never encountered, it has established a pervasive population presence between shrubland canopies and within and near forest canopy gaps that cannot be avoided by the project. There is a high risk that newly devegetated treatment areas, especially areas where the soil organic horizon is removed or where the integrity of the accumulated duff (leaf fall mulch) has been highly disrupted (e.g., at large burn piles), will soon develop flammable cheatgrass-dominated swards. Local abundance can be minimized wherever masticated

material is spread as mulch rather than gathered and burned. Practices that will minimize the likelihood that the project will encourage higher local abundances of cheat grass are based upon treading lightly - using low ground pressure equipment while taking care to minimize disruption of the existing mulch, and raking available mulch back onto any soils bared by equipment access and turning.

There is moderate risk that the established populations of the annual weeds sow thistle (*Lactuca serriola*), tubercled buttercup (*Ranunculus testiculatus*), Russian thistle (*Salsola tragus*), tumble mustard (*Sisymbrium altissimum*), white sweetclover (*Melilotus albus*, locally sometimes biennial/perennial), soft chess (*Bromus hordeaceus*), and smooth barley (*Hordeum murinum*) will become more widespread in upland habitats at Markleevillage or Manzanita due to project activities. Populations of these species are currently small in extent. They occur in upland habitats, typically at roadsides or adjacent to housing and other areas of greater human use. In particular, treatments that utilize machinery or other vehicles, and to a lesser degree hand tools, could distribute seed or other propagules. Spread can be affected unless equipment and tools are cleaned and are free of soil before they are moved from weed-infested to weed-free areas within the project. In 2020, populations at Markleevillage and Manzanita were found only as occasional patches, but avoidance at the time when seed is available could be assured only after botanical survey to delineate population boundaries.

The overall risk that project treatments will increase weediness is reduced at Bear Valley, in comparison to Markleevillage and Manzanita. Cheat grass was not found at Bear Valley. Non-native perennials (Table 5) are wetlands-adapted (Appendix A2), and excepting yellow salsify they were found only in small areas of potential wetlands. With the exceptions of sand spurrey (*Spergularia rubra*) and hairy chess (*Bromus commutatus*), the current distributions of non-native annual (-biennial) herbs and grasses at Bear Valley are similarly restricted to discreet wetlands and potential wetlands community assemblages, rather than being widespread. Red sand spurrey, a relatively inconspicuous and low-growing herb, was found only in very limited areas of either xeric or seasonally wet roadside habitat. Hairy chess occurs at but is not restricted to roadsides at Bear Valley. Like red sand spurrey, hairy chess was found in low abundances in 2020, always at less than 7300 feet elevation. It was very occasionally found at the ecotonal margins that occur between areas mapped as potential wetland and upland forest and shrublands. The published upper elevation limit for this species in California is 7200 feet (Jepson Flora Project, 2020), which is below nearly all of the 7170-7700 feet elevation range of the planned work. While hairy chess could be spread to new soil disturbance in upland road and wetland margins, self-sustaining and ecologically damaging invasion into new habitat is considered unlikely because the disturbance will occur above the upper limits of the species' known elevation range.

Project inclusion of areas mapped here as wetlands and potential wetlands greatly increases the risk that occurring non-native species will be spread, especially at Markleevillage and Manzanita. Among the 28 weed species that were detected within the project area in 2020, 17 were found only in those relatively uncommon habitats. Use of machinery, vehicles, and hand tools could distribute seed or other propagules from infested wetlands and potential wetlands, unless cleaned free of soil before they are moved from there to weed-free areas within the project. Avoidance of these populations would include avoiding staging or turning equipment at limited forest and shrubland canopy gaps where wetlands and potential wetland habitats occur, including the drying edges classified here as Dry Montane Meadow. All

other project-related entry including slash piling and burning would also be prohibited. As has been concluded for avoidance of potentially occurring sensitive plants and wildlife, avoiding project-related weed spread and creation of densely weedy treated areas would be substantial benefits of excluding these small, relatively wet areas from treatments anywhere they occur within the project.

5 Project Areas: Sensitive Habitats and Special Status Species

5.1 Markleevillage Project Area

5.1.1 Markleevillage – Waters, Wetlands and Potential Wetland Habitats

The Markleevillage project area includes subalpine, montane valley bottoms and adjacent slopes in the area where Hot Springs Creek first converges with Spratt Creek, and then at the eastern edge of the project area with Pleasant Valley Creek. The name of the drainage changes to Markleeville Creek downstream from the confluence with Pleasant Valley Creek. Markleeville Creek is recognized as a “major tributary” to East Fork Carson River (Department of Water Resources, 1991). The apparently perennial surface flows in Spratt Creek and Pleasant Valley Creek are considered relatively permanent tributaries to Hot Springs Creek. Markleeville Creek then functions as a relatively permanent tributary to the off-site East Fork Carson River, a major local waterway that under Clean Water Act regulations may be considered a navigable interstate waterway. Any project activities that would alter the banks, introduce sediment or fill material, or plan to alter the corridor-like, largely native, riparian forest and scrub vegetation that is supported by the on-site perennial streams (Table 6), will require prior completion of Clean Water Act Section 404 and Section 401, and California Fish and Game Code Section 1600 permitting.

The Markleevillage project area (Figure 2a-b) includes the area known as Lower Thornburg Canyon, where diversion of a portion of the surface flow of Hot Springs Creek causes watering of a small, unlined canal. It is likely that this ditch-like conveyance has been flowing uninterrupted for more than 100 years (M. Drews, personal communication). The canal crosses and then parallels Hot Springs Road, supporting a narrowly vegetated corridor, consisting generally of native vegetation to a width averaging 10-20 feet at the immediate water’s edge and at the downslope bank and berm. The entire length of the canal alignment within the project area is associated with downslope seep zones and flowing springs. Often resembling the Markleevillage riparian corridor stands, vegetation at these springs has developed as multi-stratum, potential wetlands communities with high diversity. This suggests that the spring flow-dependent habitats there are similarly long-standing.

It is very likely that project activity that would alter the canal banks, introduce sediment or fill material, or plan to alter the supported vegetation, or significantly affect the ecological functions and values provided by its conveyed flows (for example, the maintenance of local species diversity), will be subject to Clean Water Act permitting. On-site return flows to Hot Spring Creek and Markleeville Creek will likely be treated similarly by federal and state regulators. Upper profiles of soils at the dependent wet meadow and dry meadow plant communities located downslope from the canal likely have had sufficient time to develop hydric indicators. These limited areas, which total 1.7 acres, are scattered amid clearly uplands Jeffrey Pine Forest (Figure 2b). Each zonal assemblage is dominated by plants that

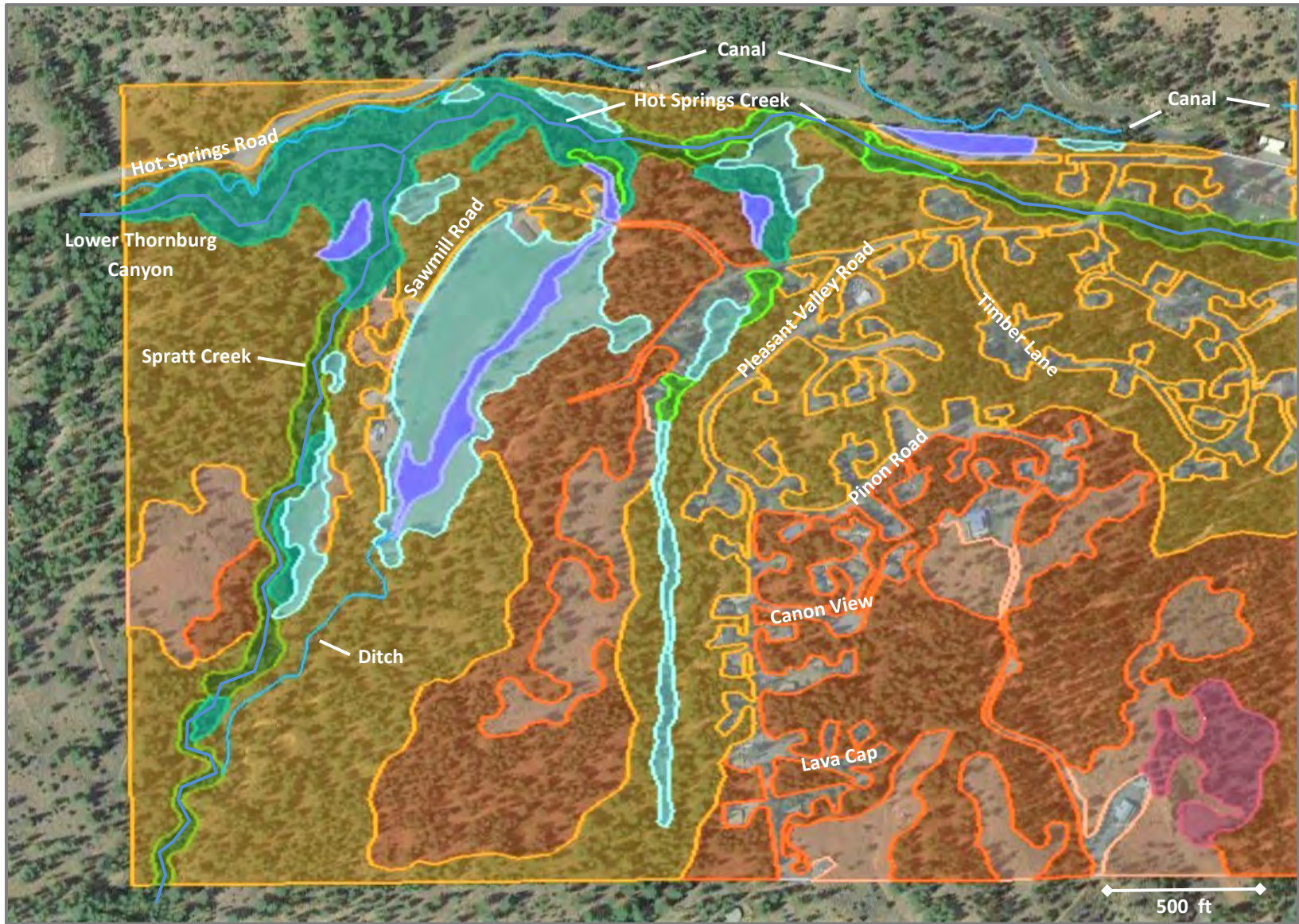


Figure 2a. Markleevillage project area, western half. Plant community occurrences mapped in August 2020 are shown. Base image date is August 2019.

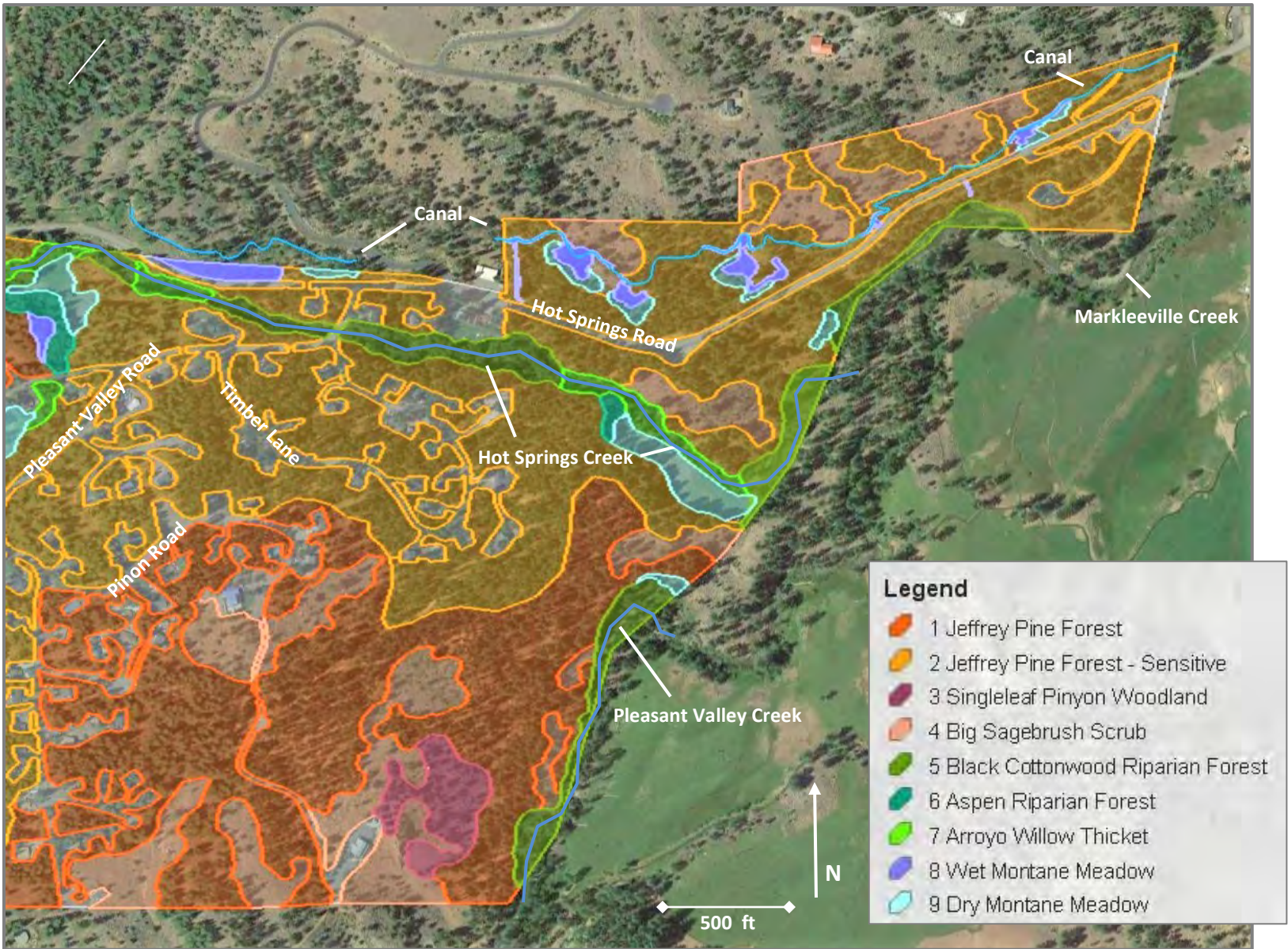


Figure 2b. Markleevillage project area, eastern half.

are dependent upon wetland habitat conditions. Being in positions adjacent to the presumably jurisdictional canal, they all may be similarly regulated as being both federal and state protected wetlands

Table 6. Plant communities that were mapped within the 300-acre Markleevillage project area in 2020. Markleevillage includes 33 acres that have been converted to houses, roads and other impervious or devegetated surfaces. Plant community names (after Holland, 1986) are cross-referenced to their Alliance names (Sawyer, *et al.*, 2009), as currently classified by CDFW. * indicates plant communities that are designated “sensitive” (CDFW, 2019).

Holland Community Name and CDFW Association Number	CNDDDB Alliance Name and Primary Association	Acreage in Study Area
Upland Communities		
Jeffrey Pine Forest 87.020.07 87.020.21*	Jeffrey Pine <i>Pinus jeffreyi</i> <i>Pinus jeffreyi-Purshia tridentata</i>	65.4 123
Singleleaf Piñon Woodland 87.040.00	Singleleaf Pinyon <i>Pinus monophylla-Artemisia tridentata</i>	3.0
Big Sagebrush Scrub 35.111.00	Mountain Big Sagebrush <i>Artemisia tridentata-Purshia tridentata</i>	30.1
Wetland and Potential Wetland Communities		
Montane Black Cottonwood Riparian Forest 61.120.03*	Black Cottonwood <i>Populus trichocarpa-Pinus jeffreyi</i>	12.2
Aspen Riparian Forest 61.111.09* 61.111.20* 61.111.00*	Aspen Grove (S3.2) <i>Populus tremuloides-Pinus jeffreyi</i> <i>Populus tremuloides-Poa pratensis</i> <i>Populus tremuloides-Prunus virginiana</i>	10.2 0.4 0.2
Modoc-Great Basin Riparian Scrub 61.201.00	Arroyo Willow Thicket <i>Salix lasiolepis-Alnus incana-Salix spp.</i>	3.0
Wet Montane Meadow 45.000.00	(Narrow-leaved Sedge) <i>Carex angustata-herbaceous</i>	4.1
Dry Montane Meadow 42.060.00 45.106.00	Kentucky Bluegrass Turf <i>Poa pratensis-herbaceous</i> <i>Agrostis gigantea-Poa pratensis</i>	8.6 4.0
Dry Montane Meadow 41.080.01*	Creeping Ryegrass Turf <i>Elymus triticoides-herbaceous</i>	2.8

Dry Montane Meadow

Dry Montane Meadow plant community types occur either zonally at seasonally drying wet meadow margins, or at the outer edge of the riparian corridors supported by Markleevillage's perennial streams (Figure 2a-b). These seasonally drying areas are ecotonal, appearing as broad transitions between riparian forest, riparian scrub, or wet montane meadows community types and upland forest or shrublands types. Dry Montane Meadows are notable where mapped as dependent upon the canal, due to the degree that they are being densely invaded by young conifers. The sapling stands are even-aged, the stems averaging about six inches diameter at breast height, suggesting that this colonization by upland conifers occurred episodically during the most recent period of drought. Dry montane meadow habitat associated with the canal totals 0.9 acres. The interrupted, 10-20 feet wide corridor at the seasonal channel paralleling west of Pleasant Valley Road (Figure 2a) is patchily becoming filled with small trees, and similarly may merit project treatments. Occurrences of Dry Montane Meadow mapped adjacent to streams, in contrast, are sparsely treed, typically only by clonally spreading stems of quaking aspen (*Populus tremuloides*).

Streambanks, riparian corridors, and wet meadows include surface flows and ponding of soils that are perennially wet to saturated. Areas classified as Dry Montane Meadow, in contrast, exhibit no evidences of surface flows or ponding, except within narrow and seasonally dried discharge pathways. If hydric soil conditions have over historical time developed within Dry Montane Meadow, it would be due to annual elevation of local shallow water tables into the soil rooting zone of wetlands-adapted plants. Therefore, for a substantial portion or all of the growing season, uses of heavy equipment or other entry by vehicles have strong potential to negatively impact potential wetlands habitat soil and hydrology. Such impacts would likely require prior permitting under federal and state Clean Water Act regulations. Any area that is mapped here as wetlands or potential wetlands, including Dry Montane Meadow, could be negatively impacted if soils are not confirmed to be well dried prior to entry.

Community-scale portions of some Dry Montane Meadows were observed to be dominated by creeping wildrye (*Elymus triticoides*). Contiguous Creeping Wildrye Alliance occurrences larger than 0.1 acres that occur adjacent to the riparian zones at Spratt Creek, Hot Springs Creek and Markleeville Creek would be considered Sensitive as defined by CDFW (2019). Drying margins at these occurrences support a high diversity of plant species, including some that have adaptations to soils burdened with evaporative saline deposits. The special status perennial herb fiddleleaf hawksbeard, which has been documented as occurring in nearby similar habitat (Appendix B1), has some likelihood of occurrence at project area riparian-adjacent meadow margins. If the project includes mechanized equipment entry into Dry Montane Meadow at Spratt Creek, Hot Springs Creek and Markleeville Creek, or practices that would substantially disturb the herbaceous stratum there, then pre-treatment surveys should be performed at the proper time of year (Table 7), in order to avoid negative impact to isolated populations of fiddleleaf hawksbeard.

Wet Montane Meadow

Markleevillage Wet Montane Meadows feature dense herbaceous vegetation. The dominant cover is often provided by species considered to be obligately restricted in the Arid West Region to

growth in wetland habitats. In August, small surface flows and surface ponding were evident at all occurrences, and it is assumed that Wet Montane Meadow as mapped perennially provide aquatic resources for wildlife use. Services provided by these habitats include maintenance of local diversity, groundwater storage, and surface water purification. The large irrigated meadow adjacent to Sawmill Road comprises 40% of the total project area acreage for this type, while 11 other sites average 0.1-0.2 acres. The green edge that demarcates wet meadow areas is stark during the growing season, including the May-November period when adjacent upland soil surfaces would be dried to a firmness accessible for project-related treatment. None of the plants that grow in this community are targeted for project treatment. It will be feasible for crews working in adjacent uplands to visually identify and avoid direct impacts to Wet Montane Meadow habitat. If larger vegetation such as trees must be removed very near Wet Montane Meadow, effective avoidance would include restricting edge work to hand crews. Also, trees should be felled into the uplands direction only. Burn pile locations should be restricted to upland areas where Jeffrey pine (*Pinus jeffreyi*) or big sagebrush (*Artemisia tridentata*) are canopy dominants.

Riparian Forest and Scrub

Riparian vegetation occurs as corridors adjacent to the Markleevillage project area’s perennial streams (Figure 2). Riparian communities (Table 6) total 25.4 acres at Markleevillage. At their greatest development, four distinct vegetative strata are present: an herbaceous layer that is sparse except at streamside seeps and springs, a shrubby substory canopy of mainly willows (*Salix lasiolepis*, *S. exigua*, and others) with mountain alder (*Alnus incana* ssp. *tenuifolia*), a mid-canopy 20-40 ft in height and dominated by quaking aspen, and a black cottonwood (*Populus trichocarpa*) overstory canopy to 80 feet height. The black cottonwood canopy is mixed with robustly growing Jeffrey pine and white fir (*Abies concolor*), and sometimes replaced by large conifers that arise from the outer riparian corridor edges. Reaches where black cottonwood drops out of the overstory and is infrequent in the middle and lower canopy layers were most commonly classified as Aspen Riparian Forest, and less commonly as Arroyo Willow Thicket (a Willow Riparian Scrub type). Regardless of community type, Markleevillage’s riparian corridors currently are remarkably uninterrupted, averaging about 80 feet width. CDFW streambed alteration permitting requirements would likely extend to the outermost riparian corridor edges at all occurrences.

Table 7. Markleevillage project area plant community types that are available for each special status plant species that could potentially occur. Reasons for species inclusion are described in Appendix B1. Flowering period is taken from CNPS (2020). Rank/Status codes are defined below.

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDB		
<i>Agrostis humilis</i> mountain bentgrass herbaceous perennial	2B.3	S2	July-Aug.	Jeffrey Pine Forest Singleleaf Pinyon Woodland Big Sagebrush Scrub Dry Montane Meadow

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDB		
<i>Botrychium ascendens</i> upswept moonwort rhizomatous perennial	2B.3	S2	sporangia June-Sept.	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Carex davyi</i> Davy's sedge herbaceous perennial	1B.3	S3	June-Sept.	Jeffrey Pine Forest Singleleaf Pinyon Woodland Big Sagebrush Scrub Dry Montane Meadow
<i>Carex hystericina</i> porcupine sedge herbaceous perennial	2B.1	S2	May-June	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Carex petasata</i> Liddon's sedge herbaceous perennial	2B.3	S3	June-July	Jeffrey Pine Forest Singleleaf Pinyon Woodland Big Sagebrush Scrub Dry Montane Meadow
<i>Carex vallicola</i> western valley sedge herbaceous perennial	2B.3	S2	July-Aug.	Jeffrey Pine Forest Singleleaf Pinyon Woodland Big Sagebrush Scrub Dry Montane Meadow
<i>Claytonia umbellata</i> Great Basin claytonia herbaceous perennial	2B.3	S1	May-Aug.	Jeffrey Pine Forest Singleleaf Pinyon Woodland
<i>Crepis runcinata</i> fiddleleaf hawksbeard herbaceous perennial	2B.2	S3	July-Aug.	Dry Montane Meadow
<i>Epilobium howellii</i> subalpine fireweed herbaceous perennial	4.3	S4	July-Aug.	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Epilobium palustre</i> marsh willowherb herbaceous perennial	2B.3	S2	July-Sept.	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Eriogonum luteolum</i> var. <i>saltuarium</i> Jack's wild buckwheat herbaceous annual	1B.2	S1	July-Sept.	Jeffrey Pine Forest Singleleaf Pinyon Woodland Disturbed/Devegetated

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDDB		
<i>Erythranthe carsonensis</i> Carson Valley monkeyflower herbaceous annual	1B.1	S1	April-June	Big Sagebrush Scrub Disturbed/Devegetated
<i>Helodium blandowii</i> Blandow's bog moss bryophyte	2B.3	S2	-	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Potamogeton robbinsii</i> Robbins' pondweed rhizomatous perennial	2B.3	S3	Aug.-Sept.	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Schoenoplectus subterminalis</i> water bulrush herbaceous perennial	2B.3	S3	June-Sept.	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Viola purpurea ssp. aurea</i> golden violet herbaceous perennial	2B.2	S2	April-June	Jeffrey Pine Forest Singleleaf Pinyon Woodland Big Sagebrush Scrub Dry Montane Meadow

1. Rank or status, by agency:

CNPS = California Native Plant Society listings (CNPS, 2020)

1B = rare and endangered in California and elsewhere,

2B = rare, threatened or endangered in California, but more common elsewhere,

4 = plants of limited distribution in California – watchlist species.

Threat Code extensions:

.1 is Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 is Fairly endangered in California (20-80% of occurrences threatened)

.3 is Not very endangered in California (< 20% of occurrences threatened or no current threats known).

CNDDDB = California Natural Diversity Data Base rankings (CDFW, 2020b)

S1 is Critically Imperiled: often 5 or fewer populations, or steep rate of decline,

S2 is Imperiled: often 20 or fewer populations, steep decline, or very restricted range,

S3 is Vulnerable: often 80 or fewer populations, declining or restricted range,

S4 = Apparently Secure: uncommon but not rare in California.

All riparian corridor vegetation alliances that are supported by the project area's perennial streams are regionally rare. Montane Black Cottonwood Riparian Forest and Aspen Riparian Forest alliances are considered sensitive by CDFW (2019). Like spring and seep-driven wet/dry meadow complexes at Markleevillage, riparian corridor occurrences support a high diversity of native plant species, and also function to support local wildlife diversity. The layered vegetation creates shading of the habitat, including the aquatic habitat where two special status fish populations are known to occur

(Table 8). Shading is an important function of the occurring plant communities, creating additional species niches for both plant and wildlife assemblage, as well as sheltering the surface flows from solar heating beyond the tolerance of occurring aquatic wildlife. The corridors provide dense cover along intact pathways for terrestrial wildlife day-to-day use and migratory movements. Species diversity, layered structures, and wildlife use of the plant communities that are naturally supported within and adjacent to the riverine environment, or similarly created and maintained by the unlined canal adjacent to Hot Springs Road, impart much to the attractiveness of this area to residents and visitors.

Nearly the entire length of each riparian corridor was walked in August 2020. Seemingly few standing dead trees were encountered, and passage was generally easy due to relatively low deadfall accumulation. Project treatments extended into riparian communities at Markleevillage could negatively impact their function to maintain biological diversity, including special status species, if overcanopy shading is substantially reduced or if large canopy gaps are created. The occurring riparian habitats are visually well-defined, their edges identifiable where black cottonwood, quaking aspen, or willows abruptly transition to the upland-adapted species that define Jeffrey Pine Forest or Big Sagebrush Scrub. Avoiding impacts and associated permitting is possible if access strictly uses existing bridges; no stream crossings should be attempted elsewhere when moving powered equipment. If larger vegetation must be removed very near riparian corridors, effective avoidance would include restricting edge work to hand crews. Also, trees should be felled into the uplands direction only. Burn pile locations should be restricted to upland areas where Jeffrey pine or big sagebrush are canopy dominants.

Markleevillage Special Status Plants – Waters, Wetlands and Potential Wetland Habitats

The special status bryophyte Blandow's bog moss, and plant species upswept moonwort, porcupine sedge, subalpine fireweed, marsh willowherb, Robbins' pondweed, and water bulrush have some potential to be found at riparian and spring-fed forest, scrub and wet meadow habitats that occur within the Markleevillage project area (Table 7). All of these species exhibit adaptations to seasonal or perennial saturation of root zone soils (FAC, FACW and OBL species as listed in Table 3), and would be unlikely to occur in Markleevillage's upland forest and scrub community types. The emergent species Robbins' pondweed and water bulrush would be threatened by changes in soil hydrology and infiltration capacity due to project disturbance of saturated or wet soils. Blandow's bog moss, upswept moonwort, porcupine sedge, subalpine fireweed, and marsh willowherb, species of shaded, perennially moist to wet streambank and meadow habitats, would be negatively impacted by soil disturbance and also by project-related changes to the density of one or more shading overcanopy layers.

If the project treatments must include mechanized thinning or other vehicular entry, or substantial overcanopy reduction, possible negative impacts to populations of these species could be avoided only if pre-treatment surveys using intensive CDFW (2018) methodology are completed. Multiple surveys may be needed, as the time of year when flowers and fruits/sporangia are available for reliable identification vary widely among these species (Table 7). If any area mapped as Dry Montane Meadow is similarly included in the project, or will be used to turn equipment or burn piles, then pre-work surveying should include searches for small and isolated populations of fiddleleaf hawksbeard, mountain bentgrass, Davy's sedge, Liddon's sedge, western valley sedge, and golden violet.

Markleevillage Special Status Wildlife – Waters, Wetlands and Potential Wetland Habitats

Waters, wetlands, and potential wetland habitats that occur within the Markleevillage project area (Table 6) may harbor individuals or crucial habitat of the regionally occurring special status wildlife species mountain sucker, mountain whitefish, Southern long-toed salamander, willow flycatcher, bald eagle, and Sierra Nevada mountain beaver. While most of these species are regionally known only from rather distant historical reports (Appendix B), mountain sucker and mountain whitefish have been recently reported in East Fork Carson River and its tributaries including both Hot Springs Creek and Markleeville Creek near the project area (Cardno-Entrix, 2014, CDFW, 2020e). Only non-native trout were observed in August 2020, but it is reasonable to assume that mountain sucker and mountain whitefish currently occupy all perennial riverine habitats in the project area, including the canal.

Table 8. Sensitive wildlife species that could potentially occur within the Markleevillage project area. Key to status codes (CDFW, 2020c, 2000d) is given below.

Species	Status ¹		Communities Some Potential for Occurrence
	CDFW	State ranking	
Insects			
<i>Bombus occidentalis</i> Western bumble bee	Candidate Endangered	S1	Big Sagebrush Scrub Dry Montane Meadow
<i>Euphydryas editha monoensis</i> Mono checkerspot butterfly	-	S1S2	Big Sagebrush Scrub Dry Montane Meadow
Fish			
<i>Catostomus platyrhynchus</i> mountain sucker	SSC	S3	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub
<i>Prosopium williamsoni</i> mountain whitefish	SSC	S3	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub
Amphibians			
<i>Ambystoma macrodactylum sigillatum</i> Southern long-toed salamander	SSC	S3	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
Birds			
<i>Empidonax traillii</i> (nesting) willow flycatcher	Endangered	S1S2	Black Cottonwood Riparian Forest Willow Riparian Scrub
<i>Haliaeetus leucocephalus</i> (nesting) bald eagle	Endangered FP	S3	Jeffrey Pine Forest Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest

Species	Status ¹		Communities Some Potential for Occurrence
	CDFW	State ranking	
Mammals <i>Aplodontia rufa californica</i> Sierra Nevada mountain beaver	SSC	S2S3	Black Cottonwood Riparian Forest Quaking Aspen Riparian Forest Willow Riparian Scrub Wet Montane Meadow
<i>Lepus townsendii townsendii</i> western white-tailed jackrabbit	SSC	S3?	Jeffrey Pine Forest forms in Singleleaf Pinyon Woodland forms in Big Sagebrush Scrub
<i>Taxidea taxus</i> American badger	SSC	S3	Jeffrey Pine Forest burrows in Singleleaf Pinyon Woodland burrows in Big Sagebrush Scrub
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	Threatened	S1	Jeffrey Pine Forest Singleleaf Pinyon Woodland burrows in Big Sagebrush Scrub

1. Rank or status, by agency:

CDFW = State of California under the California Endangered Species Act (CDFW, 2020c)

SSC = Species of Special Concern (CDFW, 2020d),

FP = Fully Protected (take cannot be authorized except for recovery-related activities, CDFW, 2020d).

State ranking = CNDDDB State Conservation Ranking as reported by CDFW (2020d)

S1 is Critically Imperiled: often 5 or fewer populations, or steep rate of decline,

S2 is Imperiled: often 20 or fewer populations, steep decline, or very restricted range,

S3 is Vulnerable: often 80 or fewer populations, declining or restricted range,

? indicates CNDDDB uncertainty in assigning rank.

Special Status Fish

Mountain sucker is an omnivorous bottom-feeder that is most often found in quiet streams of good water quality. Under recent (likely current) conditions, the Hot Springs Creek fishery within and near the project area has been considered an example of ongoing stable and relatively high populations of mountain sucker (Center for Watershed Studies, 2020). Eastern Sierra Nevada populations are isolated from the more extensive Rocky Mountains population base. Mountain whitefish is primarily a bottom-feeder, but consumes a variety of benthic invertebrates (Ellison, 1980). Within the project limits, Spratt Creek, Pleasant Valley Creek, Hot Springs Creek, Markleeville Creek, and the unlined canal provide potentially suitable spawning habitat for mountain sucker during the period early July to late August, and for mountain whitefish during the period middle October to early December. Both reportedly spawn at night. Eggs are loosely scattered on riverine gravels, hatching in early spring. Stream characteristics such as clean water, shading, invertebrate diversity and abundance, and slow gradients with deep pools that support algal growth, all promote population maintenance for both fish species. In order to avoid project impacts to special status fish, crews should be instructed to avoid incursions that would directly disrupt spawning beds or cause changes in sediment load, and treatments that will substantially reduce

aquatic habitat shading and overhanging cover in pool areas. Use of machines or other vehicles near riparian corridors and at the canal should be done with care to avoid spills that could enter the flows.

Southern Long-toed Salamander

As adults, Southern long-toed salamanders are carnivorous, living cryptically and remaining unseen for most of the year in burrows of small mammals, or underground in loose, moist soil and heavy duff. They are visible and perhaps most vulnerable to direct impacts of forestry machinery and practices as they migrate aboveground between habitats to reach nearby breeding ponds. Migration occurs during the period between snow/ice melt in early April and about June 1. Larval salamanders, which hatch from eggs in middle to late summer, may transform to terrestrial adults prior to winter or may remain in the pond as untransformed larvae for up to one year. Larval survivorship is dependent upon stable, productive pond conditions where crustaceans or tadpoles are present as prey (Stebbins, *et al.*, 2012). Potential breeding ponds occur only at habitats mapped here as Wet Montane Meadow in the area between the canal and Hot Springs Road (Figure 2b). Possible machinery-related mortality of migrating individuals during the April 1 to June 1 period can very likely be avoided if a survey of ponds in the area between the canal and Hot Springs Road contemporaneously finds that breeding Southern long-toed salamanders are not present.

Willow Flycatcher

Flowing streams are considered “an essential physical feature of willow flycatcher habitat” (USFWS, 2013). Annual migrants may meet their critical foraging needs while passing through the area’s riparian and wet meadow habitats. Pairs potentially could establish breeding territories at two larger-scale portions of the on-site Hot Springs Creek riparian corridor (Figure 3a-b), where willow-dominated scrub and more open meadow habitats border on each other. Each potential nesting habitat block is about 4 acres in size. “Typical” nesting habitats occupied by regional migrants, such as those found in Charity Valley at the nearest known willow flycatcher breeding habitat (13 miles west) feature more extensive willow patches scattered within a much larger, streamside wet meadow complex. It is possible that project vegetation treatments and burning of slash piles could cause nest abandonment if implemented during the May-July period within 100 feet of either of these areas (the approximate line-of-sight distance to the highly travelled Hot Springs Road), due to sudden increases in noise and human activity. In order to avoid negative impacts to willow flycatcher, an intensive survey protocol should be completed on specific dates during the May-July period (Bombay, *et al.*, 2003), to determine whether willow flycatcher breeding territories have been established in the adjacent riparian area.

Bald Eagle

Bald eagle nests are generally found within one mile of larger rivers or lakes. As bald eagle range expands in California, it has been found that new nest sites are more commonly established in forested areas of human habitation and relatively greater disturbance than has been characteristic of long-established nest sites. Nest success in urbanized situations is actually higher than at remote sites (Airola, 2007). A breeding bald eagle pair, if present, is likely to choose to nest in a distinctively tall conifer. The project must avoid disrupting nest structures that are attributable to eagles and other raptors, as nests are protected under CDFW code even when inactive (*i.e.*, all year).

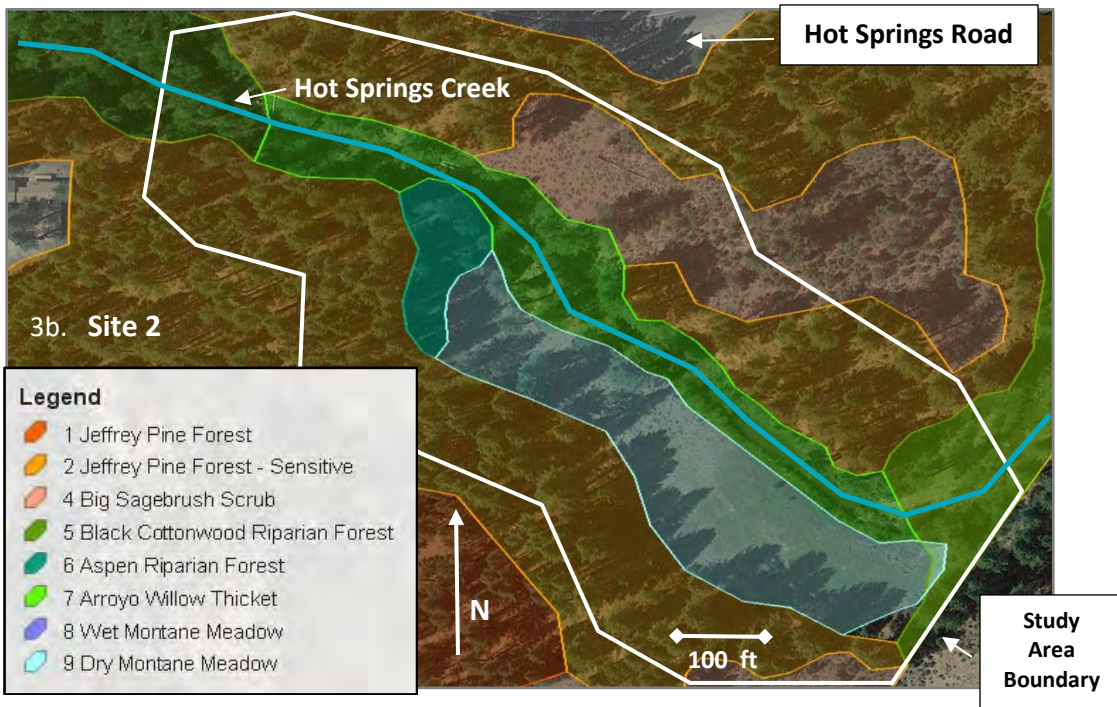
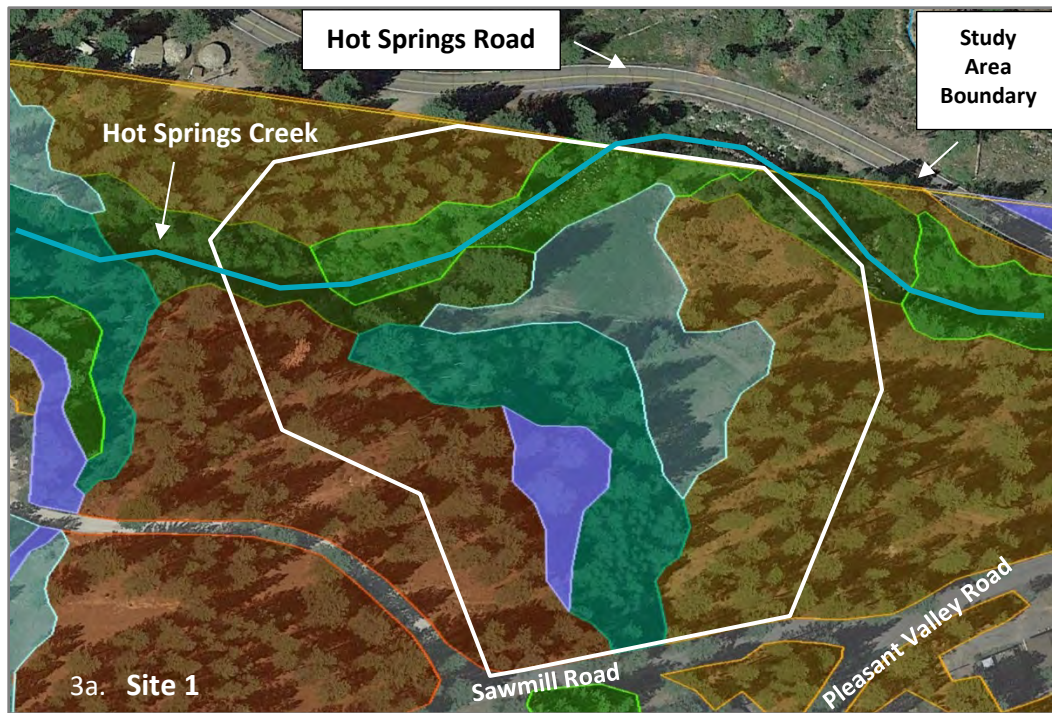


Figure 3. Two habitat blocks within the Markleevillage project area that have some potential to serve as breeding habitat for willow flycatcher. Suggested 100 feet buffering is shown (white outline).

Searching for large stick nest structures should be included in any pre-work nesting bird surveys. When performed immediately prior to the start of project-related activities that could destroy active nests or cause nest abandonment, a survey is the best available method for minimizing such impacts.

Nest discovery should be followed by buffering, or ceasing noisy and active work, until the young have left the nest. Appropriate project no-work buffering for active passerine nests would generally be about 50 feet; however, eagle and other raptor nest buffering should be determined in consultation with CDFW (N. Buckmaster, *pers. comm.*). Buffering of active eagle nests typically is 1/2 mile or more.

Sierra Nevada Mountain Beaver

While the Markleevillage project area elevation is somewhat lower than recent sightings of Sierra Nevada mountain beaver reported in CNDDDB (CDFW, 2020e), there exists some possibility that riparian habitats at perennial streams and the canal are suitable for their dispersal and denning. The relatively continuous riparian areas are sometimes densely vegetated and have not been subject to trampling by livestock in recent decades. Relatively undisturbed streambank microhabitats with dense growth and large downed tree boles that could be used for denning were frequently encountered at Hot Springs Creek. Rapidly growing mid-canopy willows and taller quaking aspen can generate substantial deadwood at their bases, however, project treatment to remove these woody accumulations where they occur directly within the banks of perennial streams, or at springs and streamside willow patch habitat associated with the unlined canal, could destroy occupied burrow systems or could increase predation upon mountain beavers due to loss of concealing cover (Steele, 1989). Project activities that will disturb areas mapped as riparian or spring-driven forest, scrub or wet meadow (Table 6), can be implemented without direct impacts to Sierra Nevada mountain beaver individuals and dens if prior surveys are performed to detect the often extensive burrow systems that they create.

5.1.2 Markleevillage – Upland Habitats

Development at Markleevillage has been for the most part to provide single family housing. During recent decades, the buildable landscape has been filled to a relatively high degree of completion immediately adjacent to paved roads, including Pleasant Valley Road, Sawmill Rd., Pinon Rd., Timber Lane, and Ox Bow, Canon View, and Lava Cap Courts (Figures 2a-b). However, in addition to 45 acres of wetlands and potential wetland habitats, 222 of the 300 acres within the project area continue to support native, relatively undisturbed coniferous forest and sagebrush scrub communities in an upland setting (Table 6). Jeffrey Pine Forest is the most widespread type, as it currently occupies 71% of the 267 acres classified here as undeveloped.

Jeffrey Pine Forest

Jeffrey Pine Forest occupies rolling hillsides, as well as valley bottoms adjacent to riparian, canal, and spring-driven potential wetlands community types. Jeffrey pine is the only tree in the canopy, or less commonly there is a sub-dominant presence (less than 10% relative frequency) of quaking aspen or white fir (*Abies concolor*). Forest canopy gaps are dominated by big sagebrush, and the forest generally transitions into community-scale Big Sagebrush Scrub at ridgelines. Trees that are central to the stands are even-aged, with larger conifers and denser stocking generally at riparian corridor margins. Very large trees (having bole diameters greater than 40 inches at breast height) are rare, and indications of old growth forest were not found. Currently, upland forests have only rarely achieved densities that exceed 40% tree canopy closure, and 10-20% closure is more typical.

The Jeffrey Pine Forest understory is generally sparse, consisting of scattered low shrubs and grasses totaling less than 5% total cover. Bitterbrush (*Purshia tridentata*) often is the most abundant shrub in areas where the understory becomes more prominent. Occurrences of this forest type where Jeffrey pine and bitterbrush are clearly dominant in their respective canopy layers (50-90% relative frequencies) were mapped as *Pinus jeffreyi-Purshia tridentata* alliance (Figure 2), which is considered Sensitive by CDFW (2019). Limited areas that have developed as much as 50% bitterbrush canopy cover were encountered. Project-related reductions of shrub density will not substantially alter the forest character or species composition, unless new invasive non-native plants are introduced. Incorporation of methods to prevent weed spread into project treatments (discussed above) would be sufficient to mitigate the potential project-related negative impacts upon sensitive upland community types at Markleevillage. The induced changes to tree and shrub canopy density will not cause any reduction in the on-site extent or ecological function of *Pinus jeffreyi-Purshia tridentata* alliance occurrences. Upland community types (Table 6) otherwise are commonly present at undeveloped areas of Alpine County, and are widespread in the Eastern Sierra Nevada (Sawyer, *et al.* 2009).

Big Sagebrush Scrub

The Big Sagebrush Scrub canopy is mainly big sagebrush (*Artemisia tridentata*), with bitterbrush at varying subdominant frequencies, and relatively minor contributions by several xerophyllic evergreen shrubs (Appendix A1). Occurrences are often at rocky hilltops and slopes. All include 10-50% total cover provided by native shrubs and 1-10% overcanopy cover provided by upland trees such as Jeffrey pine. One assemblage at steeply sloping habitat was classified as Singleleaf Pinyon Woodland (Figure 2b). This area, where sparse big sagebrush is joined by an equal cover provided by bush penstemon (*Penstemon newberryi*) and singleleaf pinyon (*Pinus monophylla*), is perhaps the only slope in the Markleevillage upland habitats that would be too steep for safe mechanized treatment.

Markleevillage Special Status Plants – Uplands

The special status plant species Jack's wild buckwheat, Carson Valley monkeyflower, mountain bentgrass, Davy's sedge, Liddon's sedge, western valley sedge, golden violet, and Great Basin claytonia, occur at similar upland habitats within 20 miles of the Markleevillage project area. Jack's wild buckwheat and Carson Valley monkeyflower may be present in the seedbank only, at least during years of below normal winter and spring precipitation. All of these species grow to very low stature, and would be present diffusely (but not necessarily widespread) within the large upland habitat blocks that are available at Markleevillage. Diffuse plant populations with diminutive growth habits will not be targeted for project treatments, and it is very unlikely that the limited, scattered areas of trampling and pile burning will threaten the continued existence of any special status plant population occurring in upland habitats.

Planned roadside staging areas should be rejected for project use if pre-treatment survey determines that either Jack's wild buckwheat and Carson Valley monkeyflower is present there. Should mechanized treatment, staging, or pile burning be unavoidable in the upland ecotonal areas that are classified as Dry Montane Meadow, including the small occurrences supported by the canal, negative impacts to potentially occurring mountain bentgrass, Davy's sedge, Liddon's sedge, western valley

sedge, fiddleleaf hawksbeard, or golden violet can be avoided by performing surveys prior to the start of work (CDFW, 2018), during the period when flowers and fruits are available for reliable identifications (Table 7).

Markleevillage Special Status Wildlife – Uplands

The special status wildlife species bald eagle, Western bumble bee, Mono checkerspot butterfly, western white-tailed jackrabbit (*Lepus townsendii townsendii*), American badger, and Sierra Nevada red fox have some potential to occur within the project area's upland habitats (Table 8). The mid-sized mammals western white-tailed jackrabbit, American badger, and Sierra Nevada red fox as adults would be mobile enough to individually escape direct impacts from project-related vegetation removal, however, they become vulnerable to being killed when day-denning or raising young in burrows that could be closed permanently during mechanized clearing. Special status western bumblebee colonies may similarly be negatively impacted by project implementation only at their burrow nest sites. Mono checkerspot butterfly may be significantly impacted at plant populations that serve as hosts for the larval stage. No documented occurrences of any special status animals at upland habitats within the project limits were uncovered as a result of the July 2020 literature review.

Special Status Insects

Potentially affected western bumble bee occurrences would be at underground colony nest sites. This species' nest site selection is limited to upland habitats near wildflower pollen and nectar sources. The nest hole is adopted from a rodent or other ground-burrowing animal, usually in sagebrush scrub, but they have also been found in dry meadows and forest/meadow ecotone habitats (Koch, *et al.*, 2012). Colonies will be active aboveground and thereby discoverable during the entire growing season (early April – late October). Mono checkerspot butterfly, a subspecies of the more widely distributed Edith's checkerspot butterfly, is regarded as Sensitive by USFS (CDFW, 2020d). One of the largest known extant population centers is in the Carson River Valley in nearby Nevada. The only CNDDDB occurrence is from Hope Valley in 1948. Plants of the genera *Castilleja* (paintbrushes) and *Penstemon* (beardtongues) are generally recognized as larval host plants (Pohl, *et al.*, 2016), however, the Carson River Valley population likely is using *Collinsia parviflora* as the main host (NatureServe, 2020). Members of each of these three genera of plants were confirmed as occurring in Big Sagebrush Scrub or Dry Montane Meadow habitat in 2020 (Appendix A1).

Habitat modifications that potentially could cause local extirpation of these insects, should they occur, can be avoided using worker education prior to the start of treatment in Big Sagebrush Scrub or Dry Montane Meadow community types. Nests of ground-dwelling bees will be readily apparent during treatment, if any occur. Workers can flag nests to be avoided when using heavy equipment and burning piles. While removal of herbaceous vegetation is not a project treatment, trampling of host plant swards that potentially support Edith's checkerspot butterfly is possible. Workers can flag densely herbaceous, meadow-like (not shrubby) vegetation that is being visited by butterflies for avoidance when using heavy equipment and burning piles.

Western White-tailed Jackrabbit

Western white-tailed jackrabbits inhabit a variety of upland montane habitats in the Eastern Sierra Nevada, including Big Sagebrush Scrub and coniferous forests that provide a substantial shrub cover. Individuals do not congregate, and are mainly nocturnal when foraging. One or more litters may be raised in shallowly depressed “form” nests during the period May-July (Lim, 1987). Occupied forms would be most likely to be found in areas that support the densest sagebrush (Duke and Hoeffler, 1988). Project-related destruction of occupied neonatal rabbit forms, or of the occupied dens of any other occurring Species of Special Concern (Table 8), would constitute incidental take of individuals. Such an impact to nesting western white-tailed jackrabbit potentially may occur within 33 acres of Big Sagebrush Scrub or Singleleaf Pinyon Woodland (Figure 2) at Markleevillage, which is a very small area compared to the species’ known regional range. If a clearing treatment must be implemented in Big Sagebrush Scrub and Singleleaf Pinyon Woodland during during the period May-July, the potential impacts to individuals can be avoided by conducting a survey for occupied forms prior to starting treatment.

American Badger

American badger are predators that characteristically excavate and enlarge the burrows of small mammalian prey. Typical prey species include Beechey ground squirrel (*Otospermophilus beecheyi*), a species that was found in August 2020 to be present at Markleevillage in Big Sagebrush Scrub and Singleleaf Pinyon Woodland. American badgers are considered active all year; however, they spend long periods in resting torpor underground, and also raise litters in underground dens (Helgen and Reid, 2016). The holes and excavated dirt piles created by badgers are large and conspicuous. Direct impacts to aboveground individuals would be unlikely due to their mobility, but badgers that are day-denning or raising litters in enlarged rodent burrows may be buried as an unintended consequence of mechanized vegetation clearing and piling. Surveys for potentially active burrows of large diameter could be conducted within 33 acres mapped as Big Sagebrush Scrub and Singleleaf Pinyon Woodland (Figure 2) immediately prior to the start of soil disturbance in order to avoid burial of denning badgers.

Sierra Nevada Red Fox

Sierra Nevada red fox are considered to be very rare animals restricted to high elevations, generally much higher than the 5700 feet average project elevation (CDFW, 2020e). CNDDDB records near the project area are from sightings from at least 45 years in the past, however, more recent collections (road kills) from Mono County suggests that lower elevation habitats may be used in the Eastern Sierra Nevada. Sierra Nevada red fox may move through or forage within any of the available habitats, but the level of human disturbance at least centrally among existing developments is not consistent with the general habitat requirements of this seldom seen animal. Den establishment within the project would have some likelihood only at the outlying, less fragmented upland scrub and wetland fringe areas. Denning has been documented in rock fall settings and other open, unforested upland habitats (CDFW, 2020e). It is possible that the poorly understood Sierra Nevada red fox sometimes uses enlarged rodent or coyote burrows. In order to avoid unintended burial of foxes that are day-denning or raising young pups, which potentially could occur during mechanized project treatments, pre-work surveys for active burrows of large diameter could be completed immediately prior to the start of soil disturbance within the 33 acres mapped as Big Sagebrush Scrub and Singleleaf Pinyon Woodland (Figure 2).

5.2 Manzanita Project Area

5.2.1 Manzanita – Waters, Wetlands and Potential Wetland Habitats

The Manzanita project area occurs 3.9 miles to the north of the Markleevillage project area. Terrain at Manzanita is similarly positioned in the regional landscape, where slopes of the eastern Sierra Nevada flank meet the lowlands associated with the Carson River. However, Manzanita encompasses a larger elevation range (Table 1) and features much steeper slopes. Scott Creek steeply and narrowly falls west to east through the central part of the project area. Scott Creek flows perennially at Manzanita, as do numerous isolated outflows from perennial springs. The primarily upland habitats of the project area are otherwise interrupted only at the eastern and southern project limits, where small spreading ditches are seasonally to perennially watered to maintain a large (off-site) meadow (Figure 4).

Manzanita's perennial springs appear to be aligned within the steeply sloping 6200-6500 feet contour. Artesian flows issue along a north to south trend within the southern half of the project area. Springs that occur to the north of Scott Creek likely produce surface flows briefly, or at most seasonally, under normal climate conditions. Drying downslope soils at spring-driven habitats sometimes include saline habitat indicators such as evaporite deposits on vegetation and thin episodic crusts. All of these spring flows end well to the west of State Highway 89, and none were observed to be tributary to Scott Creek or Indian Creek in August 2020. Scott Creek, on the other hand, is a relatively permanent tributary to Indian Creek, which is a relatively permanent tributary to East Fork Carson River. Scott Creek in the project area thereby is very likely a resource that qualifies as a jurisdictional Water of the U.S. and Water of the State of California under their respective Clean Water Acts. Further investigation and permitting would need to be completed prior to starting any work in the Scott Creek riparian corridor, pursuant to compliance with federal Clean Water Act Section 404 and Section 401, and California Fish and Game Code Section 1600 regulations.

It is not clear at this level of investigation whether some of the water spreading ditches and other constructed, unlined and sometimes rather natural appearing, creek-like conveyances at the southern and eastern edges of Manzanita would similarly qualify as jurisdictional Waters. These specific areas (Figure 4b) are watered by diversions of relatively strong, perennial spring outflows that occur near and just beyond the southern project boundary. It is possible that these flows historically were tributary to Scott Creek or Indian Creek, as evidenced by several relic, slightly incised channels in the downslope meadow, and the meadow drainage culverts that have been installed at State Highway 89. Diverted springs may maintain one or more hydrological connections to the Carson River watershed as tributaries to Scott Creek or to Indian Creek when "excess" flows are generated during ephemeral to seasonal runoff events. In lieu of Arid West Region delineation research to identify jurisdictional status (U.S. Army Corps of Engineers, 1987, 2008), the project could routinely avoid machine or vehicle entry into these ditches. Any potential for changes to existing ditch bed and banks that would be caused by machine crossings, or by incursions for treatment of associated riparian vegetation, would thereby be completely avoided.

Table 9. Plant communities that were mapped within the 460-acre Manzanita project area in 2020. Manzanita includes 3.5 acres that have been converted to houses, roads and other impervious or devegetated surfaces. Community names (after Holland, 1986) are cross-referenced to Alliance names (Sawyer, *et al.*, 2009), as currently classified by CDFW. * indicates plant communities that are designated “sensitive” (CDFW, 2019).

Holland Community Name and CDFW Association Number	CNDDDB Alliance Name and Primary Association	Acreage in Study Area
Upland Communities		
Jeffrey Pine Forest 87.020.36	Jeffrey Pine <i>Pinus jeffreyi-Ceanothus cordulatus- Artemisia tridentata</i>	146
Aspen Forest 61.111.06*	Aspen Grove (S3.2) <i>Populus tremuloides-Artemisia tridentata</i>	1.5
Montane Manzanita Chaparral 37.303.02	Greenleaf Manzanita Chaparral <i>Arctostaphylos patula-Quercus vaccinifolia</i>	251
Big Sagebrush Scrub 35.111.00	Mountain Big Sagebrush <i>Artemisia tridentata-Purshia tridentata</i>	20.1
Wetland and Potential Wetland Communities		
Montane Riparian Scrub 61.210.00*	Mountain Alder Thicket <i>Alnus incana-Salix spp.</i>	4.3
Modoc-Great Basin Riparian Scrub 61.201.00	Arroyo Willow Thicket <i>Salix lasiolepis-Prunus virginiana</i>	22.1
Wet Montane Meadow 45.000.00	(Narrow-leaved Sedge) <i>Carex angustata-herbaceous</i>	0.5
Dry Montane Meadow 42.060.00	Kentucky Bluegrass Turf <i>Poa pratensis-herbaceous</i>	11.0

Riparian Scrub

Riparian corridor vegetation at Scott Creek is sharply bounded and visually distinctive, which facilitates avoidance by the project. It crosses narrowly through xeric upland forest and shrubland communities (Table 9). The deeply shaded understory habitat is very rocky and the herbaceous stratum is generally sparse. The subcanopy is composed of various willows (Appendix A1), Sierra coffeeberry (*Frangula rubra*), Utah serviceberry (*Amelanchier utahensis*), redstem dogwood (*Cornus sericea*), and western chokecherry (*Prunus virginiana* var. *demissa*), and is for the most part classified as Mountain Alder Thicket. Its middle canopy averages 40 feet height and is dominated by mountain alder (*Alnus incana* spp. *tenuifolia*). Quaking aspen occurs patchily at less than 10% relative frequency. Dense Jeffrey

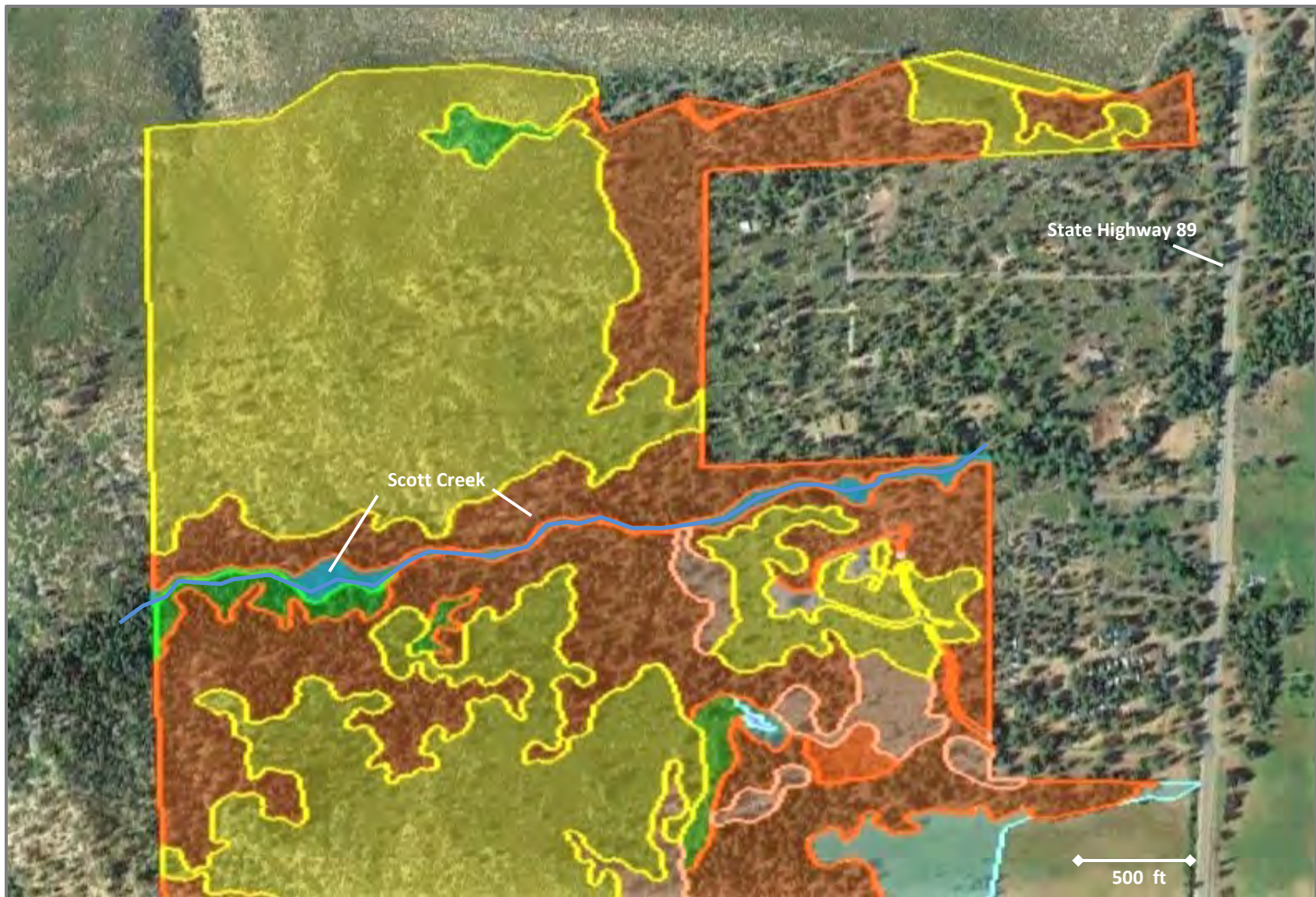


Figure 4a. Manzanita project area, northern half. Plant community occurrences mapped in August 2020 are shown. Base image date is August 2019.

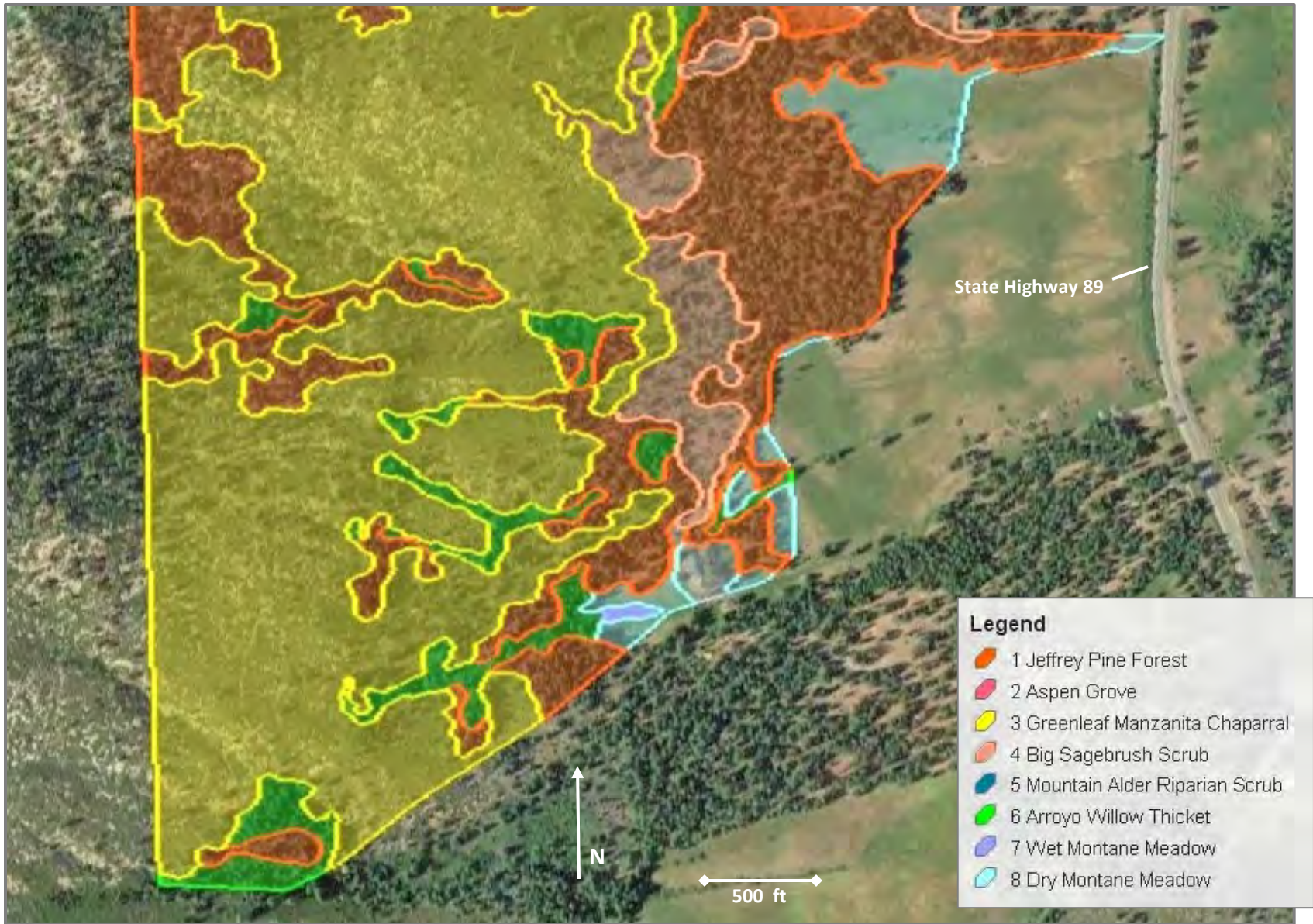


Figure 4b. Manzanita project area, southern half.

pine and white fir to 100 feet height provide a continuous overcanopy. Standing dead trees were not prominent in 2020. Arroyo Willow Thicket was mapped where mountain alder becomes subdominant (Figure 4a). Corridor vegetation near Scott Creek was found to be ungrazed and relatively undisturbed, with much natural character. Mountain Alder Thicket is considered Sensitive by CDFW (2019).

A total of 22.6 acres of vegetation having a predominance of hydrophytic shrub and herbaceous layer plant species was mapped in association with flowing artesian springs. Springfed habitats generally support 1-4 acres of elevated shallow groundwater and zonal Arroyo Willow Thicket. Two of the smallest spring outflows that support 100% cover provided by herbaceous species alone were mapped as Wet Montane Meadow (Figure 4). Shrubby willow thickets to 20 feet height, composed of mainly arroyo willow (*Salix lasiolepis*) and Scouler’s willow (*S. scouleri*), occur centrally, while outer edge canopies are mainly Sierra coffeeberry, Utah serviceberry, and Western chokecherry. This vegetation typically is impassably dense. Transitions to upland shrubland types (Table 9) are very abrupt, while transitions to Jeffrey Pine Forest at lower project area elevations are more gradual. Manzanita’s springfed habitats are grazed by livestock, but have not become devegetated by current uses. They currently support the highest plant diversity observed in the project area (Appendix A1). Access for wildlife use remains quiet and concealed. Tracks indicating holding mule deer were abundant in August 2020, and trails leading upslope from on-site springfed habitats suggest that these forage opportunities, and their dense cover and surface waters, provide an important resource for migrating deer of the Carson River Deer Herd.

Table 10. Manzanita project area plant community types that are available for each special status plant species that could potentially occur. Reasons for species inclusion are described in Appendix B2. Flowering period is taken from CNPS (2020). Rank/Status codes are defined below.

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDB		
<i>Agrostis humilis</i> mountain bentgrass herbaceous perennial	2B.3	S2	July-Aug.	Jeffrey Pine Forest Aspen Grove Greenleaf Manzanita Chaparral Big Sagebrush Scrub Dry Montane Meadow
<i>Botrychium ascendens</i> upswept moonwort rhizomatous perennial	2B.3	S2	sporangia June-Sept.	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Botrychium crenulatum</i> scalloped moonwort rhizomatous perennial	2B.2	S3	sporangia June-Sept.	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Botrychium minganense</i> Mingan moonwort rhizomatous perennial	2B.2	S3	sporangia June-Sept.	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDDB		
<i>Bruchia bolanderi</i> Bolander's candlemoss bryophyte	4.2	S3	-	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Carex davyi</i> Davy's sedge herbaceous perennial	1B.3	S3	June-Sept.	Jeffrey Pine Forest Aspen Grove Greenleaf Manzanita Chaparral Big Sagebrush Scrub Dry Montane Meadow
<i>Carex petasata</i> Liddon's sedge herbaceous perennial	2B.3	S3	June-July	Jeffrey Pine Forest Aspen Grove Greenleaf Manzanita Chaparral Big Sagebrush Scrub Dry Montane Meadow
<i>Carex vallicola</i> western valley sedge herbaceous perennial	2B.3	S2	July-Aug.	Jeffrey Pine Forest Aspen Grove Greenleaf Manzanita Chaparral Big Sagebrush Scrub Dry Montane Meadow
<i>Claytonia umbellata</i> Great Basin claytonia herbaceous perennial	2B.3	S1	May-Aug.	Jeffrey Pine Forest Aspen Grove
<i>Crepis runcinata</i> fiddleleaf hawksbeard herbaceous perennial	2B.2	S3	July-Aug.	Dry Montane Meadow
<i>Epilobium howellii</i> subalpine fireweed herbaceous perennial	4.3	S4	July-Aug.	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Epilobium palustre</i> marsh willowherb herbaceous perennial	2B.3	S2	July-Sept	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Eriogonum luteolum</i> var. <i>saltuarium</i> Jack's wild buckwheat herbaceous annual	1B.2	S1	July-Sept	Jeffrey Pine Forest Aspen Grove Disturbed/Devegetated
<i>Erythranthe carsonensis</i> Carson Valley monkeyflower herbaceous annual	1B.1	S1	April-June	Greenleaf Manzanita Chaparral Big Sagebrush Scrub Disturbed/Devegetated

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDDB		
<i>Helodium blandowii</i> Blandow's bog moss bryophyte	2B.3	S2	-	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Meesia uliginosa</i> broad-nerved hump moss bryophyte	2B.2	S3	-	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
<i>Viola purpurea</i> ssp. <i>aurea</i> golden violet herbaceous perennial	2B.2	S2	April-June	Jeffrey Pine Forest Aspen Grove Greenleaf Manzanita Chaparral Big Sagebrush Scrub Dry Montane Meadow

1. Rank or status, by agency:

CNPS = California Native Plant Society listings (CNPS, 2020)

1B = rare and endangered in California and elsewhere,

2B = rare, threatened or endangered in California, but more common elsewhere,

4 = plants of limited distribution in California – watchlist species.

Threat Code extensions:

.1 is Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 is Fairly endangered in California (20-80% of occurrences threatened)

.3 is Not very endangered in California (< 20% of occurrences threatened or no current threats known).

CNDDDB = California Natural Diversity Data Base rankings (CDFW, 2020b)

S1 is Critically Imperiled: often 5 or fewer populations, or steep rate of decline,

S2 is Imperiled: often 20 or fewer populations, steep decline, or very restricted range,

S3 is Vulnerable: often 80 or fewer populations, declining or restricted range,

S4 = Apparently Secure: uncommon but not rare in California.

Dry Montane Meadow

Vegetated drying margins at two springs situated south of Scott Creek were classified as Dry Montane Meadow (Figure 4). These small areas support a high diversity of plant species, including some that have adaptations to saline soils. The special status perennial herbs fiddleleaf hawksbeard and golden violet have some potential to occur in this habitat type, especially at meadow-upland margins. The special status perennial herb golden violet may occur at this same habitat. These meadows margins should be avoided when operating equipment in the adjacent uplands forest and scrub, and should not be used to burn piles. If vehicular entry or implementation of project treatments is unavoidable, then pre-treatment surveys of Dry Montane Meadow should be performed and any occurring populations should be flagged, in order to avoid trampling of fiddleleaf hawksbeard or golden violet populations. Survey results are most reliable if the field work is properly timed when flowers and fruits are available (Table 10).

Riparian and Springfed Habitats

The occurring riparian and springfed wetlands and potential wetland habitats are usually well-defined when viewed from within the site's expansive Jeffrey Pine Forest and Greenleaf Manzanita Chaparral. Their edges with upland vegetation types (Figure 4) are readily identifiable where willows, Sierra coffeeberry, Utah serviceberry, and Western chokecherry abruptly transition to Jeffrey pine, big sagebrush, huckleberry oak (*Quercus vacciniifolia*), and greenleaf manzanita (*Arctostaphylos patula*). Shading is an important function of the occurring Mountain Alder Thicket and Arroyo Willow Thicket plant communities, creating additional species niches for both plant and wildlife assemblages, as well as sheltering the surface flows from solar heating beyond the tolerance of occurring aquatic wildlife. Avoidance is feasible, especially at the Scott Creek riparian corridor. Mechanized crew leads should arrange project treatment area entry at access points both to the north and to the south of the flowing channel. No crossings of perennial flows or seasonally dried channels bearing evidence of annual flows (scour, deposition, prevalence of riparian scrub vegetation) at Scott Creek and area spring outflows should be attempted when equipment is moved.

The wettest springfed habitats and at least some of the outflow channels from springs near the southern edge of the Manzanita project area have some likelihood of having a legal nexus to Clean Water Act federal regulations, and/or may be Waters of the State under jurisdiction of the Regional Water Board. The small, herb-dominated Wet Montane Meadows at Manzanita do not support plants that are targeted for project treatments, and the impact avoidance reasoning that is appropriate at Markleevillage (see above) can also be applied at Manzanita. Prior investigation to more precisely determine federal and state agency jurisdictional limits is needed if the project includes these limited wetlands and potential wetland habitats (Table 9). Potentially jurisdictional areas will be avoided completely if there is no mechanized entry, treatment, or burning implemented Wet Montane Meadow, Dry Montane Meadow, or anywhere arroyo willow, Sierra coffeeberry, Utah serviceberry, and Western chokecherry alone or in combination exceed 25% absolute cover.

Manzanita Special Status Plants – Waters, Wetlands and Potential Wetland Habitats

Populations of the special status bryophytes Blandow's bog moss, Bolander's candle moss, and broad-nerved hump moss, three species of moonworts (*Botrychium ascendens*, *B. crenulatum*, and *B. minganense*), and the herbaceous plants subalpine fireweed and marsh willowherb have some potential to occur at riparian and spring-fed thicket and wet meadow habitats of the Manzanita project area (Table 10). All of these species exhibit characteristic adaptations to the wetlands pattern of seasonal or perennial saturation of root zone soils (FAC, FACW and OBL in Table 3), and would be unlikely to occur in Manzanita's upland forest and scrub. The special status plants fiddleleaf hawksbeard, golden violet, mountain bentgrass and three sedges (*Carex davyi*, *C. petasata*, and *C. vallicola*) have some potential to occur at spring-fed Dry Montane Meadow.

If the project treatments must include mechanized thinning or other vehicular entry (e.g., to access difficult terrain), or substantial overcanopy reduction, possible negative impacts to populations of these species could be avoided only if pre-treatment surveys using intensive CDFW (2018) methodology are completed. Multiple surveys may be needed, as the time of year when flowers and fruits/sporangia

are available for reliable identification vary widely among these species (Table 10). If any area mapped as Dry Montane Meadow is similarly included in the project, or will be used to turn equipment or burn piles, then pre-work surveying should include searches for small and isolated populations of fiddleleaf hawksbeard, mountain bentgrass, Davy’s sedge, Liddon’s sedge, western valley sedge, and golden violet during the period May-July (Table 10).

Manzanita Special Status Wildlife – Waters, Wetlands and Potential Wetland Habitats

There exists some possibility that mountain sucker (*Catostomus platyrhynchus*) and mountain whitefish (*Prosopium williamsoni*) populations extend to Scott Creek. Non-native trout were observed at the eastern edge of the project area, implying a pathway for movement from known populations in the East Fork Carson River watershed. Scott Creek stream characteristics such as clean water, shading, and deep pools would support population maintenance for both fish species. However, the slow gradients that characterize much of the available stream habitat at Markleevillage were not observed within the Manzanita survey limits; it appears to be unlikely that spawning beds could be affected by the project. Impacts to potentially occurring special status fish will be avoided if incursions that would cause changes in the bed and bank structures and treatments that will substantially reduce aquatic habitat shading are excluded from the project. Use of machines or other vehicles near riparian corridors and at the canal should be done with care to avoid spills that could enter the flows.

Manzanita’s wetland and potential wetland habitats more generally could harbor populations of the special status wildlife species Southern long-toed salamander, and Sierra Nevada mountain beaver (Table 11). These two species also have been identified as potentially occurring at riparian or springfed habitats of the Markleevillage project area. Aquatic habitat availability and connectivity, however, is lower overall at Manzanita. Potentially suitable nesting habitats for special status willow flycatcher and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) are not available at springs, Scott Creek, or elsewhere within the Manzanita project area. Modifications to the project and available mitigations that were highlighted in order to avoid substantial negative impacts to Southern long-toed salamander and Sierra Nevada mountain beaver at Markleevillage’s wetland and potential wetland communities (see above) are sufficient and reasonably applicable to the analogous work that is to be performed at Manzanita.

Table 11. Sensitive wildlife species that could potentially occur within the Manzanita project area. Key to status codes (CDFW, 2020c, 2020d) is given below.

Species	status ¹		Communities Some Potential for Occurrence
	CDFW	State ranking	
Insects			
<i>Bombus occidentalis</i> Western bumble bee	Candidate Endangered	S1	Big Sagebrush Scrub Dry Montane Meadow
<i>Euphydryas editha monoensis</i> Mono checkerspot butterfly	-	S1S2	Big Sagebrush Scrub Dry Montane Meadow

Species	status ¹		Communities Some Potential for Occurrence
	CDFW	State ranking	
Fish			
<i>Catostomus platyrhynchus</i> mountain sucker	SSC	S3	Mountain Alder Thicket
<i>Prosopium williamsoni</i> mountain whitefish	SSC	S3	Mountain Alder Thicket
Amphibians			
<i>Ambystoma macrodactylum sigillatum</i> Southern long-toed salamander	SSC	S3	Mountain Alder Thicket Arroyo Willow Thicket Wet Montane Meadow
Birds			
<i>Haliaeetus leucocephalus</i> (nesting) bald eagle	Endangered FP	S3	Jeffrey Pine Forest Aspen Grove Greenleaf Manzanita Chaparral Big Sagebrush Scrub
Mammals			
<i>Aplodontia rufa californica</i> Sierra Nevada mountain beaver	SSC	S2S3	Mountain Alder Thicket Arroyo Willow Thicket
<i>Lepus townsendii townsendii</i> western white-tailed jackrabbit	SSC	S3?	Jeffrey Pine Forest forms in Aspen Grove, forms in Greenleaf Manzanita Chaparral forms in Big Sagebrush Scrub
<i>Taxidea taxus</i> American badger	SSC	S3	Jeffrey Pine Forest burrows in Aspen Grove, burrows in Greenleaf Manzanita Chaparral burrows in Big Sagebrush Scrub
<i>Vulpes vulpes necator</i> Sierra Nevada red fox	Threatened	S1	Jeffrey Pine Forest burrows in Aspen Grove, burrows in Greenleaf Manzanita Chaparral burrows in Big Sagebrush Scrub

1. Rank or status, by agency:

CDFW = State of California under the California Endangered Species Act (CDFW, 2020d)

SSC = Species of Special Concern (CDFW, 2020d),

FP = Fully Protected (take cannot be authorized except for recovery-related activities, CDFW, 2020d).

State ranking = CNDDDB State Conservation Ranking as reported by CDFW (2020d)

S1 is Critically Imperiled: often 5 or fewer populations, or steep rate of decline,

S2 is Imperiled: often 20 or fewer populations, steep decline, or very restricted range,

S3 is Vulnerable: often 80 or fewer populations, declining or restricted range,

? indicates CNDDDB uncertainty in assigning rank.

5.2.2 Manzanita – Upland Habitats

Development has displaced or converted Manzanita’s native vegetation at the eastern and southeastern edges only (Figure 4). In comparison to the observed 33 acres of development (15%) in uplands, and overall moderate fragmentation observed at Markleevillage, upland habitat development at Manzanita totals only 3.5 acres (less than 1%). No obvious signs of ecological fragmentation (*i.e.*, imposed barriers to wildlife resource use, migration, and in the larger sense barriers to gene flow to and from habitats) were observed in the uplands at Manzanita. In all, 419 of the 460 acres within the project area currently support relatively undisturbed coniferous forest, manzanita chaparral, and sagebrush scrub plant communities in an upland setting (Table 9). Greenleaf Manzanita Chaparral dominates on steep slopes that rise nearly 1000 feet to the west within the project area, encompassing 56% of the 460-acre project area. Jeffrey Pine Forest meanwhile is the most widespread type near Scott Creek, and across the more gently rising terrain at the base of these slopes (Figure 4).

Jeffrey Pine Forest

Jeffrey pine forms nearly pure stands throughout most of the Jeffrey Pine Forest mapped at Manzanita. Near the Scott Creek riparian corridor, up to 20% of the tree canopy is provided by white fir. Tree canopy closure averages 10-30%. The understory is currently sparse near the large meadow at the eastern project area boundary. Meanwhile, a variable shrub stratum comprised of big sagebrush, greenleaf manzanita, or mountain whitethorn (*Ceanothus cuneatus*) provides up to 40% total cover in Jeffrey Pine Forest more widely. The densest shrub subcanopies occur wherever overstory conifer canopy closure is less than 20%. As observed at Markleevillage, sapling-sized pine and fir sometimes are densely colonizing the margins of Big Sagebrush Scrub where that community abuts Jeffrey Pine Forest.

About 100 acres of the mapped Jeffrey Pine Forest community occurs on rolling hillsides and small flats where mechanized treatments as contemplated by the project would be feasible. All of the upland acres mapped as Big Sagebrush Scrub or Aspen Grove are similarly accessible. However, the densest uplands vegetation was consistently found on steep to very steep, rocky slopes in dense assemblages mapped as Montane Manzanita Chaparral. It is estimated that 70% of Jeffrey Pine Forest is accessible for mechanized treatment methods, but that less than 10% of the Montane Manzanita Chaparral is safely accessible for mechanized treatments.

Montane Manzanita Chaparral

Montane Manzanita Chaparral averages 60% cover by stiffly intertwined shrubs of 5-8 feet average height. The shrub canopy at its average density is impassable to humans and larger wildlife species. Virtually all work in this type will be performed by hand crews, due to slope severity. The understory is generally sparse, consisting of scattered low shrubs and grasses totaling less than 5% total cover. Non-native cheat grass (*Bromus tectorum*) has widely invaded all slopes, but has not currently established swards or local densities greater than 5% absolute cover. Scattered Jeffrey pines that emerge from the shrub canopy are sometimes joined by singleleaf pinyon, but local tree canopy closure never exceeds 10%. Greenleaf manzanita grow to 10 feet. Manzanita dominance declines with increasing elevation, so that huckleberry oak or less commonly tobacco brush (*Ceanothus velutinus*) patchily attain higher relative frequencies at the project area’s upper elevations. Dominant plants in this

community type are known for their ability to survive wildfires at 10 to 50-year intervals (Sawyer, et al., 2009). Adaptation include vigorous post-fire stump-sprouting. Nearly every crown of these shrubs was observed to be sprouting in 2020 at areas that recently had been mechanically cleared for defensive space around houses, even though stems had been pruned to ground level.

Aspen Grove

Aspen Grove was mapped where quaking aspen provides a tree canopy layer of greater than 10% cover amid more extensive Big Sagebrush Scrub. As in Big Sagebrush Scrub, the shrub canopy is composed mainly of big sagebrush and bitterbrush. Shrub cover averages 40%. Clonal regrowth of quaking aspen can be expected if the project includes removing stems. Deadwood accumulation is notable in this community. The single occurrence of Aspen Grove (Table 9) is the only uplands community that is considered Sensitive by CDFW (2019). Project-related reduction of tree or shrub density will not substantially alter the character or species composition, unless new invasive non-native plants are introduced. Incorporation of methods to prevent weed spread into project treatments (discussed above) would be sufficient to mitigate the potential project-related negative impacts upon sensitive upland community types at Manzanita. Changes to tree and shrub canopy density will not cause any reduction in the on-site extent or ecological function of the *Populus tremuloides-Artemisia tridentata* alliance occurrence. Upland community types (Table 9) otherwise are commonly present at undeveloped areas of Alpine County, and are widespread in the Eastern Sierra Nevada (Sawyer, et al. 2009).

Manzanita Special Status Plants – Upland Habitats

The special status plant species mountain bentgrass, Davy's sedge, Liddon's sedge, western valley sedge, Great Basin claytonia, Jack's wild buckwheat, Carson Valley monkeyflower, and golden violet have some potential to occur at Manzanita area upland habitats. Jack's wild buckwheat and Carson Valley monkeyflower may be present in the seedbank only in some years. They are the only species that could persist at recent clearings, roadsides, and other disturbed areas that could be conveniently used for project equipment or materials staging. All other potentially occurring (perennial) special status species grow to very low stature, and would be present diffusely (and possibly but not necessarily widespread) within the large upland habitat blocks that are available at Manzanita. Diffuse plant populations with diminutive growth habits will not be targeted for project treatments, and it is very unlikely that limited, scattered areas of trampling and pile burning will threaten the continued existence of any special status plant population occurring in upland habitats.

Avoidance of small populations of Jack's wild buckwheat and Carson Valley monkeyflower could be assured by completing pre-treatment surveys for populations at each intensive use area where equipment staging or materials storage is planned. Should soil disturbance or substantial vegetation mastication be unavoidable at either of the upland ecotonal areas that were classified as Dry Montane Meadow, pre-disturbance surveys should be extended to the small habitat occurrences there in order to determine whether isolated populations of mountain bentgrass, Davy's sedge, Liddon's sedge, western valley sedge, fiddleleaf hawksbeard, or golden violet are present, so that they can be avoided.

Manzanita Special Status Wildlife – Upland Habitats

The special status wildlife species Western bumble bee, Mono checkerspot butterfly, bald eagle, western white-tailed jackrabbit, American badger, and Sierra Nevada red fox have some potential to occur within the available upland habitats at Manzanita (Table 11). These same species have potential to occur within the Markleevillage project area also, 3.9 miles to the south in upland habitats that bear resemblance to those at Manzanita. As described for Markleevillage, western white-tailed jackrabbit, American badger, and Sierra Nevada red fox as adults would be mobile enough to individually escape direct impacts from project-related vegetation removal. But they become vulnerable to being killed when day-denning or raising young in burrows that could be closed permanently during mechanized clearing. Western bumblebee colonies may similarly be negatively impacted by project implementation only at their adopted burrow nest sites. The Mono checkerspot butterfly life cycle may be negatively impacted by unintended removal of herbaceous plant populations that serve as hosts for the larval stage. The project modifications and available mitigations that were highlighted in order to avoid substantial negative impacts these species at Markleevillage’s uplands communities (see above) are sufficient and reasonably applicable to the analogous work that is to be performed at Manzanita.

5.3 Bear Valley Project Area

5.3.1 Bear Valley – Waters, Wetlands and Potential Wetland Habitats

The Bear Valley project area is at a relatively high elevation on the western slope of the Sierra Nevada range (Figure 1). Its location is more than 20 miles to the southwest and its elevation averages 1000-1700 feet higher than the average elevations of the eastern slope Markleevillage and Manzanita project areas (Table 1). The climate at Bear Valley is wetter, with annual precipitation principally falling as snow. The average frost-free growing season for plants is about one month shorter. While perennial streams and springs provide significant habitat variation at Markleevillage and Manzanita, Bear Valley’s surface flows are strictly seasonal or ephemeral in duration. Surface flows at Bear Valley occur mainly after snow that has accumulated during the December to April winter period begins to melt. Small areas of remnant snow and wet soil surfaces were observed in early July. It is likely that the upper soil profile at shaded upland habitats, and all habitats on slopes north-facing aspect, will be susceptible to possibly substantial, patchy disturbance and compaction if mechanized project treatments are implemented prior to middle-late July. The upper soil profiles of upland habitats likely will have dried completely and will not be substantially affected under normal conditions if work is started after August 1, or following an inspection for appropriate dryness.

No perennial streams were found within the 130-acre Bear Valley project area. Quick checks of the nearby “blue line” streambeds (none cross through the project) found that surface flows had ceased there as of late July in 2020. The nearest dependable surface water is at the 15-acre Bear Lake impoundment, which closely approaches the northeastern project limits (Figure 5). Within the boundaries of the project area, snowmelt conveyances are narrow, steeply falling, and often have been diverted at one or more reaches for provision of drainage around the existing developments. There are no canals, but the widely dispersed roadside habitats generally include ditches wherever slopes greater than 5% are traversed. Small portions of the ditches lining the upslope edges of Snowshoe Road, Bloods

Ridge Road, and Quaking Aspen Road are intermittently vegetated with distinctive species that are adapted to wetlands root zone habitats. It was determined that seasonal watering by snowmelt is augmented by seep zone recharge, the latter persisting at least into August, wherever wetlands-adapted plants suddenly become prevalent in and near roadside ditches. While wetlands and potential wetland habitats are similarly signaled by sudden vegetation shifts at scattered locations along relatively undisturbed portions of the site's ephemeral stream channels, seasonally drying surface flows were found only rarely in settings away from roads. Outside of what may be provided at human residences, the overall dry season availability of surface waters for use by wildlife is at best sparse in the northern half of the project area and none in the southern half.

At this level of study, it was not possible to determine whether any or all wetlands and potential wetland habitat occurrences would be protected under Clean Water Act regulation or Fish and Game Code Section 1600 regulations. Agencies would have some likelihood of asserting jurisdiction based upon the bed and bank structures, ordinary high-water marks, and signs of deposition and scour that were found to be present at stream courses where wetlands-adapted Bitter Cherry Shrubland, Blue Wildrye Montane Meadow, and Kentucky Bluegrass Turf dominants are patchily distributed. Project vehicular entry or implementation of treatments within Bitter Cherry Shrubland, Blue Wildrye Montane Meadow, and Kentucky Bluegrass Turf at seasonal streambed settings would be delayed until the completion of technical investigations into whether or not the individual sites occur "isolated above the headwaters" of jurisdictional Waters.

Mapped community-scale wetlands and potential wetland habitats are situated at lower project elevations amid relatively dense housing, often at short sections of roadside ditch (Figure 5). They total only 1.7 acres in extent (Table 12). Community composition is primarily shrub-statured willows (*Salix lasiolepis*, *S. scouleriana*), bitter cherry (*Prunus emarginata*) and cascara (*Frangula purshiana*) to ten feet height, and verdant, densely carpeted spots of diverse wetlands-adapted herbs (FAC, FACW and OBL in Appendix A2). Patch-scale examples of these vegetation types occasionally will be encountered along stream courses amid uplands Lodgepole Pine Forest and Dry Montane Meadow. Wet Montane Meadow is regionally uncommon, and most occurring assemblages would be considered Sensitive by CDFW (2019). All occurrences appear in stark contrast to the surrounding upland vegetation types, so routine project avoidance is feasible.

Project treatments extended into these communities at Bear Valley could negatively impact their function to maintain biological diversity, including special status species, if overcanopy shading is substantially reduced or if large canopy gaps are created. Avoiding impacts and associated permitting is possible if access to adjacent upland treatment areas strictly uses existing bridges; no seasonal streambed crossings should be attempted elsewhere when moving powered equipment if bed and bank structures are present. If larger vegetation must be removed very near these streambeds or associated Mixed Montane Chaparral and Wet Montane Meadow, effective avoidance would include restricting edge work to hand crews. Trees should be felled into the uplands direction. Burn pile locations should be restricted to upland areas where Lodgepole pine, Jeffrey pine, white fir, big sagebrush, or mountain whitethorn are canopy dominants.

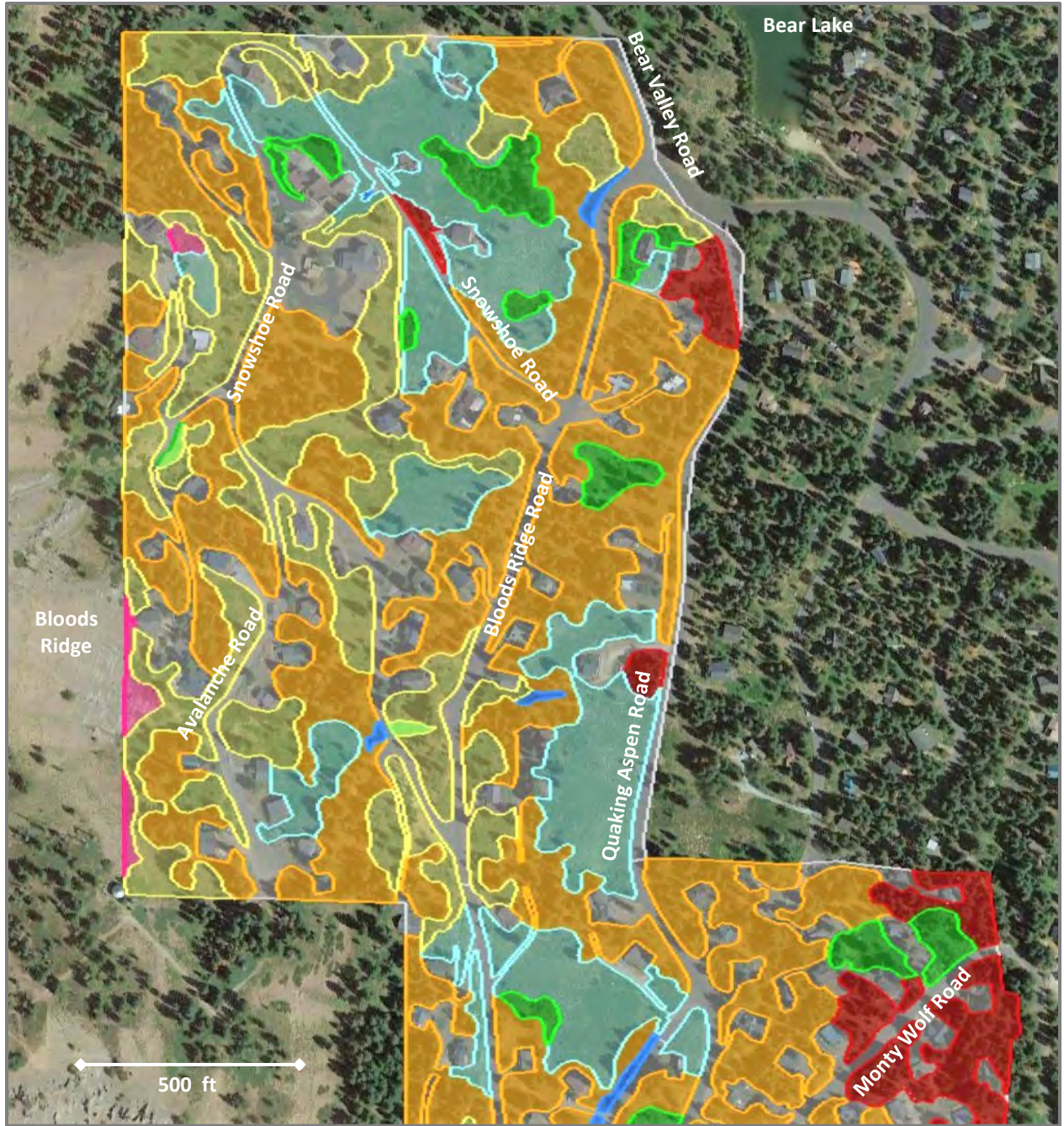


Figure 5a. Bear Valley project area, northern half. Plant community occurrences mapped in August 2020 are shown. Base image date is August 2019.

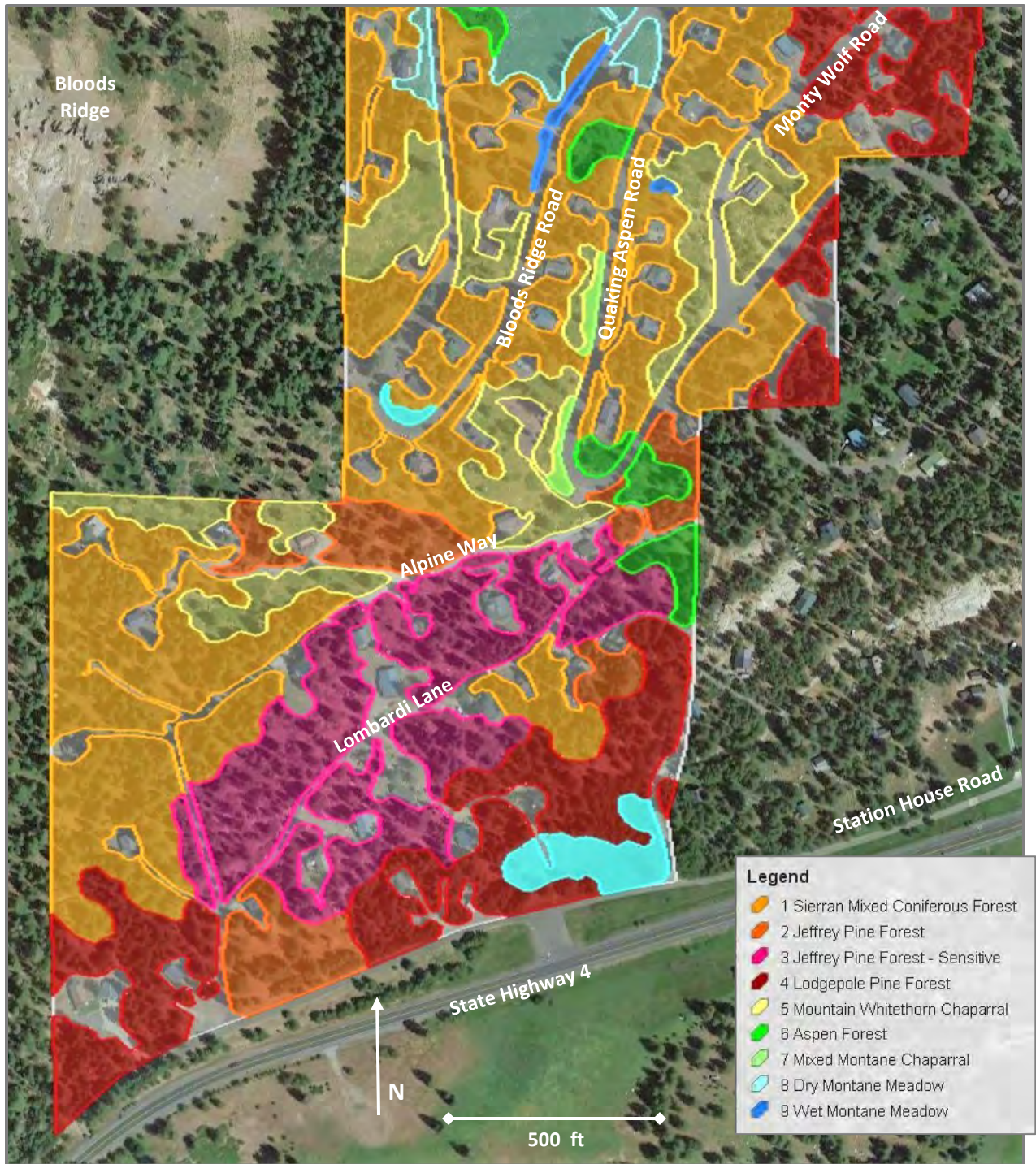


Figure 5b. Bear Valley project area, southern half.

Table 12. Plant communities that were mapped within the 130-acre Bear Valley project area in 2020. Bear Valley includes 0.4 acres of essentially unvegetated lava cap habitat, and a total of 33.7 acres that have been converted to houses, roads and other impervious or devegetated surfaces. Plant community names (after Holland, 1986) are cross-referenced to their Alliance names (Sawyer, *et al.*, 2009), as currently classified by CDFW. * indicates plant communities that are designated “sensitive” (CDFW, 2019).

Community Name and CDFW Classification Number	Alliance Name and Primary Association	Acreage in Study Area
Upland Communities		
Sierran Mixed Coniferous Forest 88.500.00	White Fir <i>Abies concolor</i> - <i>Pinus jeffreyi</i> - <i>A.magnifica</i>	40.6
Jeffrey Pine Forest 87.020.30	Jeffrey Pine <i>Pinus jeffreyi</i> - <i>Abies concolor</i>	3.5
87.020.10*	<i>Pinus jeffreyi</i> - <i>Ceanothus cordulatus</i>	7.4
Lodgepole Pine Forest 87.080.00	Lodgepole Pine <i>Pinus contorta</i> ssp. <i>murrayana</i>	10.4
Aspen Forest 61.111.04*	Aspen Grove (S3.2) <i>Populus tremuloides</i> -upland	1.9
61.111.16*	<i>P. tremuloides</i> - <i>Symphoricarpos rotundifolius</i>	1.6
Mountain Whitethorn Chaparral 37.209.00	Mountain Whitethorn <i>Ceanothus cordulatus</i> - <i>Quercus vacciniifolia</i>	16.9
Dry Montane Meadow --	(Arrowleaf Balsamroot) <i>Balsamorhiza sagitata</i> -herbaceous	11.9
Wetland and Potential Wetland Communities		
Mixed Montane Chaparral 37.970.00	Bitter Cherry Shrubland <i>Prunus emarginata</i> - <i>Frangula purshiana</i> - <i>Salix</i> spp.	0.4
Wet Montane Meadow 41.640.00*	Blue Wildrye Montane Meadow <i>Elymus glaucus</i> -herbaceous	0.3
Wet Montane Meadow 42.060.00	Kentucky Bluegrass Turf <i>Poa pratensis</i> -herbaceous	1.0

Bear Valley Special Status Plants – Waters, Wetlands and Potential Wetland Habitats

The seasonally moist to perennially wet Mixed Montane Chaparral and Wet Montane Meadow habitats associated with the small springs scattered in the northern half of the Bear Valley project area (none were found within the southern half) have some potential to support the special status aquatic felt lichen, four special status ferns of the genus *Botrychium* – upswept moonwort, scalloped moonwort, Mingan moonwort, and western goblin – and the special status higher plant tall draba. Rooting zones in

the upper soil profiles of these habitats remain wet during the normal growing season at least until late July, and it appears that some stay wet the entire frost-free period under normal conditions. The lichen and moonworts would have likelihood to occur only where these habitats are dependably shaded. Like the available habitats, special status populations that depend upon these conditions would be small and isolated, making them vulnerable to loss due to mechanized trampling and habitat alteration.

Table 13. Bear Valley project area plant community types that are available for each special status plant species that could potentially occur. Reasons for species inclusion are described in Appendix B3. Flowering period is taken from CNPS (2020). Rank/Status codes are defined below.

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDDB		
<i>Allium tribracteatum</i> three-bracted onion herbaceous perennial, bulb	1B.2	S2	March-May	Dry Montane Meadow (at Lava Cap habitat only)
<i>Botrychium ascendens</i> upswept moonwort rhizomatous perennial	2B.3	S2	sporangia June-Sept.	Mixed Montane Chaparral Wet Montane Meadow
<i>Botrychium crenulatum</i> scalloped moonwort rhizomatous perennial	2B.2	S3	sporangia June-Sept.	Mixed Montane Chaparral Wet Montane Meadow
<i>Botrychium minganense</i> Mingan moonwort rhizomatous perennial	2B.2	S3	sporangia June-Sept.	Mixed Montane Chaparral Wet Montane Meadow
<i>Botrychium montanum</i> western goblin rhizomatous perennial	2B.1	S2	sporangia June-Sept.	Mixed Montane Chaparral Wet Montane Meadow
<i>Carex davyi</i> Davy's sedge herbaceous perennial	1B.3	S3	June-Sept.	Sierran Mixed Coniferous Forest Jeffrey Pine Forest Lodgepole Pine Forest Aspen Forest Mountain Whitethorn Chaparral Dry Montane Meadow
<i>Cryptantha crymophila</i> subalpine cryptantha herbaceous perennial	1B.3	S3	July-Aug.	Dry Montane Meadow (at Lava Cap habitat only)
<i>Draba praealta</i> tall draba herbaceous perennial	2B.3	S3	June-Aug.	Mixed Montane Chaparral Wet Montane Meadow

Scientific Name Common Name Life Form	Rank or Status ¹		Flowering Period	Communities Some Potential for Occurrence
	CNPS	CNDDDB		
<i>Lomatium stebbinsii</i> Stebbins' lomatium herbaceous perennial	2B.3	S3	June-Aug.	Sierran Mixed Coniferous Forest Jeffrey Pine Forest Aspen Forest Mountain Whitethorn Chaparral Dry Montane Meadow
<i>Peltigera gowardii</i> aquatic felt lichen lichen	4.2	S3	-	Mixed Montane Chaparral Wet Montane Meadow

1. Rank or status, by agency:

CNPS = California Native Plant Society listings (CNPS, 2020)

1B = rare and endangered in California and elsewhere,

2B = rare, threatened or endangered in California, but more common elsewhere,

4 = plants of limited distribution in California – watchlist species.

Threat Code extensions:

.1 is Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2 is Fairly endangered in California (20-80% of occurrences threatened)

.3 is Not very endangered in California (< 20% of occurrences threatened or no current threats known).

CNDDDB = California Natural Diversity Data Base rankings (CDFW, 2020b):

S2 is Imperiled: often 20 or fewer populations, steep decline, or very restricted range,

S3 is Vulnerable: often 80 or fewer populations, declining or restricted range.

Impacts that could result in loss of small, isolated populations of aquatic felt lichen, upswept moonwort, scalloped moonwort, Mingan moonwort, western goblin, and tall draba can be avoided if the project avoids vehicular entry and mechanized thinning activities that would disrupt the root zone soil structure, mulching and hydrologic regime, and avoids treatments that substantially reduce habitat shading at Mixed Montane Chaparral and Wet Montane Meadow occurrences. Effective avoidance would include specifying that the very limited patches that feature willows, bitter cherry, cascara, and/or verdant, or densely carpeted spots of diverse wetlands-adapted species at stream courses are to be routinely avoided when working in adjacent Sierran Mixed Coniferous Forest, Lodgepole Pine Forest, and Dry Montane Meadow.

Bear Valley Special Status Wildlife – Waters, Wetlands and Potential Wetland Habitats

The number of potentially occurring special status wildlife species at Bear Valley is relatively few in comparison to Markleevillage and Manzanita. Project activities that disturb soil or vegetation at the limited areas of wetlands and potential wetlands, or activities that disturb patch-sized occurrences of perennially moist habitat within channels that exhibit bed and bank structures could negatively impact small, isolated populations of southern long-toed salamander (Table 11). Any vehicular entry for project treatments would disrupt the accumulated mulch and reduce habitat concealing cover and shading that area important for population maintenance. Potential breeding ponds were not found at Bear Valley in August. Practical avoidance of this species, in lieu of performing pre-project surveys for population

presence, is feasible at Bear Valley if Mixed Montane Chaparral, Wet Montane Meadow, Dry Montane Meadow, and patches of analogous vegetation assembled in seasonal channels that cross through forested habitats are avoided by the project. Effective avoidance would include restricting mechanized treatments and other vehicular entry to upland habitats only at Bear Valley.

Table 14. Sensitive wildlife species that could potentially occur within the Bear Valley project area. Key to status codes (CDFW, 2020c) is given below.

Species	Status ¹		Communities Some Potential for Occurrence
	CDFW	State ranking	
Amphibians			
<i>Ambystoma macrodactylum sigillatum</i> Southern long-toed salamander	SSC	S3	Mixed Montane Chaparral Wet Montane Meadow
Birds			
<i>Accipiter striatus</i> (nesting) sharp-shinned hawk	WL	S4	Sierran Mixed Coniferous Forest Jeffrey Pine Forest Lodgepole Pine Forest
<i>Pandion haliaetus</i> (nesting) osprey	WL	S4	Sierran Mixed Coniferous Forest Jeffrey Pine Forest Lodgepole Pine Forest
Mammals			
<i>Taxidea taxus</i> American badger	SSC	S3	Sierran Mixed Coniferous Forest Jeffrey Pine Forest Lodgepole Pine Forest burrows in Aspen Forest, Mountain Whitethorn Chaparral, and Dry Montane Meadow

1. Rank or status, by agency:

CDFW = State of California under the California Endangered Species Act (CDFW, 2020d)

SSC = Species of Special Concern

WL = Watchlist species of limited distribution or recent decline

State ranking = CNDDDB State Conservation Ranking as reported by CDFW (2020d)

S3 is Vulnerable: often 80 or fewer populations, declining or restricted range,

S4 is Apparently Secure: uncommon but not rare in California,

5.3.1 Bear Valley – Upland Habitats

Nearly the entire 130-acre landscape encompassed by the Bear Valley project area has become ecologically fragmented by development to provide single-family housing and roads, and by constant human activity, subsidies (feeders, unsecured trash), and unrestrained domestic pets. Nearly all of the undeveloped area (98%) supports upland forest, shrublands and dry meadow vegetation (Table 12).

Upland forest types appear to be ordered along the project area's 7170-7700 feet elevation gradient, with lodgepole pine (*Pinus contorta* ssp. *murrayana*) the most abundantly occurring tree at the lowermost forested slopes and flats, Jeffrey pine assuming clear canopy dominance at middle elevations, and white fir attaining up to 90% relative frequency in the tree canopy on the steepest, uppermost slopes (Figure 5). Indications of old growth forest were not found. Xeric, thorny scrub occurs in forest canopy gaps and community-sized openings, interrupting mid-slope Jeffrey Pine Forest stands and upper-slope Sierran Mixed Coniferous Forest. Smaller occurrences of Dry Montane Meadow and Aspen grove occupy a similar landscape position.

Sierran Mixed Coniferous Forest

Sierran Mixed Coniferous Forest canopy closure averages 20% and does not exceed 40% even though the trees are frequently clumped. Understory disturbance appears to vary widely, as it is absent and sapling trees have been thinned out at some lots, while other areas including the steepest project area slopes have comparatively native character including shrubs to 60% total cover, downed tree boles and deadwood accumulation, sapling trees (subcanopy stands of mainly white fir), and standing dead trees. The shrub layer is generally mountain whitethorn, but diverse perennial herbs (Appendix A2) are present where clearing has been less intensely practiced. Densely tangled, scrambling perennial herbs and low subshrubs such as bitter dogbane (*Apocynum androsaemifolium*), gooseberry (*Ribes* spp.) and coyote mint (*Monardella odoritissima*) attain 30-40% ground cover where the mixed pine canopy has exceeded 20% closure. Patches of unusually dense growth or frequency shifts to prevalence by wetland-adapted plant species were not found in areas mapped as Sierran Mixed Coniferous Forest.

Jeffrey Pine Forest

Jeffrey Pine Forest occurs as two separable alliance types, which are Jeffrey pine – white fir and Jeffrey pine – mountain whitethorn. The former was mapped where Jeffrey pine relative frequency passes 50% as white fir becomes subdominant with decreasing elevation. The understory is diverse where not already thoroughly disturbed to increase fire safety or for other land uses. However, at 7.4 acres where Jeffrey pine clearly dominates the tree canopy, and the understory layer is mainly (>50%) mountain whitethorn, separate Jeffrey pine – mountain whitethorn classification was warranted as the alliance is considered Sensitive by CDFW (2019). This type occurs among houses near Lombardi Lane and Alpine Way. Total cover by whitethorn currently is as high as 80% in untreated areas. Watercourses through Jeffrey Pine Forest may be incised, but none support riparian corridors of potential wetlands plants, and flowing springs were not found. Project-related work anywhere within Jeffrey Pine Forest, including mechanized removal of a substantial portion of the shrub layer, is very unlikely to change the overall extent of occurring sensitive Jeffrey pine – mountain whitethorn alliance, unless new populations of invasive non-native plants are introduced. Significant impact to the sensitive community can be avoided if care is taken to avoid introducing weed seed, and disturbed soil and mulch is replaced (see Non-Native Plants, above).

Lodgepole Pine Forest

Lodgepole pine is sparsely present in the tree canopy throughout Bear Valley. It attains higher relative frequencies and greater tree canopy closure at the lower elevations and relatively flat terrain

along the eastern edge of the project limits (Figure 5). Lodgepole pine is a species that is recognized for facultative adaptation to wetland habitats (USACE, 2012); however, it is likely that Lodgepole Pine Forest at Bear Valley is uplands habitat as defined in federal wetlands delineation guidance, given the co-occurrence of strictly uplands-adapted Jeffrey pine and white fir, and predominance of uplands plants in the understory layers. Uplands Dry Montane Meadow assemblages similarly include at least a few wetlands-adapted species. Both Lodgepole Pine Forest and Dry Montane Meadow are mapped here as uplands because the necessary predominance of wetland species appears to be lacking throughout nearly all of their extents. Dry Montane Meadow generally is an herbaceous, sometimes also grassy vegetation type of moderate to steep slopes that is dominated by northwest balsamroot (*Balsamorhiza deltoidea*) clumps. The distinct exceptions discussed above (see Waters, Wetlands and Potential Wetlands) are small, likely spring-driven zones in lower elevation watercourses, where typical shrubs and herbs of Mixed Montane Chaparral and Wet Montane Meadow are briefly and densely supported.

Bear Valley Special Status Plants – Upland Habitats

The special status plant species Davy's sedge, three-bracted onion, subalpine cryptantha, and Stebbins' lomatium have some potential to occur in upland habitats that are available within the Bear Valley project area. All are low-growing perennial herbs that would be most likely to establish populations diffusely in the relatively large upland vegetation blocks (Table 13). Three-bracted onion and subalpine cryptantha are regionally known to occur more specifically in upland forest gaps at geological features known as "lava caps". Bloods Ridge is a feature of this type that is immediately upslope from the western edge of the project area. Three-bracted onion and subalpine cryptantha likely would be restricted to 0.4 acres of semi-barren lava cap habitat that intersects the western project area edge (Figure 5a).

Diffuse populations of low-growing plants such as Davy's sedge and Stebbins' lomatium will not be targeted by project treatments, and it is very unlikely that limited areas of trampling and pile burning will substantially impact the continued existence of any occurring population. Project-related soil disturbance may negatively impact individuals, but local population extirpation due to implemented treatments is very unlikely. Potential negative impacts to small populations of three-bracted onion and subalpine cryptantha that would be caused by mechanized trampling, turning of equipment, and piling and burning slash, will be completely avoided if the project does not enter into areas mapped as lava cap (Figure 5).

Bear Valley Special Status Wildlife – Upland Habitats

American badger as adults would be mobile enough to individually escape direct impacts from project-related vegetation removal, however, they become vulnerable to being killed when day-denning or raising young in burrows that could be closed permanently during mechanized clearing. Burrowing attributable to badgers was not observed within the Bear Valley project area, but ground-burrowing prey rodents were noted as sometimes densely colonizing Dry Montane Meadow, and rockier areas of Aspen Forest and Mountain Whitethorn Chaparral. The project modifications and available mitigations that were highlighted in order to avoid negative impacts to American badger at Markleevillages's upland communities (see above) are sufficient and reasonably applicable to the analogous work that is to be performed at Bear Valley.

Sharp-Shinned Hawk and Osprey

Sharp-shinned hawk (*Accipiter striatus*) and osprey (*Pandion haliaetus*) may choose to nest in tall living pines or fir (sharp-shinned hawk), or standing dead pines or fir (osprey) in Mixed Coniferous Forest, Jeffrey Pine Forest, and Lodgepole Pine Forest. Sharp-shinned hawks build and maintain large stick nests, but the sites they choose for nesting are generally more remote and less subject to residential disturbances. Osprey nests in montane settings are always located near or at lakes, and it is not unknown for pairs to choose large standing snags among resort and residential homes (Paulus, 2018). Surveys for large stick nest structures should be conducted at Mixed Coniferous Forest, Jeffrey Pine Forest, and Lodgepole Pine Forest when the project is implemented there during the nesting season. If active raptor nests are found, no-work buffers should be established in consultation with CDFW. Inactive stick nests, if any occur, should be avoided during tree thinning operations; these nest structures are protected even when not in use.

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Appendix A1. List of plant species that were observed in August 2020 to occur at the Markleeville (MV) and Manzanita (MZ) portions of the Alpine County Wildfire Risk Mitigation Plan project. Presence within the available upland and lowland habitat types is indicated. Growth form (Habit) and likelihood of wetland occurrence (Status) codes are defined in Appendix B2.

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Gnetophyta					
Dennstaedtiaceae					
<i>Pteridium aquilinum</i>	Northern bracken fern	NPH	FACU		MV, MZ
Equisitaceae					
<i>Equisetum arvense</i>		NAH	FAC		MV, MZ
<i>Equisetum laevigatum</i>		NAH	FACW		MV, MZ
Cupressaceae					
<i>Calocedrus decurrens</i>	incense cedar	NT		MV	MV, MZ
<i>Juniperus grandis</i>	Sierra juniper	NT		MV, MZ	MV, MZ
Pinaceae					
<i>Abies concolor</i>	white fir	NT		MV, MZ	MV, MZ
<i>Pinus contorta</i> ssp. <i>murrayana</i>	lodgepole pine	NT	FAC		MV, MZ
<i>Pinus jeffreyi</i>	Jeffrey pine	NT		MV, MZ	MV, MZ
<i>Pinus monophylla</i>	singleleaf pinyon	NT		MV, MZ	
Anthophyta (Dicotyledones)					
Adoxaceae					
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	blue elderberry	NS	FAC	MV, MZ	MV, MZ
Apiaceae					
<i>Angelica capitellatum</i>	ranger's buttons	NPH	FACW		MV, MZ
<i>Cicuta douglasii</i>	water hemlock	NPH	OBL		MV
<i>Osmorhiza berteroi</i>	mountain sweet cicely	NPH	FACU	MV	MV
<i>Perideridia lemmonii</i>	Lemmon's yampah	NPH	FAC		MZ
Apocynaceae					
<i>Apocymum</i> <i>androsaemifolium</i>	bitter dogbane	NPH	UPL	MV, MZ	MV, MZ
<i>Asclepias fascicularis</i>	narrow-leaved milkweed	NPH	FAC	MV	MV
<i>Asclepias speciosa</i>	showy milkweed	NPH	FAC	MV, MZ	
Asteraceae					
<i>Achillea millefolium</i>	yarrow	NPH	FACU		MV, MZ
<i>Agoseris grandiflora</i>	grassland agoseris	NPH		MV, MZ	
<i>Agoseris retrorsa</i>	spear-leaved agoseris	NPH		MV	
<i>Artemisia douglasiana</i>	mugwort	NPH	FAC		MV, MZ

Plant Families and Species	Habit	Status	Habitat Type	
			UPL	LOWL
Asteraceae (cont.)				
<i>Artemisia dracunculus</i>	tarragon	NPH		MV
<i>Artemisia ludoviciana</i> ssp. <i>incompta</i>	silver wormwood	NPH	FACU	MV
<i>Artemisia spiciformis</i>	snowfield sagebrush	NS	FACU	MZ
<i>Artemisia tridentata</i>	big sagebrush	NS	MV, MZ	
<i>Balsamorhiza sagittata</i>	arrow-leaved balsamroot	NPH	MV, MZ	MV, MZ
<i>Chaenactis douglasii</i>	dusty maidens	NPH	MV, MZ	
<i>Chrysothamnus viscidiflorus</i>	curl-leaf rabbitbrush	NS	MV	
<i>Cirsium</i> sp.	thistle	NBH		MV
<i>Crepis acuminata</i>	long-leaved hawksbeard	NPH	MV, MZ	
<i>Dieteria canescens</i> var. <i>canescens</i>	hoary aster	NPH	UPL	MV, MZ
<i>Ericameria nauseosus</i>	rubber rabbitbrush	NS	MV, MZ	
<i>Erigeron divergens</i>	spreading fleabane	NBH	MV	
<i>Eriophyllum lanatum</i> var. <i>croceum</i>	common woolly sunflower	NPH	MV	
<i>Grindelia squarrosa</i> var. <i>serrulata</i>	curly-cup gumplant	IBH	FACU	MZ
<i>Hieracium albiflorum</i>	white hawkweed	NPH	MV, MZ	
<i>Lactuca serriola</i>	prickly lettuce	IAH	FACU	MV
<i>Madia elegans</i>	common madia	NAH		MZ
<i>Packera streptanthifolia</i>	Rocky Mtns. groundsel	NPH	FACU	MV
<i>Solidago elongata</i>	Canada goldenrod	NPH	FACU	MV, MZ
<i>Solidago spectabilis</i>	showy goldenrod	NPH	FACW	MV
<i>Stephanomeria lactucina</i>	woodland wirelettuce	NPH		MZ
<i>Symphotrichium campestre</i>	Western meadow aster	NPH		MV, MZ
<i>Symphotrichium foliaceum</i> var. <i>parryi</i>	alpine leafy-bract aster	NPH	UPL	MV, MZ
<i>Symphotrichium spathulatum</i> var. <i>spathulatum</i>	Western mountain aster	NPH	FAC	MV
<i>Tragopogon dubius</i>	yellow salsify	IPH		MV, MZ
Betulaceae				
<i>Alnus incana</i> ssp. <i>tenuifolia</i>	mountain alder	NT	FACW	MV, MZ
Boraginaceae				
<i>Cryptantha</i> sp.	cryptantha	NAH		MV, MZ
<i>Phacelia hastata</i> var. <i>hastata</i>	lance-leaved phacelia	NPH		MV, MZ
<i>Plagiobothrys torreyi</i>	Sierra popcornflower	NAH		MV
Brassicaceae				
<i>Boechera</i> sp.	rockcress	NPH		MV, MZ

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Brassicaceae (cont.)					
<i>Capsella bursa-pastoris</i>	shepherd's purse	IAH	FACU		MV
<i>Descurainia californica</i>	California tansy mustard	NAH			MV
<i>Erysimum perenne</i>	Sierra wallflower	NPH		MV, MZ	
<i>Lepidium campestre</i>	field pepperweed	IAH			MV
<i>Lepidium virginicum</i> ssp. <i>virginicum</i>	annual peppergrass	NAH	FACU	MV, MZ	MV, MZ
<i>Sisymbrium altissimum</i>	tumble mustard	IBH	FACU	MV	
Caprifoliaceae					
<i>Symphoricarpos mollis</i>	creeping snowberry	NS		MV, MZ	MV, MZ
Caryophyllaceae					
<i>Silene verecunda</i>	San Francisco campion	NPH			MZ
Chenopodiaceae					
<i>Salsola tragus</i>	Russia thistle	IAH	FACU	MV, MZ	
Cornaceae					
<i>Cornus sericea</i> ssp. <i>sericea</i>	redstem dogwood	NS	FACW		MV, MZ
Ericaceae					
<i>Arctostaphylos patula</i>	greenleaf manzanita	NS		MV, MZ	
<i>Sarcodes sanguinea</i>	snow plant	NPH\$		MZ	
Fabaceae					
<i>Acmispon parviflorus</i>	small-flowered deervetch	NAH		MV, MZ	
<i>Astragalus purshii</i>	Pursh's milkvetch	NPH		MV, MZ	
<i>Astragalus webberi</i>	Webber's milkvetch	NAH	FAC		MV
<i>Hosackia oblongifolia</i> var. <i>oblongifolia</i>	stream lotus	NPH	OBL		MV, MZ
<i>Lupinus argenteus</i> var. <i>argenteus</i>	silvery lupine	NPH		MV, MZ	
<i>Lupinus lepidus</i> var. <i>confertus</i>	dwarf lupine	NPH		MV, MZ	MV, MZ
<i>Melilotus albus</i>	white sweetclover	IBH	FACU	MV	MV, MZ
<i>Melilotus officinalis</i>	yellow sweetclover	IBH	FACU		MV
<i>Trifolium repens</i>	white clover	IPH	FACU		MV, MZ
<i>Trifolium variegatum</i> var. <i>major</i>	large variegated clover	NAH	FAC		MZ
<i>Vicia americana</i> ssp. <i>americana</i>	American vetch	NPH	FAC		MV, MZ
Fagaceae					
<i>Chrysolepis sempervirens</i>	bush chinquapin	NS		MZ	
<i>Quercus vacciniifolia</i>	huckleberry oak	NS		MV, MZ	

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Grossulariaceae					
<i>Ribes nevadense</i>	mountain pink currant	NS	FAC	MZ	MV, MZ
<i>Ribes velutinum</i>	desert gooseberry	NS		MV	
Hypericaceae					
<i>Hypericum scouleri</i>	Scouler's St John's wort	NPH	FACW		MV, MZ
Lamiaceae					
<i>Agastache urticifolia</i>	nettle-leaf horsemint	NPH	FACU		MV, MZ
<i>Monardella breweri</i> ssp. <i>lanceolata</i>	mustang mint	NAH		MV, MZ	
<i>Monardella odoritissima</i>	coyote mint	NHS	FACU	MV, MZ	MV
<i>Stachys rigida</i> var. <i>rigida</i>	rigid hedge nettle	NPH	FACW		MV, MZ
Loasaceae					
<i>Mentzelia congesta</i>	congested blazing star	NAH		MZ	
Malvaceae					
<i>Sidalcea oregana</i> ssp. <i>spicata</i>	Oregon checker mallow	NPH	FACW		MV
Onagraceae					
<i>Gayophytum diffusum</i> ssp. <i>parviflorum</i>	summer snowflakes	NAH		MV, MZ	
<i>Oenothera elata</i> ssp. <i>hirsutissima</i>	Hooker's evening primrose	NBH	FACW		MV
Orobanchaceae					
<i>Castilleja applegatei</i> ssp. <i>pinetorum</i>	Applegate's paintbrush	NPH		MV, MZ	
Phrymaceae					
<i>Erythranthe moschata</i>	musk monkeyflower	NPH	FACW		MV
Plantaginaceae					
<i>Keckiella breviflora</i>	bush penstemon	NS		MV, MZ	
<i>Penstemon newberryi</i> var. <i>newberryi</i>	Newberry's beardtongue	NPH		MV, MZ	
<i>Plantago major</i>	common plantain	IPH	FAC		MZ
Polemoniaceae					
<i>Allophyllum gilioides</i> ssp. <i>violaceum</i>	dense false gilia	NAH		MV	
<i>Collomia grandiflora</i>	large-flowered collomia	NAH		MV, MZ	MV, MZ
<i>Microsteris gracilis</i>	slender annual phlox	NAH	FACU	MV, MZ	
<i>Phlox hoodii</i> ssp. <i>canescens</i>	Hood's spiny phlox	NPH		MV, MZ	

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Polygonaceae					
<i>Eriogonum elatum</i>	tall woolly buckwheat	NPH		MZ	
<i>Eriogonum nudum</i> var. <i>deductum</i>	naked wild buckwheat	NPH		MV, MZ	
<i>Eriogonum wrightii</i> var. <i>subscaposum</i>	short-stemmed buckwheat	NHS		MV, MZ	
<i>Polygonum douglasii</i>	Douglas' knotweed	NAH	FACU		MV
Ranunculaceae					
<i>Aquilegia formosa</i>	crimson columbine	NPH	FAC		MV, MZ
<i>Ranunculus testiculatus</i>	tubercled buttercup	IAH		MV	
<i>Thalictrum fendleri</i> var. <i>fendleri</i>	Fendler's meadow rue	NPH	FAC		MV, MZ
Rhamnaceae					
<i>Ceanothus cordulatus</i>	mountain whitethorn	NS		MV, MZ	
<i>Ceanothus velutinus</i>	tobacco brush	NS		MV, MZ	
<i>Frangula rubra</i> ssp. <i>rubra</i>	Sierra coffeeberry	NS	FACU	MV, MZ	MV, MZ
Rosaceae					
<i>Amelanchier utahensis</i>	Utah serviceberry	NS	FACU	MV, MZ	MV, MZ
<i>Cercocarpus ledifolius</i> var. <i>intermontanus</i>	curl-leaf mountain mahogany	NS		MZ	
<i>Potentilla gracilis</i> var. <i>fastigiata</i>	graceful cinquefoil	NPH	FAC		MV, MZ
<i>Prunus andersonii</i>	desert peach	NS		MV, MZ	
<i>Prunus virginiana</i> var. <i>demissa</i>	western chokecherry	NS	FAC		MV, MZ
<i>Purshia tridentata</i>	bitterbrush	NS		MV, MZ	
<i>Rosa woodsii</i> var. <i>ultramontana</i>	Wood's wild rose	NS	FACU	MV, MZ	MV, MZ
Rubiaceae					
<i>Kelloggia galioides</i>		NPH		MV, MZ	
Salicaceae					
<i>Populus tremuloides</i>	quaking aspen	NT	FACU	MV, MZ	MV, MZ
<i>Populus trichocarpa</i>	black cottonwood	NT	FACU	MV, MZ	MV, MZ
<i>Salix exigua</i>	narrow-leaved willow	NS	FACW		MV, MZ
<i>Salix geyeriana</i>	Geyer's willow	NT	OBL		MV
<i>Salix lasiandra</i>	Pacific willow	NT	FACW		MV, MZ
<i>Salix lasiolepis</i>	arroyo willow	NT	FACW		MV, MZ
<i>Salix scouleriana</i>	Scouler's mountain willow	NS	FAC		MV, MZ

Plant Families and Species	Habit	Status	Habitat Type	
			UPL	LOWL
Scrophulariaceae				
<i>Verbascum thapsus</i>	woolly mullein	IBH	FACU	MV, MZ
Solanaceae				
<i>Nicotiana attenuata</i>	wild coyote tobacco	NAH	FACU	MZ
Violaceae				
<i>Viola glabella</i>	stream violet	NPH	FAC	MZ
<i>Viola nephrophylla</i>	Leconte violet	NPH	FACW	MV
Anthophyta (Monocotyledones)				
Alliaceae				
<i>Allium</i> sp.	onion	NPH		MV, MZ
Cyperaceae				
<i>Carex angustata</i>	narrow-leaved sedge	NPGL	FACW	MV, MZ
<i>Carex fracta</i>	fragile-sheathed sedge	NPGL	FAC	MV
<i>Eleocharis</i> sp.	spikerush	NPGL	OBL	MV
Juncaceae				
<i>Juncus balticus</i> ssp. <i>ater</i>	Baltic rush	NPGL	FACW	MV, MZ
<i>Juncus nevadensis</i>	Sierran rush	NPGL	FACW	MV, MZ
<i>Juncus orthophyllus</i>	straight-leaved rush	NPGL	FACW	MV, MZ
<i>Scirpus microcarpus</i>	panicked bulrush	NPGL	OBL	MV, MZ
Liliaceae				
<i>Calochortus leichtlinii</i>	smoky mariposa lily	NPGL		MV, MZ
<i>Lilium parvum</i>	Sierra tiger lily	NPH	OBL	MV
Poaceae				
<i>Agrostis gigantea</i>	redtop bent grass	IPG	FACW	MV, MZ
<i>Agrostis pallens</i>	dune bent grass	NPG	FACU	MV
<i>Agrostis scabra</i>	rough bent grass	NPG	FAC	MV, MZ
<i>Agrostis stolonifera</i>	bent grass	NPG	FACW	MV, MZ
<i>Bromus carinatus</i> var. <i>marginatus</i>	mountain brome	NPG		MV, MZ
<i>Bromus hordeaceus</i>	soft chess	IAG	FACU	MV
<i>Bromus laevipes</i>	woodland brome	NPG		MV, MZ
<i>Bromus tectorum</i>	cheat grass	IAG		MV, MZ
<i>Dactylis glomerata</i>	orchard grass	IPG	FACU	MV, MZ
<i>Elymus elymoides</i>	squirreltail grass	NPG	FACU	MV, MZ
<i>Elymus repens</i>	quackgrass	IPG	FAC	MV
<i>Elymus triticoides</i>	creeping wildrye	NPG	FAC	MV, MZ
<i>Festuca rubra</i>	red fescue	NPG		MV, MZ
<i>Festuca trachyphylla</i>	sheep fescue	IPG	UPL	MV, MZ
<i>Holcus lanatus</i>	common velvet grass	IPG	FAC	MZ

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Poaceae (cont.)					
<i>Hordeum brachyantherum</i>	Northern barley	NPG	FACW		MV, MZ
<i>Hordeum murinum</i> ssp. <i>glaucum</i>	smooth barley	IAG	FACU	MV	
<i>Muhlenbergia richardsonis</i>	mat muhly	NPG	FAC		MV, MZ
<i>Phleum pratense</i>	common timothy	IPG	FACU		MV, MZ
<i>Poa bulbosa</i> ssp. <i>vivipara</i>	bulbous bluegrass	IPG		MV	
<i>Poa fendleriana</i> ssp. <i>longiligula</i>		NPG		MV, MZ	
<i>Poa pratensis</i> ssp. <i>pratensis</i>	Kentucky blue grass	IPG	FAC		MV, MZ
<i>Stipa comata</i>	needle and thread grass	NPG		MV	
<i>Stipa nelsoni</i> var. <i>dorei</i>		NPG	FACU		MZ
<i>Stipa nevadensis</i>		NPG		MV	
<i>Stipa occidentalis</i> ssp. <i>californica</i>	western needle grass	NPG		MV, MZ	MV, MZ
<i>Stipa occidentalis</i> ssp. <i>pubescens</i>	western needle grass	NPG		MV, MZ	
<i>Stipa thurberiana</i>	Thurber's needlegrass	NPG		MV	MV
Ruscaceae					
<i>Maianthemum stellatum</i>	false Solomon's seal	NPH	FACU		MV, MZ
Typhaceae					
<i>Typha latifolia</i>		NPH	OBL		MV

Habit: A = annual H = herb T = tree
B = biennial I = introduced \$ = parasitic
G = grass N = native
GL = grass-like P = perennial

Appendix A2. List of plant species that were observed to occur at the Bear Valley portion of the Alpine County Wildfire Risk Mitigation Plan project in August 2020. Presence at each occurring available habitat type is indicated (BV). Growth form (Habit) and likelihood of wetland occurrence (Status) codes are defined below.

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Gnetophyta					
Dryopteridaceae					
<i>Polystichum cf. lemmonii</i>	Lemmon's sword fern	NPH	FAC		BV
Cupressaceae					
<i>Juniperus grandis</i>	Sierra juniper	NT		BV	BV
Pinaceae					
<i>Abies concolor</i>	white fir	NT		BV	
<i>Abies magnifica</i>	red fir	NT		BV	
<i>Pinus contorta</i> ssp. <i>murrayana</i>	lodgepole pine	NT	FAC	BV	BV
<i>Pinus jeffreyi</i>	Jeffrey pine	NT		BV	BV
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	Douglas fir	NT	FACU	BV	BV
Anthophyta (Dicotyledones)					
Adoxaceae					
<i>Sambucus racemosa</i> var. <i>racemosa</i>	red elderberry	NS	FACU	BV	
Apiaceae					
<i>Angelica capitellatum</i>	ranger's buttons	NPH	FACW		BV
<i>Ligusticum grayi</i>	Gray's licorice root	NPH	FAC		BV
<i>Osmorhiza berteroi</i>	mountain sweet cicely	NPH	FACU	BV	BV
<i>Osmorhiza occidentalis</i>	western sweet cicely	NPH		BV	BV
<i>Perideridia lemmonii</i>	Lemmon's yampah	NPH	FAC		BV
<i>Perideridia parishii</i> ssp. <i>latifolia</i>	Parish's yampah	NPH	FAC	BV	
Apocynaceae					
<i>Asclepias speciosa</i>	showy milkweed	NPH	FAC		BV
<i>Apocynum androsaemifolium</i>	bitter dogbane	NPH	UPL	BV	BV
Asteraceae					
<i>Achillea millefolium</i>	yarrow	NPH	FACU		BV
<i>Agoseris monticola</i>	Sierra Nevada agoseris	NPH	FAC	BV	BV
<i>Anaphalis margaritacea</i>	pearly everlasting	NPH		BV	
<i>Artemisia douglasiana</i>	mugwort	NPH	FAC		BV
<i>Balsamorhiza deltoidea</i>	Northwest balsamroot	NPH		BV	BV
<i>Cirsium cymosum</i> var. <i>cymosum</i>	peregrine thistle	NBH		BV	BV

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Asteraceae (cont.)					
<i>Cirsium occidentale</i> var. <i>venustum</i>	Venus thistle	NPH		BV	BV
<i>Dieteria canescens</i> var. <i>shastensis</i>	hoary aster	NPH	UPL	BV	
<i>Hazardia whitneyi</i>	Whitney's goldenbush	NHS		BV	
<i>Hieracium albiflorum</i>	white hawkweed	NPH		BV	
<i>Madia glomerata</i>	mountain tarweed	NAH	FACU	BV	BV
<i>Packera streptanthifolia</i>	Rocky Mtns. groundsel	NPH	FACU	BV	BV
<i>Symphotrichium campestre</i>	Western meadow aster	NPH		BV	BV
<i>Symphotrichium foliaceum</i> var. <i>parryi</i>	alpine leafy-bract aster	NPH	UPL	BV	
<i>Symphotrichium spathulatum</i> var. <i>intermedium</i>	Western mountain aster	NPH	FAC		BV
<i>Tragopogon dubius</i>	yellow salsify	IPH		BV	BV
Boraginaceae					
<i>Mertensia ciliata</i> var. <i>stomatechoides</i>	streamside bluebells	NPH	FACW		BV
<i>Phacelia ramosissima</i>	branching phacelia	NPH	FACU	BV	
Brassicaceae					
<i>Arabis eschscholziana</i>	hairy rockcress	NBH		BV	
<i>Boechera davidsonii</i>	Davidson's rockcress	NPH		BV	
<i>Boechera pinetorum</i>	pine rockcress	NPH	FACU	BV	
<i>Boechera platysperma</i>	pioneer rockcress	NPH		BV	
<i>Descurainia californica</i>	California tansy mustard	NAH		BV	BV
<i>Erysimum capitatum</i> var. <i>capitatum</i>	Douglas' wallflower	NPH		BV	
<i>Lepidium virginicum</i> ssp. <i>virginicum</i>	annual peppergrass	NAH	FACU	BV	BV
Caprifoliaceae					
<i>Symphoricarpos mollis</i>	creeping snowberry	NS		BV	BV
<i>Symphoricarpos rotundifolius</i>	roundleaf snowberry	NS		BV	
Caryophyllaceae					
<i>Silene bernardina</i>	Palmer's catchfly	NPH		BV	
<i>Spergularia rubra</i>	red sand spurrey	IAH	FAC	BV	BV
Cornaceae					
<i>Cornus sericea</i> ssp. <i>sericea</i>	redstem dogwood	NS	FACW		BV
Ericaceae					
<i>Arctostaphylos nevadensis</i>	pinemat manzanita	NS		BV	
<i>Arctostaphylos</i> cf. <i>patula</i>	greenleaf manzanita	NS		BV	
<i>Sarcodes sanguinea</i>	Sierra snow plant	NPH\$		BV	

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Fabaceae					
<i>Acmispon americanus</i> var. <i>americanus</i>	American bird's-foot trefoil	NAH		BV	BV
<i>Hosackia oblongifolia</i> var. <i>oblongifolia</i>	stream lotus	NPH	OBL		BV
<i>Lupinus andersonii</i>	Anderson's lupine	NPH		BV	
<i>Lupinus lepidus</i> var. <i>confertus</i>	dwarf lupine	NPH		BV	BV
<i>Lupinus polyphyllus</i> var. <i>burkei</i>	many-leaved lupine	NPH	FAC	BV	BV
<i>Trifolium monanthum</i> ssp. <i>parvum</i>	small carpet clover	NPH	FAC		BV
Fagaceae					
<i>Quercus vaccinifolia</i>	huckleberry oak	NS		BV	
Grossulariaceae					
<i>Ribes cereum</i> var. <i>cereum</i>	wax currant	NS		BV	
<i>Ribes montigenum</i>	prickly gooseberry	NS		BV	
<i>Ribes viscosissimum</i>	sticky gooseberry	NS	FAC	BV	BV
Hypericaceae					
<i>Hypericum perforatum</i>	klamathweed	IPH	FACU	BV	
Lamiaceae					
<i>Agastache urticifolia</i>	nettle-leaf horsemint	NPH	FACU		BV
<i>Monardella odoritissima</i> ssp. <i>pallida</i>	coyote mint	NHS	FACU	BV	BV
Malvaceae					
<i>Sidalcea glaucescens</i>	waxy checkerbloom	NPH		BV	BV
Melanthiaceae					
<i>Veratrum californicum</i>	corn lily	NPH	FACW		BV
Onagraceae					
<i>Chamerion angustifolium</i> ssp. <i>circumvagum</i>	narrow-leaved fireweed	NPH	FACU		BV
<i>Epilobium brachycarpum</i>	tall annual willowherb	NAH		BV	
<i>Gayophytum diffusum</i> ssp. <i>parviflorum</i>	summer snowflakes	NAH		BV	BV
<i>Gayophytum eriospermum</i>	Colville's gayophytum	NAH		BV	BV
Orobanchaceae					
<i>Castilleja applegatei</i> ssp. <i>pallida</i>	Applegate's paintbrush	NPH		BV	

Plant Families and Species	Habit	Status	Habitat Type	
			UPL	LOWL
Orobanchaceae (cont.)				
<i>Cordylanthus tenuis</i> <i>ssp. tenuis</i>	slender bird's-beak	NAH		BV
<i>Orthocarpus cuspidatus</i> <i>ssp. cryptanthus</i>	toothed owl's-clover	NAH		BV
<i>Pedicularis semibarbata</i>	pinewoods lousewort	NPH		BV
Phrymaceae				
<i>Erythranthe moschata</i>	musk monkeyflower	NPH	FACW	BV
Plantaginaceae				
<i>Penstemon newberryi</i> <i>var. newberryi</i>	Newberry's beardtongue	NPH		BV
<i>Penstemon speciosus</i>	blue penstemon	NPH	FACW	BV
Polemoniaceae				
<i>Collomia grandiflora</i>	large-flowered collomia	NAH		BV
<i>Ipomopsis aggregata</i> <i>ssp. aggregata</i>	western scarlet gilia	NPH		BV
<i>Microsteris gracilis</i>	slender annual phlox	NAH	FACU	BV
Polygonaceae				
<i>Eriogonum nudum</i> <i>var. nudum</i>	naked wild buckwheat	NPH		BV
<i>Eriogonum umbellatum</i> <i>var. furcosum</i>	Sierra Nevada sulphur flower	NHS		BV
<i>Polygonum douglasii</i>	Douglas' knotweed	NAH	FACU	BV
<i>Polygonum minimum</i>	little mountain knotweed	NAH	FACU	BV
<i>Rumex acetosella</i>	sheep sorrel	IPH	FACU	BV
Ranunculaceae				
<i>Delphinium cf. depauperatum</i>	blue mountain larkspur	NPH		BV
<i>Thalictrum fendleri</i> <i>var. fendleri</i>	meadow rue	NPH	FAC	BV
Rhamnaceae				
<i>Ceanothus cordulatus</i>	mountain whitethorn	NS		BV
<i>Frangula purshiana</i>	cascara	NS	FACU	BV
Rosaceae				
<i>Amelanchier utahensis</i>	Utah serviceberry	NS	FACU	BV
<i>Geum macrophyllum</i>	large-leaved avens	NPH	FACW	BV
<i>Potentilla gracilis</i> <i>var. fastigiata</i>	graceful cinquefoil	NPH	FAC	BV
<i>Prunus emarginata</i>	bitter cherry	NS	FACU	BV
<i>Spirea splendens</i>	subalpine meadowsweet	NS		BV

Plant Families and Species	Habit	Status	Habitat Type		
			UPL	LOWL	
Salicaceae					
<i>Populus tremuloides</i>	quaking aspen	NT	FACU	BV	BV
<i>Salix lasiolepis</i>	arroyo willow	NS	FACW		BV
<i>Salix scouleriana</i>	Scouler's mountain willow	NS	FAC		BV
Violaceae					
<i>Viola glabella</i>	stream violet	NPH	FAC		BV
<i>Viola purpurea</i>	purple-leaved violet	NPH		BV	
Anthophyta (Monocotyledones)					
Alliaceae					
<i>Allium bisceptrum</i>	twin-crested onion	NPH	FACU	BV	
Cyperaceae					
<i>Carex fracta</i>	fragile-sheathed sedge	NPGL	FAC		BV
<i>Carex specifica</i>	narrow-fruited sedge	NPGL		BV	
Juncaceae					
<i>Luzula subcongesta</i>	wood rush	NPGL	FACW		BV
Liliaceae					
<i>Lilium parvum</i>	Sierra tiger lily	NPH	OBL		BV
Poaceae					
<i>Agrostis gigantea</i>	redtop bent grass	IPG	FACW		BV
<i>Agrostis variabilis</i>	mountain bent grass	NPG		BV	
<i>Bromus commutatus</i>	hairy chess	IAG		BV	BV
<i>Bromus laevipes</i>	woodland brome	NPG		BV	
<i>Dactylis glomerata</i>	orchard grass	IPG	FACU		BV
<i>Deschampsia danthonioides</i>	annual hair grass	NAG	FACW		BV
<i>Elymus elymoides</i>	squirreltail grass	NPG	FACU	BV	BV
<i>Elymus glaucus</i>	Western wildrye	NPG	FACU	BV	BV
<i>Elymus hispidus</i>	intermediate wheatgrass	IPG		BV	
<i>Elymus repens</i>	quackgrass	IPG	FAC	BV	BV
<i>Phleum alpinum</i>	mountain timothy	NPG	FAC		BV
<i>Stipa occidentalis</i>	western needle grass	NPG		BV	BV
<i>ssp. pubescens</i>					
<i>Stipa pinetorum</i>	pinewoods needle grass	NPG		BV	
<i>Trisetum canescens</i>	tall false oat	NPG	FACU		BV
Ruscaceae					
<i>Maianthemum stellatum</i>	false Solomon's seal	NPH	FACU	BV	BV
Themidaceae					

Plant Families and Species	Habit	Status	Habitat Type	
			UPL	LOWL
<i>Triteleia ixoides ssp. scabra</i> golden triteleia	NPGL	FAC		BV

Habit: A = annual H = herb P = perennial
 B = biennial HS = half-shrub S = shrub
 G = grass I = introduced T = tree
 GL = grass-like N = native \$ = parasitic

Status: Wetland occurrence status describes the probability for each identified plant species to occur in habitats that qualify as wetlands in the Arid West Region (NRCS, 2014). Status codes are defined:

Code	Status	Designation	Comment
OBL	Obligate Wetland	Hydrophyte	Almost always occur in wetlands
FACW	Facultative Wetland	Hydrophyte	Usually occur in wetlands, but may occur in non-wetlands
FAC	Facultative	Hydrophyte	Occur in wetlands and non-wetlands
FACU	Facultative Upland	Nonhydrophyte	Usually occur in non-wetlands, but may occur in wetlands
UPL	Obligate Upland	Nonhydrophyte	Almost never occur in wetlands

APPENDIX C

Cultural Resources Assessment Report

**Cultural Resource Assessment for the Manzanita,
Markleevillage & Bear Valley Wildland-Urban Interface
Fuels Reduction Projects, Alpine County, California**



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October 2020



MANAGEMENT SUMMARY

The Alpine County Community Development Department is preparing a Wildfire Risk Mitigation Plan (WRMP) and associated environmental review, pursuant to the California Environmental Quality Act (CEQA). The goal of the project is to reduce wildfire risk for throughout the Alpine County, California. The WRMP includes three priority projects: Manzanita, Markleevillage, and Bear Valley. As part of the environmental review process, Alpine County is conducting cultural resource surveys within the priority project areas.

To assist Alpine County in complying with requirements of the California Environmental Quality Act (CEQA), Great Basin Consulting Group, LLC, (GBCG) completed a cultural resource assessment for the three priority project areas. Panorama Environmental, Inc., contracted GBCG to complete the assessment, which included California Office of Historic Preservation archival review, background research, Native American coordination, archaeological survey, cultural resource documentation/evaluation, and technical reporting.

At GBCG's request, a record search was conducted at the Central California Information Center (CCIC). The record search request included GIS datasets for the cultural resource components; cultural resource reports and resources, GLO plats and historic maps within a one-mile radius of each project location. CCIC results were returned on June 4, 2020. A similar search was requested for Bureau of Land Management, Carson City District, USDA Humboldt-Toiyabe National Forest, and USDA Stanislaus National Forest records. Results of the record search including Resource and Report Maps were provided to Darrel Cruz, Washoe Tribe of Nevada and California, Tribal Historic Preservation Officer prior to the field visit.

Between August 17 and 21, 2020, previously un-surveyed portions of the three project areas were investigated for cultural resources; all previously recorded site locations within the project areas were visited, although one site could not be found. Five new archaeological sites and two isolated finds were identified and recorded during the survey. DPR 523 forms for these resources, as well as updated site forms for five previously recorded resources (CA-ALP-238, -269, -270, -271, and -272H), as well as all digital geo-spatial data, were submitted to the CCIC to update the state database.

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1.0 INTRODUCTION

Forest fire suppression, residential development in the wildland-urban interface (WUI), and climate change have resulted in wildfire-prone conditions for communities throughout the Sierra Nevada of California. In an effort to address this hazard, the Alpine County Community Development Department prepared a Wildfire Risk Mitigation Plan (WRMP) with a California Department of Forestry and Fire Protection (Cal Fire) Fire Prevention Grant. The WRMP's purpose is to implement forest fuels treatment projects to mitigate wildfire risk by reducing wildfire potential for at-risk communities throughout the county. The WRMP identifies, assesses, and prioritizes candidate fuels reduction projects in designated WUI lands. Three priority fuel treatment areas, all on private land, have been prioritized for environmental review and implementation.

To assist Alpine County in complying with requirements of the California Environmental Quality Act (CEQA), Great Basin Consulting Group, LLC, (GBCG) completed a cultural resource assessment for the three priority project areas. Panorama Environmental, Inc., contracted GBCG to complete the assessment, which included California Office of Historic Preservation archival review, background research, Native American coordination, archaeological survey, cultural resource documentation/evaluation, and technical reporting.

In this document, GBCG presents the findings of the cultural resource inventory for the three prioritized project areas. GBCG Principal, Mike Drews, managed the project, completed all GPS/GIS cartography, and acted as Field Director. Tucker Orvald, M.S., RPA served as Principal Investigator. Mr. Orvald meets the Secretary of the Interior's (SOI) Historic Preservation Professional Qualifications Standards for Archaeology and is listed on the Register of Professional Archaeologists (RPA). Professional resumes for these key personnel are found in Appendix A. GBCG completed archival research in June of 2020 and pedestrian survey and archaeological resource documentation between August 17 and 21, 2020.

1.1 PROJECT DESCRIPTION

Alpine County selected three priority candidate fuels reduction projects in WUI-designated private land referred to as the *Manzanita*, *Markleevillage*, and *Bear Valley* fuels treatment projects. These project-ready fuels treatment areas are within mountainous rural land of Alpine County in the Sierra Nevada Mountain Range (Figure 1).

Located in east-central California, Alpine County straddles the crest of the Sierra Nevada extending westward in the High Sierra and eastward to the Sierran Front and the western limits of the Great Basin. A mosaic of public and private forest land, largely within the Stanislaus, Eldorado national forests, comprises the county. The eastern portion of the county is public land managed by the Humboldt-Toiyabe National Forest. California State Route (SR-4), State Route 88 (SR-88), and State Highway 89 (Hwy-89) provide regional and local access. Residential areas nearest the project areas include the unincorporated community of Woodfords on SR-88 and two census-designate places – Markleeville, on Hwy. 89 and the county seat, and Bear Valley, on SR-4.

Fuel treatment strategies to be implemented in the three project areas require combinations of fuel reduction methods depending on individual project area location, facility access, slope, and vegetation type. Based on these considerations, Alpine County, in consultation with a Registered Professional Forester, has developed an approach to reducing fuel loads. Fuel reduction treatment methods to be implemented will entail hand thinning and mechanical mastication. Pile burn and chipping may be implemented as fuels disposal methods. Timber harvesting for economic gain is not currently proposed under any of the three projects.

1.2 FUEL TREATMENT AREAS

Alpine County has prioritized three specific project locations for priority vegetation treatment under the WRMP. Two priority treatment areas, four miles apart, are located in the north-central county along the Sierra Nevada

Front, while the third is approximately 20 miles to the southwest, in the High Sierra (Figure 2). Approximately 903 acres of privately-owned land comprises the total project footprint within the following individual project areas: 1) Manzanita – 469 acres; 2) Markleevillage – 296 acres; and 3) Bear Valley – 138 acres. We describe the locations and settings of each of the priority project locations in the following sections.

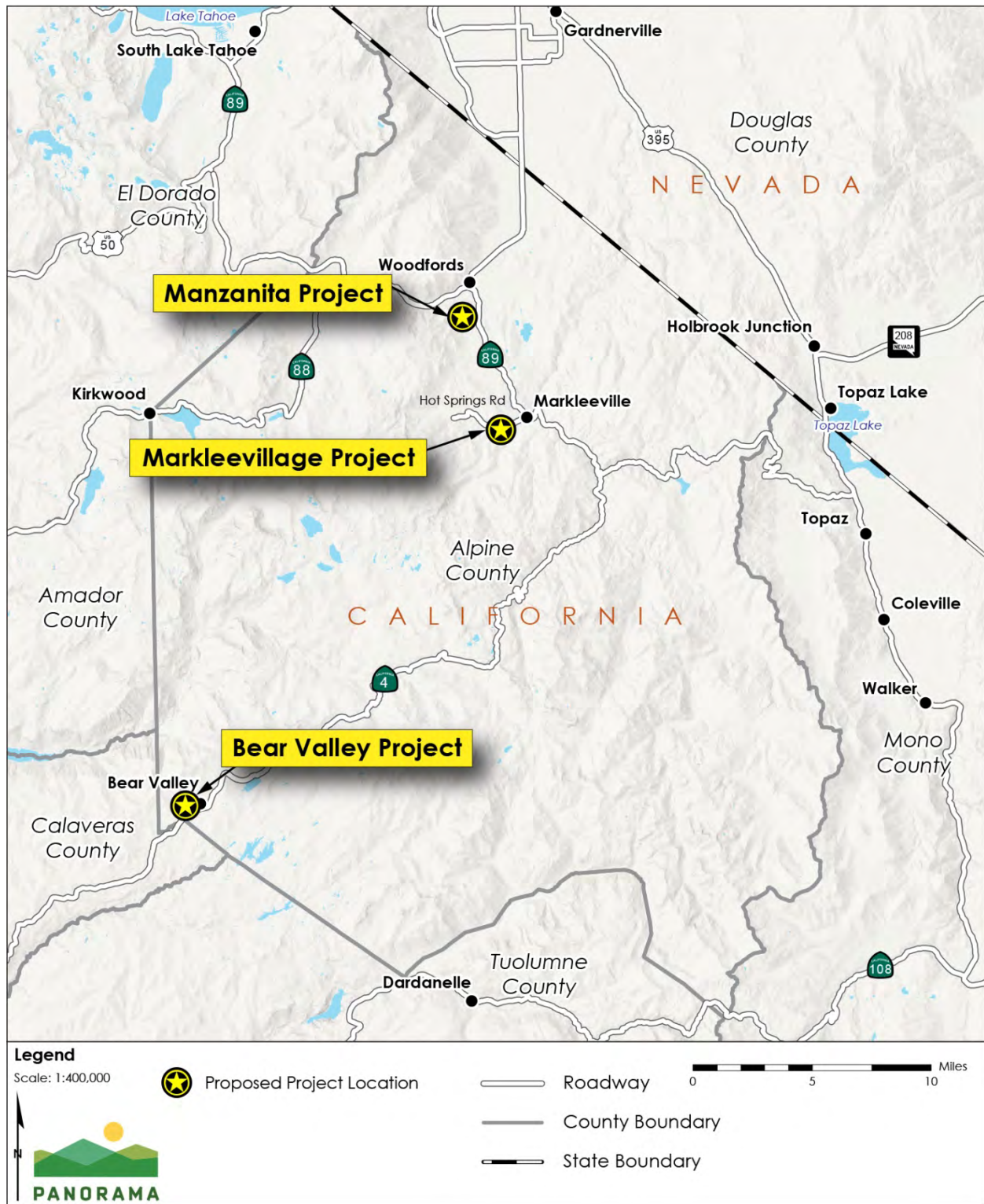


Figure 1. Alpine County priority fuels reduction project location map.

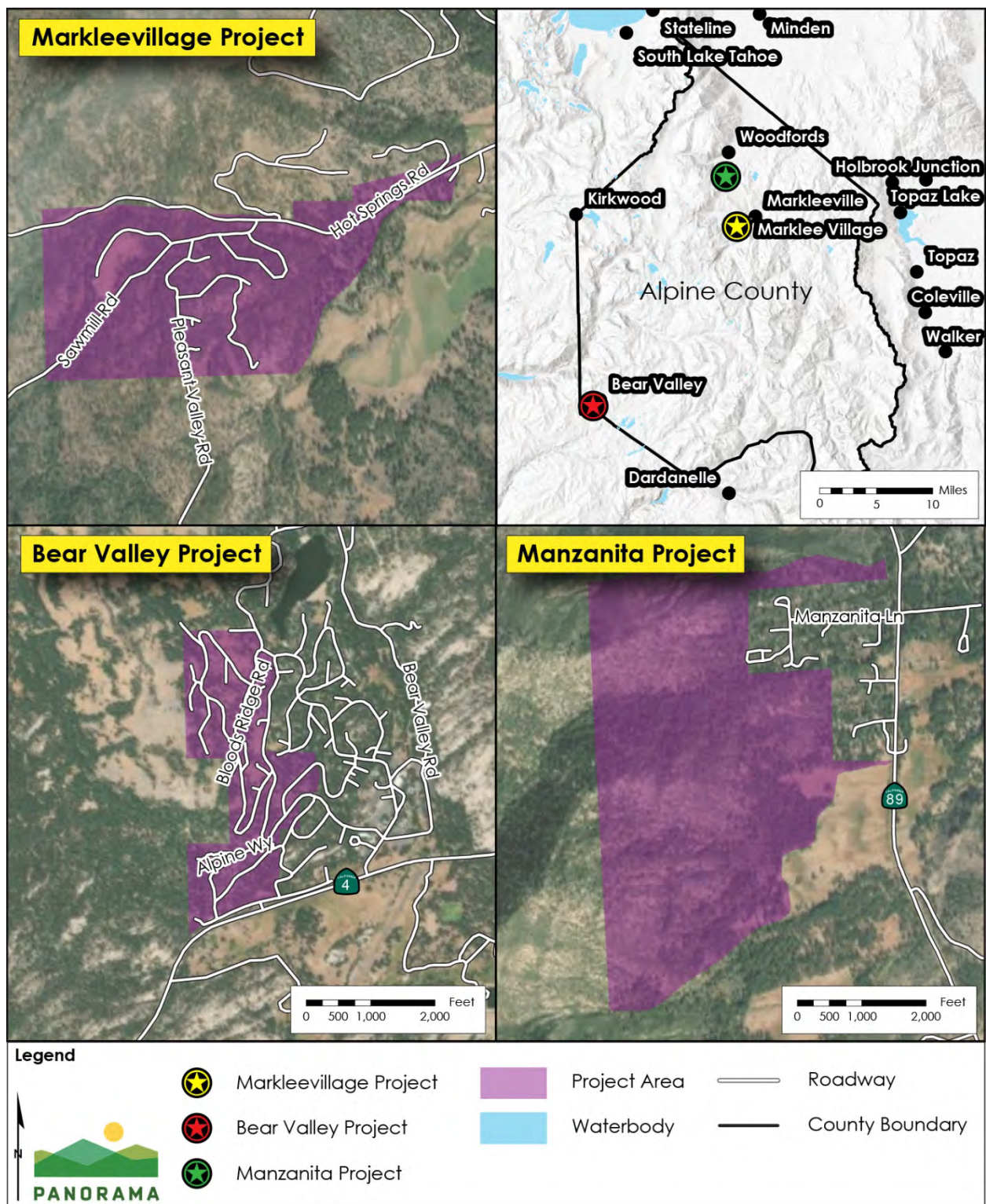


Figure 2. Alpine County project location and individual project areas.

1.3.1 MANZANITA

The Manzanita treatment unit is an irregularly shaped 469-acre area located in central-north Alpine County at the lower flank of the Sierran Front one mile south of the Carson River's West Fork, SR-88, and the small historic

community of Woodfords. The unit may be found west of Hwy. 89 on the Woodfords and Markleeville 7.5' U.S. Geological Survey (USGS 1979) quadrangles in Township 10 North, Range 20 East, in parts of several lots of Section 6, Mount Diablo Base Meridian (MDBM) (Figures 3 and 4). Private land, including a former ranch property and several smaller residential parcels, accounts for most the Manzanita unit, and the Sierra Pines Mobile Home Park lies beyond its northeast corner, adjacent to Hwy. 89.

Elevation ranges from a high of 6,616 feet above mean sea level (amsl) to a low of 5,833 feet, and averages 6,206 feet. Slope in the Manzanita unit ranges from 3° to 34° and averages 13°. A mix of forest (47%), shrub (44%), and wetland (8%) comprises land cover. Open dry meadows, irrigated as pasture land, characterize the eastern portion of the project area, and steep slopes define the western portion. Approximately 100 acres at the northern end, comprising some 20% of the unit, burned in 1988. This area, as well as others in the unit, is heavily overgrown with robust manzanita.

1.3.2 MARKLEEVILLAGE

The Markleevillage treatment unit is an irregularly shaped 296-acre area located in central-north Alpine County at the lower flank of the Sierra Nevada between 0.35 and 1.6 miles west of the community of Markleeville and Hwy. 89, largely south of Hot Springs Road and Markleeville/Hot Springs Creek (Figures 5 and 6). The unit encompasses all of the densely forested Markleevillage subdivision off Pleasant Valley Road. A large agricultural parcel (APN 002-340-001-0) lies west of Markleevillage and four undeveloped or lightly developed parcels lie to the east. Humboldt-Toiyabe National Forest land borders the unit's western and southern boundaries.

The unit may be found on the Markleeville 7.5' quadrangle (USGS 1979) in Township 10 North, Range 20 East, in all or parts of Section 20: SE ¼ SE ¼; Section 21: SE ¼ SW ¼ and SW ¼ SW ¼; Section 28: NW ¼ NW ¼, NE ¼ NW ¼, SW ¼ NW ¼; and Section 29: NE ¼ and NE ¼ NW ¼ and SE ¼ NW ¼, MDBM. Elevation ranges from a high of 5,850 feet amsl to a low of 5,555 feet, and averages 5,691 feet. Slope in the Markleevillage unit ranges from 0° to 30° and averages 8°. A mix of forest (62%), shrub (35%), and wetland (4%) comprises land cover in the unit.

1.3.3 BEAR VALLEY

The Bear Valley treatment unit is an irregularly shaped 138-acre area in the far-southwest corner of Alpine County on the upper west slope of the Sierra near the North Fork of the Stanislaus River watershed's northern boundary (Figures 7 and 8). The crest of the Sierra and Ebbetts Pass on SR-4 are 14 miles to the northeast. The project area includes 269 platted lots, most of which have homesites, and comprises the western half of the skiing and summer recreation community of Bear Valley. Primarily a "second-home community," Bear valley offers seasonal attractions – winter sports at the Bear Valley Resort and snow parks at Lake Alpine and Spicer Reservoir and summer campground, lakes, and trails recreation. Stanislaus National Forest land encompasses the entire Bear Valley unit.

The unit may be found on the Tamarack, California 7.5' quadrangle (USGS 2001) in Township 7 North, Range 17 East, in parts of Section 12: NE ¼ NE ¼ and SE ¼ SE ¼ and Section 13: NE ¼ NE ¼, SE ¼ NE ¼, and NE ¼ SE ¼; as well as in Township 7 North, Range 18 East, in parts of Lot 3 and Lot 4 in Section 7 and parts of Lot 1 and Lot 2 in Section 18, MDBM. Elevation ranges from a high of 7,681 feet amsl to a low of 7,063 feet, and averages 7,291 feet. Slope in the Markleevillage unit ranges from 1° to 35° and averages 13°. A mix of forest (30%), shrub (33%), and developed area (37%) comprises land cover in the Bear Valley unit. A substantial open meadow area, Bloods Meadow, borders the southern boundary of the Bear Valley unit.

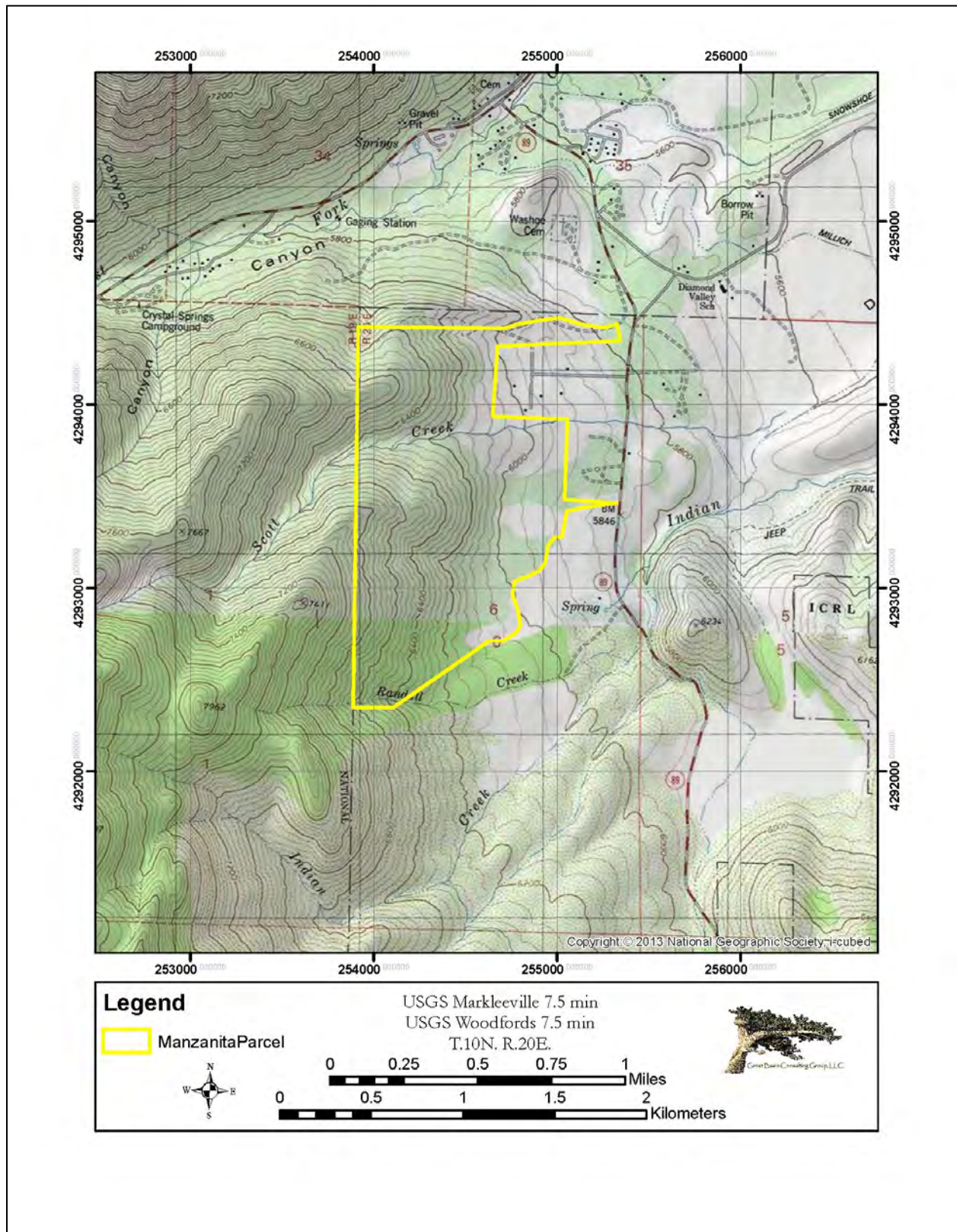


Figure 3. Manzanita project area location.

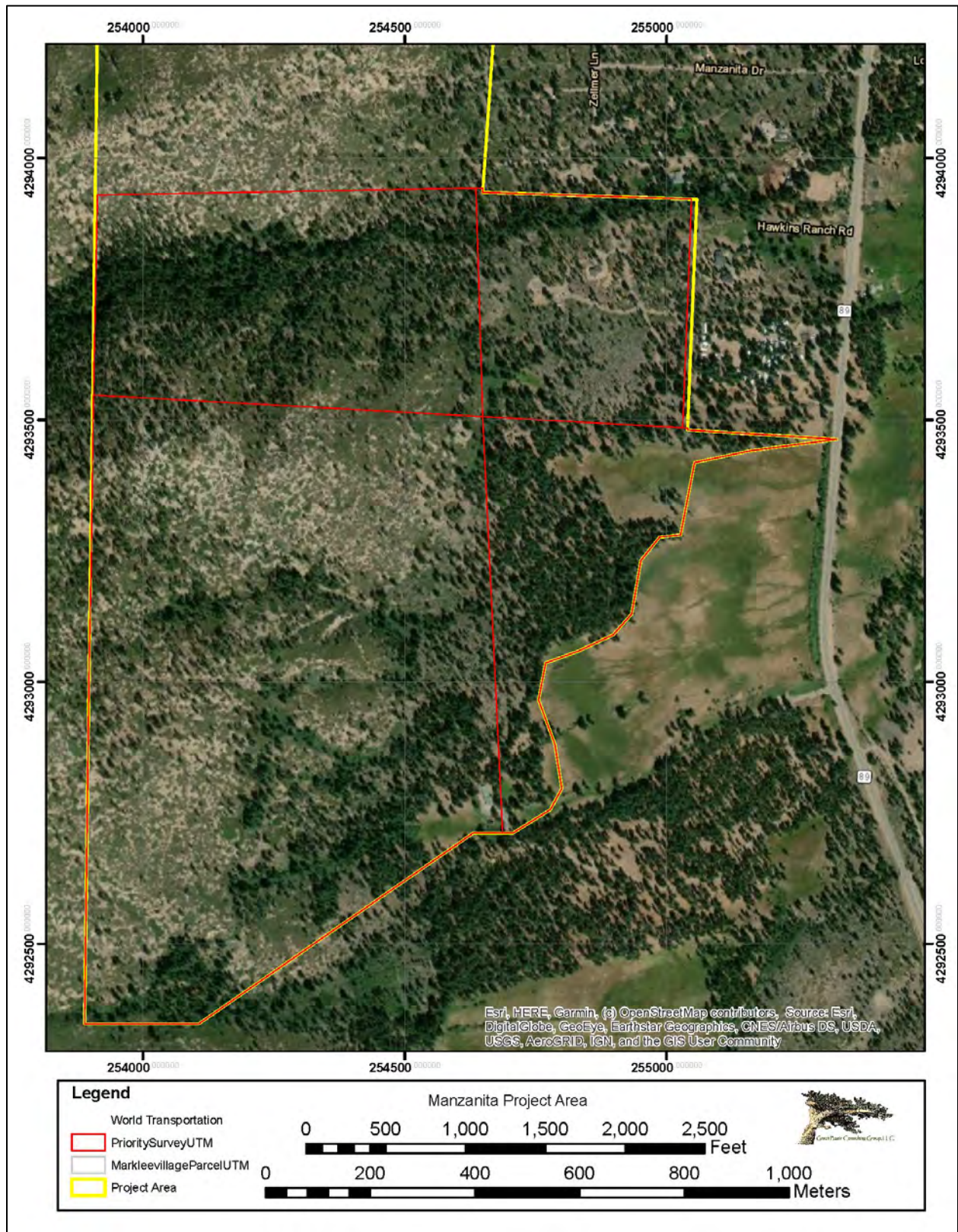


Figure 4. Aerial imagery of the Manzanita project survey area.

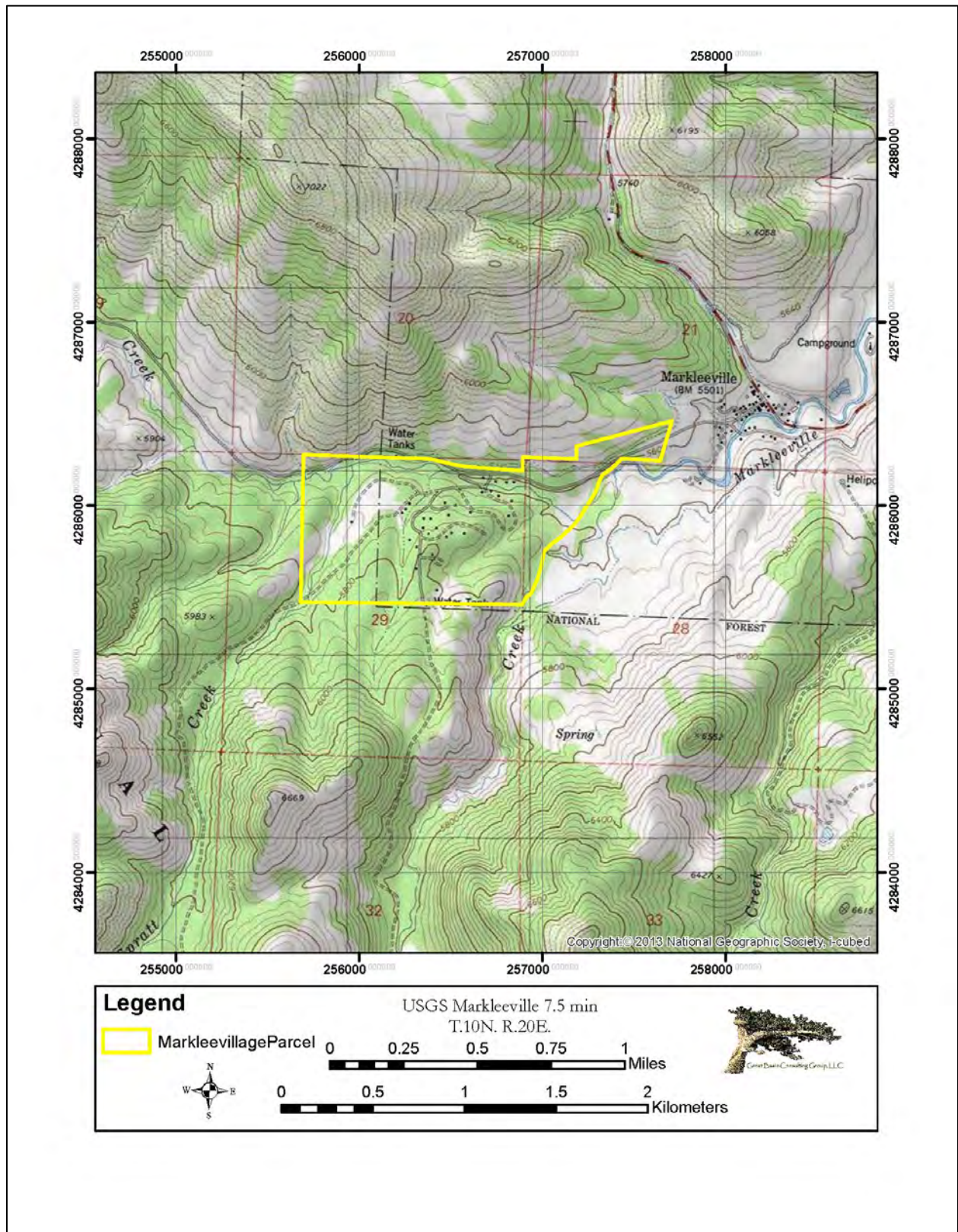


Figure 5. Markleeville project area location.

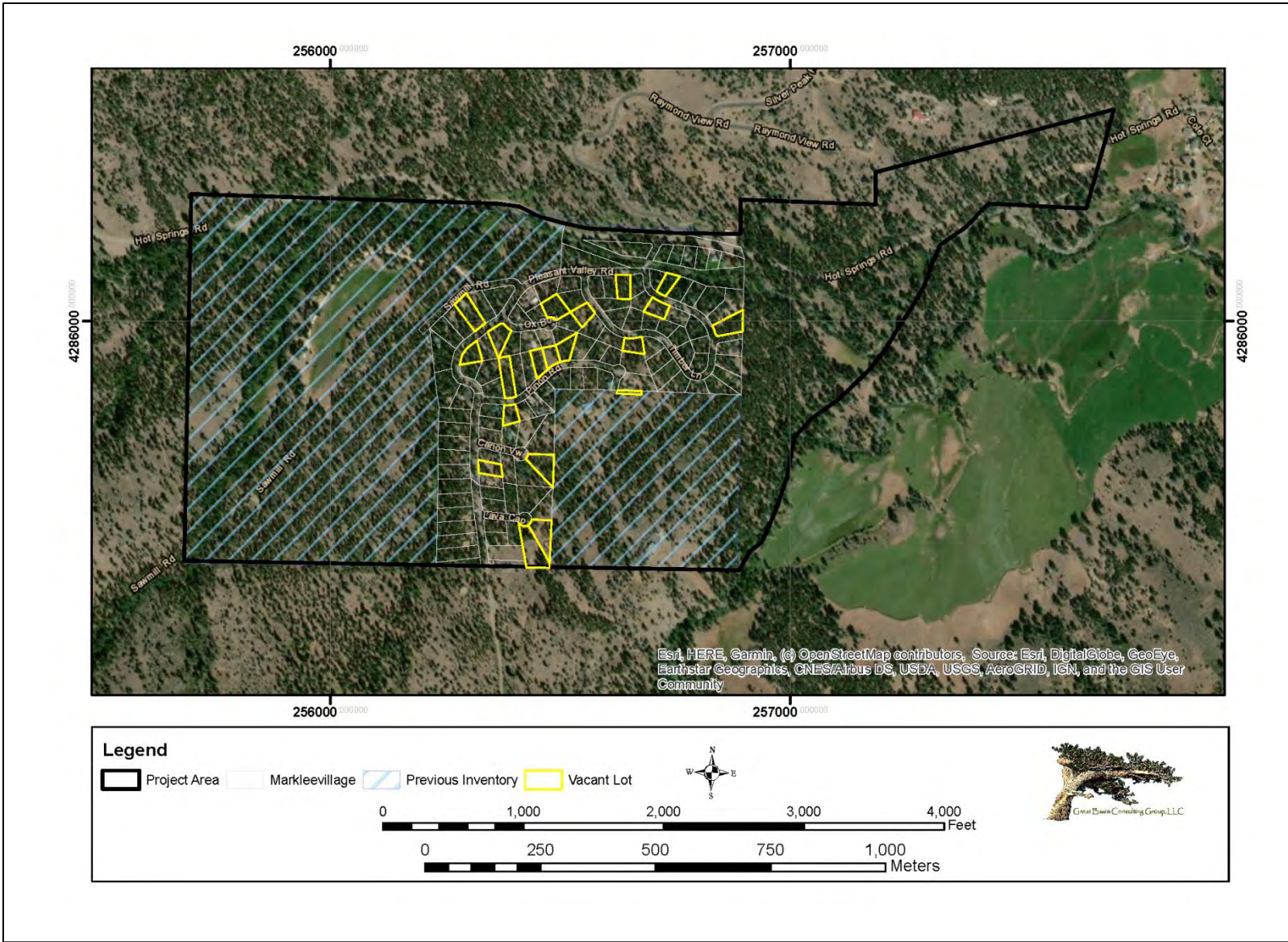


Figure 6. Aerial imagery of the Markleevillage project survey area.

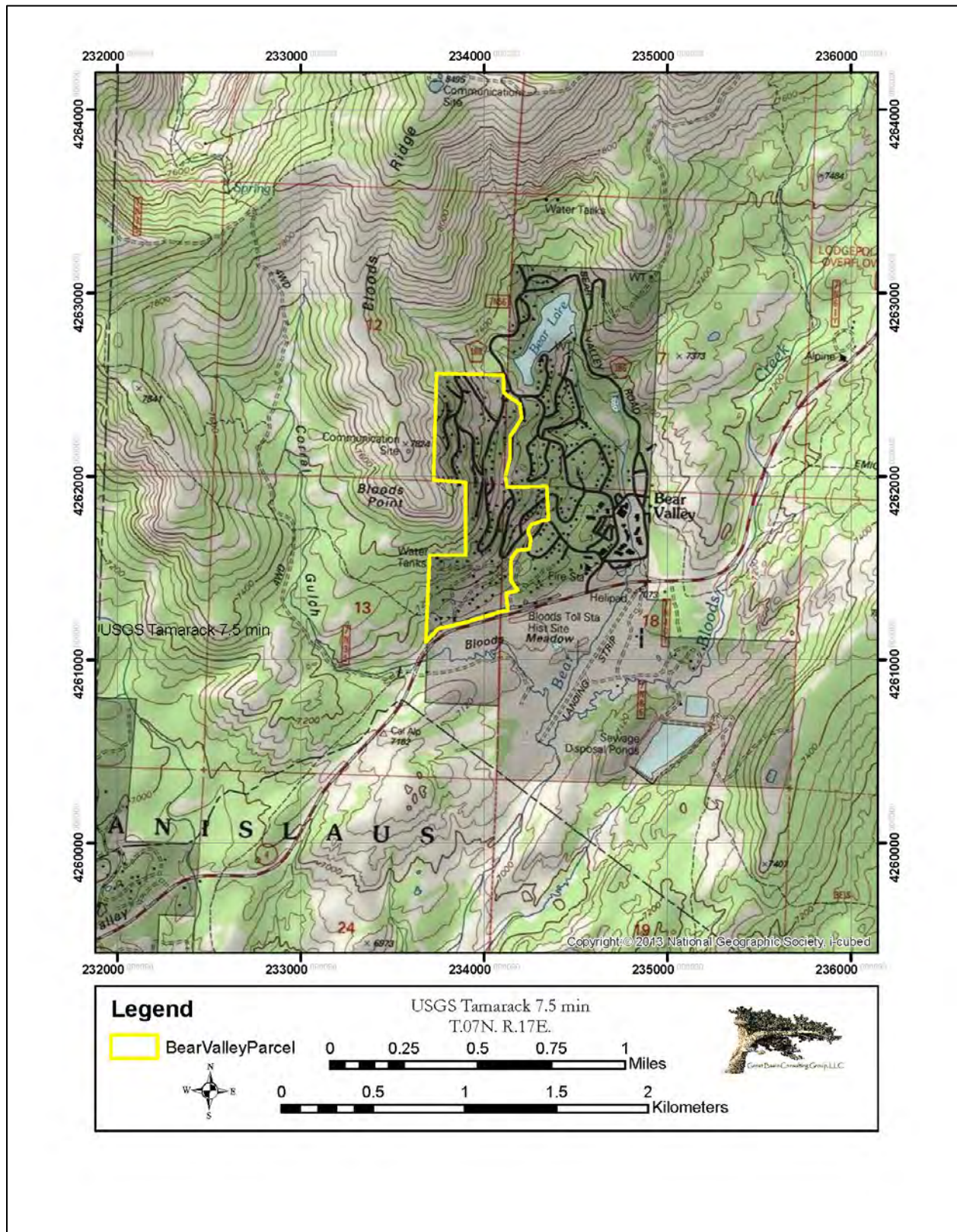


Figure 7. Bear Valley project area location.

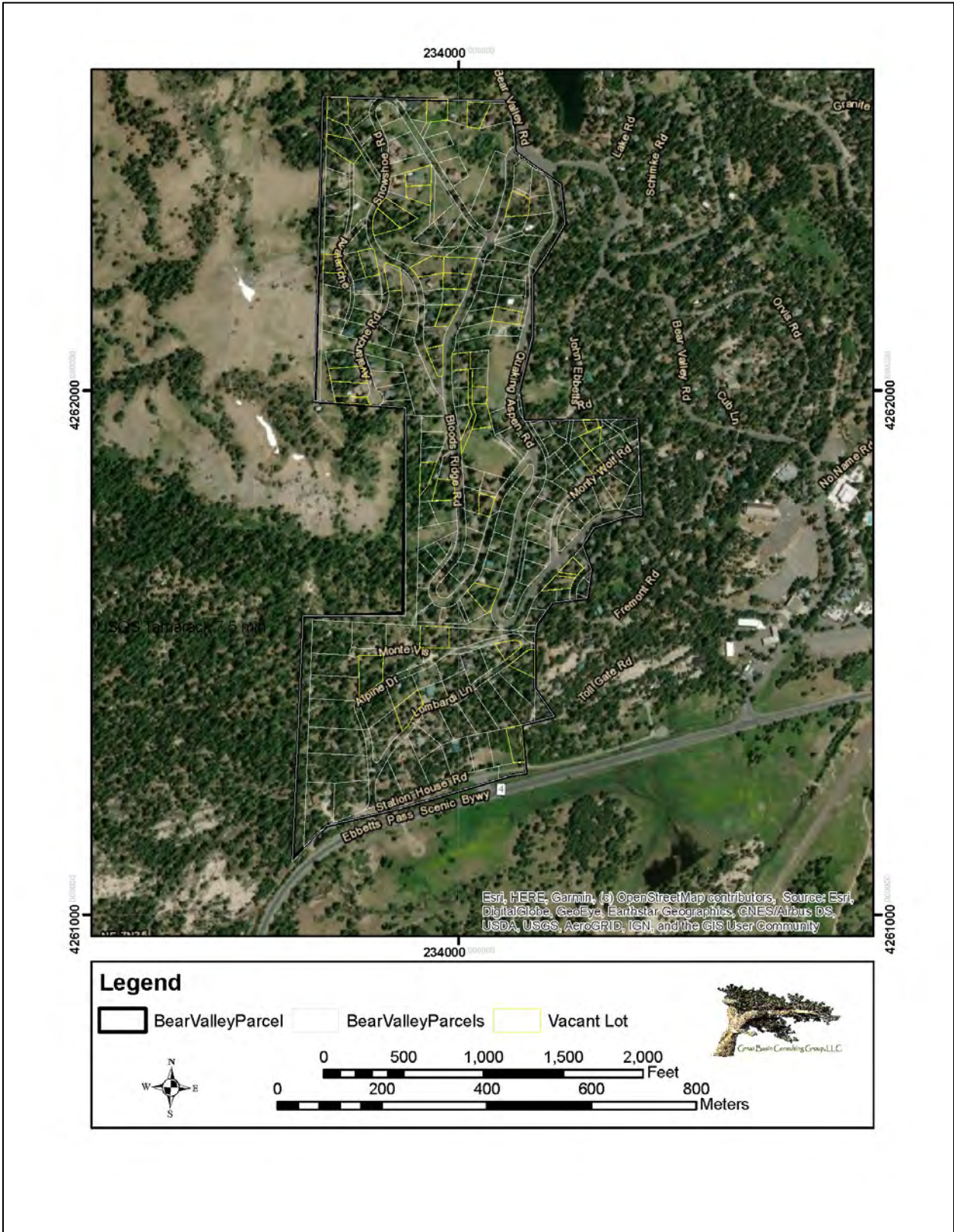


Figure 8. Aerial imagery of the Bear Valley project survey area.

1.3 AREA OF POTENTIAL EFFECTS

The Area of Potential Effects (APE) for cultural resources is defined as the footprint of potential ground disturbance and any property or any portion thereof that will be physically altered or destroyed by a given undertaking. The horizontal APE is defined as the extent of each fuels-reduction area wherein selective tree and understory vegetation will be cut down and masticated. The vertical APE is assumed to be less than one foot below the ground surface, as the only anticipated subsurface impacts will be from off-road vehicle traffic and felling, winching, and dragging felled trees and underbrush.

1.3.1 MANZANITA

Fuel treatment in the Manzanita project area includes fuel treatment on 469 acres of open space east of Manzanita Lane and south of Zellmer Lane. Treatment methods will include a combination of mechanical mastication and hand thinning throughout the unit. Live and dead target vegetation less than 10 inches dbh would be cut, and approximately 90 percent of shrubs will be treated. Mechanical mastication will occur in the northern portion of the unit on trees and brush less than 10 inches diameter at breast height (dbh) on slopes up to 30 percent (i.e., 27°). Chipping may be implemented where feasible, otherwise cut vegetation will be dispersed by lopping and scattering; small hand piles will be burned.

1.3.2 MARKLEEVILLAGE

Fuel treatment in the Markleevillage project area includes fuel treatment on 296 acres south of Hot Springs Road centered on the densely developed subdivision along Sawmill and Pleasant Valley roads as well as on various neighborhood roads. Treatment methods will include a combination of mechanical mastication and hand thinning throughout the unit. Live and dead target vegetation less than 10 inches dbh would be cut, and approximately 90 percent of shrub land will be treated. A crew will conduct mastication on trees and brush less than 10 inches dbh in the majority of the unit, including on slopes up to 30 percent (27°). Hand thinning will occur in the central portion of the unit surrounding Pleasant Valley Road. Chipping may be implemented where feasible, otherwise cut vegetation will be dispersed by lopping and scattering, or small hand piles will be burned.

1.3.3 BEAR VALLEY

The Bear Valley project will build on previous fuel treatment work that has been completed on neighboring land by the U.S. Forest Service (USFS). Fuel treatment in the Bear Valley project area will include hand thinning methods within the entire 130-acre unit surrounding Quaking Aspen Road, Bloods Ridge Road, and Alpine Way. Hand crews conduct all work in the Bear Valley treatment area by due to slope and terrain inaccessibility. Treatment activities will target areas where excess fuel buildup and non-native invasive plants occur. Subdivision and residential landscaping will not be altered. Live and dead target vegetation less than 10 inches dbh would be cut, and approximately 90 percent of the shrubs would be removed. Chipping may be implemented where feasible, otherwise cut vegetation will be dispersed by lopping and scattering, or small hand piles will be burned.

1.5 REGULATORY FRAMEWORK

As required for discretionary projects under CEQA, an intensive cultural resources inventory (i.e., Class-III pedestrian survey) of the three project areas is called for in the regulatory process of environmental compliance for county permitting. CEQA established that historical and archaeological resources are afforded consideration and protection (14 CCR Section 21083.2, 14 CCR Section 15064), and guidelines define significant cultural resources under two regulatory designations: historical resources and unique archaeological resources.

Under CEQA, a cultural resource is generally considered historically significant if it meets the criteria for listing in the CRHR. A resource must meet at least one of the following significance criteria (PRC 5024.1; 14 CCR Section 15064.5[a][3]):

1. The resource is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage. Title 14, CCR Section 4852(b)(1) adds, "is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States."
2. The resource is associated with the lives of persons important in our past. Title 14, CCR Section 4852(b)(2) adds, "is associated with the lives of persons important to local, California, or national history."
3. The resource embodies the distinctive characteristics of a type, period, region, or method of construction; or represents the work of an important creative individual; or possesses high artistic values. Title 14, CCR 4852(b)(3) allows a resource to be CRHR eligible if it represents the work of a master.
4. The resource has yielded, or may be likely to yield, information important in prehistory or history. Title 14, CCR 4852(b)(4) specifies that importance in prehistory or history can be defined at the scale of "the local area, California, or the nation."

Title 14, CCR 4852(b)(4) specifies that importance in prehistory or history can be defined at the scale of "the local area, California, or the nation." An archaeological artifact, object, or site can meet CEQA's definition of a unique archaeological resource even if it does not qualify as a historical resource (PRC 21083.2[g]; 14 CCR 15064.5[c][3]). An archaeological artifact, object, or site is considered a unique archaeological resource if "it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (PRC 21083.2[g]):

- It contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- It has a special and particular quality such as being the oldest of its type or the best available example of its type;
- It directly is associated with a scientifically recognized important prehistoric or historic event or person.

Historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (14 CCR 4852[c]). Integrity is the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is proposed for eligibility.

CEQA defines a historical resource as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historic Resources" (CRHR); or "a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code"; or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural

annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record" (14 CCR Section 15064.5[a][3]).

While Traditional Cultural Properties (TCPs) and cultural landscapes are not directly identified by category in the state definitions of historical resources, TCPs correspond to "places" in CEQA and cultural landscapes correspond to "areas" in CEQA. Places and areas can be types of historical resources. Historical resources automatically listed in the CRHR include historic properties listed in or formally determined eligible for the National Register of Historic Places (NRHP) and California Registered Historical Landmarks from No. 770 onward (PRC 5024.1[d]). Locally listed resources are entitled to a presumption of significance unless a prevalence of evidence in the record indicates otherwise.

1.5.1 NATIVE AMERICAN REMAINS

Also applicable are Section 7052 of the Health and Safety Code and Section 5097 of the Public Resources Code, which provide for the protection of Native American remains and identify special procedures to be followed when Native American burials are found. When human remains are found, the Alpine County coroner and the Native American Heritage Commission (NAHC) will be notified. The NAHC provides guidance concerning the most likely Native American descendant and the treatment of human remains and any associated artifacts.

2.0 ENVIRONMENTAL SETTING

The three project areas are located in the Sierra Nevada, a 50- to 80-mile-wide mountain range that extends for more than 400 miles along eastern California and part of western Nevada, from the Mojave Desert in the south to the Cascade Range at the north (Bateman and Wahrhaftig 1966:107). The range is asymmetrical in cross-section, with a broad, gradually rising western slope and a short, steep fault-block escarpment to the east, known as the Sierra Front. Uplift and glacial erosion have exposed granitic and volcanic bedrock over large areas of the High Sierra. At lower elevations, the western slope is characterized by steep ridges and rolling foothills that grade into nearly level valleys. In the Sierra Front, steep-gradient, V-shaped valleys debouch into basin floors of the western Great Basin. The Manzanita and Markleevillage survey areas are located in the eastern Sierra Front, while Bear Valley is on the upper western slope of the High Sierra.

2.1 HYDROLOGY

The Manzanita and Markleevillage survey areas are located in the eastern Sierran Front, in the Carson River Watershed, which drains into the Carson Sink within the Great Basin. Both Manzanita and Markleevillage lie in the catchment of the East Fork of the Carson River. Glacial erosion in the Pleistocene has affected all three areas, either by direct erosion of exposed granitic bedrock or by deposition of glacial moraines, glacial outwash, and attendant alluvial fans.

Manzanita is located on the alluvial fan apron below the eastern slopes of Hawkins Peak, drained by Scott Creek at the north and Randal Creek at the south. Both creeks are tributaries of Indian Creek, which drains into the East Fork of the Carson River below Diamond Valley. Numerous groundwater discharge zones, including seeps, springs, and spring brooks, contribute to these lesser creeks, which enter Diamond Valley below the project area.

The Markleevillage survey area is located in the relatively short valley drained by Hot Springs Creek (at its upper end where Grover Hot Springs are located), which takes the name Markleeville Creek just before town. Spratt Creek and Pleasant Valley Creek cross the survey area to meet Markleeville Creek within the survey area. Markleeville Creek in turn drains into the East Fork of the Carson River approximately one mile northeast of Markleeville.

The Bear Valley survey area is in the High Sierra near the northern limits of the North Fork of the Stanislaus River watershed, itself a tributary of the San Joaquin River. Bear Valley is in the Bear Creek drainage, a tributary of Bloods Creek, which drops some 1,000 feet in three miles to the Stanislaus River to the south.

2.2 GEOLOGY

Beginning in the Miocene, rapid uplift and westward tilting of large fault blocks accompanied the emplacement of the large plutonic batholiths that now form the Sierra Nevada crest (Bateman 1992; Huber 1981). Widespread volcanism during the Pliocene and Quaternary periods resulted in the accumulation of andesite and basalt flows, breccias, volcaniclastic sediments, and tephra on the upper eastern and western slopes. Increased uplift and continued weathering during the late Quaternary created extensive erosion, dissection of existing deposits, and the entrenchment of stream and river channels within deep bedrock canyons (Clark 1970:5; Huber 1981:11). Much of the material eroded from the western slope of the Sierra was deposited on the eastern and central floor of the San Joaquin Valley during the Pleistocene and Holocene eras.

Geology in the Manzanita project area largely consists of dissected Pleistocene and Holocene alluvial fan deposits bounded to the north, south, and west by Upper Cretaceous Freel Peak granodiorite (Armin et al. 1983, 1984). Five miles to the south in the Markleevillage project area, bedrock geology includes interbedded Miocene-age volcanic rock, including andesite and basalt flows, breccias, and lahars, surrounding Pleistocene-aged glacial moraine and outwash deposits on the valley floor of Markleeville Creek (Armin et al. 1984). Exposed bedrock geology in the Bear Valley area consists of granitic outcrops of the Sierra Nevada batholith and a sequence of sandstone, conglomerate, and claystone beds of the Miocene and Pliocene Mehrton Formation (State of California 1987).

2.3 NATURAL ENVIRONMENT

Hot weather and summer sunshine, moderate to heavy winter precipitation, and wide temperature ranges characterize Alpine County weather. Summer precipitation is generally limited to a few scattered thunderstorms over the summer months. The historical annual average total precipitation is approximately 20 inches, and annual average total snowfall averages 83 inches (Western Regional Climate Center 2004). Temperatures throughout the county range from warm in the summer to cold in the winter, with an average temperature of 85 degrees Fahrenheit in July and average low temperature of 18° in January (U.S. Climate Data 2020).

2.3.1 FLORA AND FAUNA

The Varied geology, relief, and physiography of the Sierra Nevada produce a diverse array of gradient-driven habitats that correspond to differences in elevation, precipitation, soils, and temperature, creating a series of distinctive ecological zones with a variety of plant and animal communities. Located between 5,500 feet amsl and 7,700 feet, the three project areas are mostly within the Lower Montane Forest of the Sierra; the Bear Valley project area lies in the transition zone with the Upper Montane Forest.

The Markleevillage survey unit is confined to a narrow upland canyon northeast of Thornburg Peak, south of Hawkins Peak, and west of Markleeville in the eastern Sierra Front. The relatively level valley-floor settings along Markleeville Creek, Pleasant Valley, and the meadows around Grover Hot Springs border the study area to the east, southeast, and west. The meadow southeast of the project area supports a riparian vegetation community within a lower-montane mixed-conifer forest. Riparian vegetation includes cottonwood (*Populus fremontii*) and aspen (*Populus tremuloides*) groves, willows (*Salix* sp.), and wild rose (*Rosa acicularis*). The slopes adjacent to the riparian corridor near the creek zone support Jeffrey pine (*Pinus jeffreyi*), with the occasional incense cedar (*Calocedrus decurrens*) and piñon pine (*Pinus monophylla*), and an understory of sagebrush (*Artemisia tridentata*),

desert peach (*Prunus andersonii*), bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus ledifolius*), and mules ear (*Wyethia angustifolia*).

Vegetation in the Manzanita project area includes Jeffrey pine (*Pinus jeffreyi*), Ponderosa pine (*Pinus ponderosa*), and an understory of robust manzanita (*Arctostaphylos manzanita*), sagebrush (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus ledifolius*), and mules ear (*Wyethia angustifolia*). Riparian vegetation includes cottonwood (*Populus fremontii*) and aspen (*Populus tremuloides*) groves, willows (*Salix* sp.), and wild rose (*Rosa acicularis*). Various grasses and forbs are found in the seeps, dry meadows, and areas historical cleared of forest.

The Bear Valley project area is in the central high Sierra in the upper North Fork Stanislaus River watershed. The biological environment includes mixed-conifer montane conifer forest and riparian stream corridors with associated wet meadows, including nearby Blood Meadow (Allen 1988; Ratliff 1985). Forest vegetation includes red fir (*Abies magnifica*), Jeffrey (*Pinus jeffreyi*), lodgepole pine (*Pinus contorta*), hemlock (*Tsuga mertensiana*), green manzanita (*Arctostaphylos* sp.). Along creeks and in wet meadows, aspen (*Populus tremuloides*), willow (*Salix* sp.), and various forbs and grasses thrive.

Mammals common to all three projects areas include mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), beaver (*Castor canadensis*), rabbit (*Sylvilagus* spp.), ground squirrels (*Spermophilus* spp.), gray squirrels (*Sciurus griseus*), martens (*Martes americana*), and weasels (*Mustela frenata*), and the pocket gopher (*Thomomys bottae*). Grizzly bear (*Ursus arctos horribilis*) and wolverine (*Gulo gulo*) formerly were prevalent throughout the Sierra Nevada. Resident avian species include mountain quail (*Oreortyx pictus*), several species of owls, thrushes, and warblers. Migratory species include duck (*Anas* spp.) and goose (*Branta canadensis*). Three species of trout (*Oncorhynchus* spp.) are native to Sierran streams.

3.0 CULTURAL SETTING

The project area includes the eastern Sierra Nevada Front (Manzanita and Markleeville) and the central High Sierra Nevada (Bear valley) in the upper North Fork of the Stanislaus River watershed. This region has a long history of Native-American land use and subsequent Euro-American emigrant appropriation and extractive industry land-use, including historically important early emigrant trails and wagon roads that cross the central Sierra Nevada.

3.1 PREHISTORY

The project area lies near the interface of three overlapping cultural-historical areas, the Tahoe-Truckee region, the western Great Basin, and the west-central Sierra Nevada western slope. No integrative archaeological framework directly encompassing the three project areas has been developed, as each project area lies at the upper end of resource gradients focused on lower elevations. The present review of prehistory must rely on investigations accomplished in the north central Sierra Nevada, the western Great Basin, and along drainage systems in the central Sierra's western slope and foothills, particularly the Stanislaus River.

The prehistory of the Tahoe-Truckee area, extending into the western Great Basin, is relatively well understood and has been outlined by Elston (1971, 1982, 1986), Elston et al. (1977, 1994). The Tahoe-Truckee sequence, with its connections to the western Great Basin, is emphasized here. Young (2014) provides a cogent review of the Sierra Front that in part captures the Manzanita and Markleevillage project areas.

Developed for the Sonora region, the Sonora Sequence is the current, wide-ranging culture history for the west-central Sierra Nevada foothills and adjacent mid-elevation areas (Rosenthal 2008, 2011). While the applicability of this chronology in the central High Sierra is unknown, it is used here as a convenient organizing framework to facilitate the discussion of prehistory local to the Bear Valley survey area within a larger regional context.

3.1.1 TAHOE-TRUCKEE/WESTERN GREAT BASIN

The archaeological records of the Tahoe-Truckee region and the western Great Basin are intertwined due to cultural connections and resource corridors along the Truckee, Carson, and Walker rivers, which connect the two areas (Young 2014). Sequences on the eastern slopes of the Sierra Nevada and on the western margin of the Great Basin traditionally have been cited, but little integration has been accomplished with the exception of the Tahoe-Truckee region. In the north-central Sierra Nevada and the western Great Basin, the primary cultural sequence was originally developed by Heizer and Elsasser (1953), Elston (1971, 1986), Elston et al. (1977), and Elsasser and Gortner (1992).

TAHOE REACH PHASE

A Pre-Archaic occupation, the Tahoe Reach Phase, was suggested by Elston (1986) and Elston et al. (1977), which was tentatively defined on the basis of Parman-like stemmed points and a date of 8000 Before Present (BP). Elston (1971) further suggested an early (ca. 7000-4000 B.P.) occupation predating the Martis Complex. This Early Archaic period, which Elston called the Spooner Complex, was characterized by deposition of projectile points in the Pinto and Humboldt series at residential camps and larger field camps, many of which also had a Martis component (Elston 1986).

MARTIS COMPLEX

Drawn from a study of sites in the vicinity of Lake Tahoe, Heizer and Elsasser's (1953) scheme proposed the Martis Complex (from ca. 4000-2000 BP) wherein subsistence systems focused on big game hunting and to a lesser extent on resource gathering. Characteristic artifacts included large, heavy projectile points and bifaces, flake scrapers, handstone and millingstones, drills, and graters. The primary flaked stone material was fine-grained volcanic rock, including basalt, andesite, and rhyolite.

Elston (1986) described the Middle Archaic period as marking the florescence of the Martis Complex, with dates from about 4000 to 1900 years BP. The ephemeral sites and assemblages of the Martis Complex at high elevations on both sides of the Sierra were proposed to represent seasonal (spring/summer) big game hunting and seed gathering adaptation. Denser site complexes at lower elevations and generally near hot springs included pit houses with hearths, cache pits and occasional burials (Elston 1986).

The putative 1000 year gap between Martis and King's Beach, which Heizer posited, was disputed by Elston, who also identified a division of the King's Beach Complex into periods whose diagnostic markers were the Eastgate and Rose Spring point series (i.e., Rosegate) followed by Desert Side-notched and Cottonwood series, and eventually at about 600 BP, brownware pottery. Subsistence was based on seeds, small game, and intensive exploitation of piñon nuts. Settlements were less dense, more scattered, and contained smaller houses than recorded for Martis peoples. A climatic warming, as well as population stress on resources, has been suggested as causal factors in this pattern (Elston 1986).

KINGS BEACH PHASE

The subsequent King's Beach Phase commencing at ca. 1000 BP appeared to be more oriented toward fishing and consisted of an assemblage with obsidian flaked stone, small projectile points, including the Desert Side-notched type, and bedrock mortars and cobble pestles.

3.1.2 SONORA SEQUENCE

Rosenthal's (2008, 2011) culture history for the Stanislaus, Mokelumne, Calaveras, and Tuolumne watersheds is based on a consideration of chronological information from more than 100 excavated archaeological sites. This

research included the spatial and stratigraphic analyses of more than 200 radiocarbon dates, 4,000 source-specific obsidian hydration readings, nearly 900 projectile points, and some 600 diagnostic shell beads. Rosenthal assembled a database to define five prehistoric culture-history periods: Early Archaic, Middle Archaic, Late Archaic, Recent Prehistoric I, and Recent Prehistoric II. This new chronology, referred to as the Sonora Sequence, substantially revises earlier works of Moratto (2002) and Moratto et al. (1988).

EARLY ARCHAIC (11,500-7000 CAL BP)

Early Archaic components have been identified at two sites to the north of Yosemite: Skyrocket (CA-CAL-629/630) in Salt Springs Valley and Clarks Flat (CA-CAL-342) located upstream from New Melones Reservoir along the Stanislaus River. Both of these sites were discovered in buried stratigraphic contexts and include large numbers of wide-stem and large-stemmed dart points, as well as very small numbers of other notched and stemmed projectile points. The Early Archaic stratum at the Skyrocket site included hundreds of handstones and millingslabs, as well as a variety of cobble-core tools, large percussion-flaked “greenstone” bifaces, and obsidian from the Bodie Hills and Casa Diablo sources located east of the Sierra Nevada in Mono County.

Plant macrofossil assemblages recovered from Skyrocket were dominated by gray pine and acorn nutshell and included few, if any, small seeds or other spring- and summer-ripening plant foods. The large accumulation of ground stone in the early Holocene stratum at the Skyrocket site probably represents the residue of repeated seasonal occupations over many millennia. This pattern of repeated occupation may indicate that land use in the western Sierra was seasonally structured and not the wide-ranging, mobile lifestyle often believed to characterize the Early Archaic throughout the Intermountain West. This is further supported by the almost exclusive use of local toolstone for the manufacture of bifaces and projectile points at both the Skyrocket and Clarks Flat sites.

MIDDLE ARCHAIC (7000-3000 CAL BP)

Moratto et al. (1988) suggest that deposits from this time period are rare in the region. The absence of the early record is due in part to misunderstanding of the timing of corner-notched dart points, such as Elko points, on the western slope of the Sierra. Previous researchers have suggested that either broad-stem points, such as the Stanislaus Broad Stem, or Pinto and Humboldt Concave points were diagnostic of this period (Moratto 2002; Moratto et al. 1988, 1991; Peak and Crew 1990). Recent excavations at several well-dated and stratified Middle Archaic sites suggest that corner-notched dart points were prevalent in the foothill region between the Tuolumne and Mokelumne rivers from about 7,000 to 1,100 years ago (Rosenthal 2011). Other notched and stemmed dart point forms have been found at Middle Archaic sites north of the Tuolumne River, but to a lesser degree.

Like the Early Archaic, known Middle Archaic deposits in the north-central Sierra are identified in buried stratigraphic contexts. The earliest known house structures on the western slope were identified in a Middle Archaic stratum at the Edgemont Knoll site near Sonora, in association with large subterranean storage pits (Meyer 2008). A diverse assemblage of flaked, ground, and battered stone tools, along with comparatively high densities of dietary debris (plant remains and faunal bone), suggest that the Edgemont Knoll site served as a seasonal residential encampment. Archaeobotanical remains, dominated by gray pine and acorn nutshell, indicate that landform use occurred primarily in fall and winter when pine and acorn mast was stored in subterranean storage pits. Faunal assemblages from Middle Archaic sites are dominated by large mammal remains, a pattern that continued throughout the remainder of the period. According to (Jones and Mikkelsen 2008), soapstone vessels first appeared in the local record during the Middle Archaic along with various stone pendants, incised slate, and stone beads. Atlatl weights and spurs in these deposits indicate that the dart thrower was a primary hunting weapon.

LATE ARCHAIC (3000-1100 CAL BP)

Late Archaic deposits are among the most common on the western slope north of the Tuolumne River. Late Archaic settlement, subsistence patterns, and technology were mirrored those of Middle Archaic, although the use of imported obsidian increased. Handstones and millingslabs dominate ground stone implements, just as corner-notched dart points were the dominant projectile point type. Expedient cobble-core tools, battered cobbles, and other heavily used flake-based implements are common in Late Archaic deposits from the foothills. These heavy processing tools likely are associated with pine nut collection. Faunal assemblages from Late Archaic sites continue to be dominated by large mammal bone, and the atlatl and dart remained the primary hunting technology.

Mirroring increased quarry production at east of the Sierra, use of imported obsidian peaked during the Late Archaic, averaging half of the debitage found in deposits from the lower montane forest/upper foothills and nearly a quarter from sites in the lower foothills. Soapstone vessels remain more or less common in the Late Archaic, as do various stone ornaments and pendants. Imported shell beads and other ornaments remain nearly non-existent at sites in foothill and higher elevations deposits of the Sierra Nevada, but are common in Late Archaic Central Valley sites (Bennyhoff and Hughes 1987).

RECENT PREHISTORIC I & II (1100-100 CAL BP)

Adoption of the bow and arrow at about 1100 cal BP is a hallmark of change in the archeological record for the western slope of the central Sierra. This technological shift evident in the predominance of corner-notched and stemmed arrow points Recent Prehistoric I Period (1100-610 cal BP) deposits. Although it is unknown whether bedrock milling features were first used during this initial sub-period, their occurrence at Recent Prehistoric II (610-100 cal BP) sites indicates they had become an important milling technology by some 600 years ago.

Recent Prehistoric II Period (610-100 cal BP) site components provide compelling evidence for changes in subsistence economies across the lower- to mid-elevation west slope of the Sierra. Bedrock milling features became fixtures across the landscape near residential deposits and as isolated features. The occurrence of these facilities above and below the oak zone suggests that a variety of gathered resources, beyond acorns, were being processed. Subsistence remains in foothill deposits include a greater amount of spring/summer grass seeds and fruit/berry pits than Archaic deposits, indicating lengthier seasonal occupation or possibly, storage locales at or below the snowline. Settlement pattern variability appears to have been greater during Recent Prehistoric II time, with house-depressions at residential sites and special-use localities solely consisting of bedrock milling features.

As with Archaic sites in the region, large mammal remains make up a substantial portion of faunal assemblages from both high- and low-elevation sites. Many more specialized technologies are associated with the Recent Prehistoric II Period than were evident during the Archaic, including stone drills and the common occurrence of bone awls, suggesting that basketry may have taken on a new importance. The Desert Side-notched arrow point was first introduced on the west slope at about 610 cal BP, diffused from the Great Basin. Circular, perforated stone shaft-straighteners are common in these sites, consistent with use of the bow and arrow. Imported shell beads from coastal California first appear in appreciable amounts in Recent Prehistoric II village sites (Bennyhoff and Hughes 1987).

3.2 ETHNOGRAPHIC SETTING

The project area is located within the region that the Washoe and Sierra Miwok people claim as traditional territory. Barrett (1917) and Kroeber (1925) place portions of the upper reaches of the Mokelumne and Stanislaus Rivers in the territory of the Washoe. Kroeber's map places the boundary between the Washoe and the Miwok in the Dorrington-Camp Connell area. D'Azevedo (1986) and Levy (1978) follow these earlier authorities in the placement of the ethnographic boundary. Several authorities have discussed the travels of the Washoe across the Sierra crest to the vicinity of Big Trees in the upper Stanislaus drainage (Barrett 1906, 1908:347, 1917:6; D'Azevedo 1966:331) where they camped among the Miwok and harvested acorns. Washoe individuals and

families sometimes wintered over with the Sierra Miwok in the vicinity of Big Trees when there was a good harvest and relations were cordial (D'Azevedo 1986:472). It is fairly clear from all sources that neither the Miwok nor the Washoe had permanent settlements between Dorrington and Ebbetts Pass and that both groups made use of this area in summer and fall.

Prior to the disease and disruption brought by Euro-Americans in the early- to mid-nineteenth century, the Washoe and Miwok occupied permanent villages and temporary seasonal camps and subsisted by hunting, fishing, and plant-food gathering. This way of life abruptly changed with the arrival of non-native gold and silver miners, settlers, ranchers, and entrepreneurs, who spread disease, claimed and decimated traditional lands, and indiscriminately murdered native people. Despite major disruptions from the Mission Period, European diseases, gold mining, and non-native settlement, the Sierra Miwok and the neighboring Washoe have managed to persist, maintaining attachment to the central Sierra Nevada, from the west slope to the Sierran Front and the western Great Basin.

3.2.1 WASHOE

This section largely is excerpted from Meredith “Penny” Rucks’ ethnographic summary of the Washoe (Waechter et al. 2003). Prior to contact and disruption by Euro-American appropriation and encroachment (ca. 1850), Washoe territory straddled the Sierra Nevada north and south of Lake Tahoe, from the southern shore of Honey Lake south through Antelope Valley and the West Fork of the Walker River in the western Great Basin. Washoe traditional homeland is subdivided into three regions defined as areas of “most frequent” interaction and cooperation among neighboring communities (D’Azevedo 1986:469). Overlapping resource areas, cooperation in defense, and collaborative harvests and festivals occurred most consistently among neighbors within one of three regions: the *wélmelti* (“northerners”), the *pá:wa lu* (“valley dwellers”), and the *há aletti* (“southerners”). However, affiliation with any one of these areas was (and continues to be) transcended by identity with and access to the entirety of the “Washoe world,” “within which one could move freely by exploiting a lore of common origin and hospitality accorded distant or putative kin” (D’Azevedo 1986:485).

The *há aletti* band of the Washoe lived in the area of Woodfords and Markleeville, while also extending southward toward Topaz Lake and Antelope Valley. The *pá:wa lu* band occupied Carson Valley, often wintering in the Pine Nut Hills. The *há aletti* of the Woodfords-Markleeville region, between the east and west forks of the Carson River, have always been strongly associated with “the mountains,” i.e., the Sierra Nevada, and with neighboring California Indians, with whom they interacted and shared many traditions. So strong was this association, that they were often referred to as *tá lel i*, “westerners,” “a term also applied to the Miwok and Maidu or any Washoe people who might be living among them; the term became synonymous with ‘California side’” (D’Azevedo 1984:25). D’Azevedo (1986:470) states that others regarded them “as less like real Washoe and more like the Miwok to their west with whom they had longstanding relations.” Bertha Holbrook gave *tániw melé:we*, “Miwok jumping on the ground” as a nickname once used for the Woodfords-area residents (Jacobsen 1955), probably in reference to the Miwok-style roundhouse constructed there for ceremonial dances (D’Azevedo 1956:15–16, 1986:481). Identification with the Sierra and as “California Indians” is maintained today by a tendency to refer to the Woodfords Washoe as “those California Indians” and to plants known to them as “from California” or “from the mountains.” The West Fork of the Carson River provides a prominent geographic connection between Washoe and Miwok.

The traditional economy was based on seasonally available resources from catchments tethered to camps where “first use” rights and accessibility were maintained by priority of use. Key among these resources was fish and pinyon pine nuts. Investigators have described their seasonal movements in terms of spring and fall fish runs and fall pinyon harvests from September to October (D’Azevedo 1955; Siskin 1990; Wright 1990).

Access to key resources and exotic goods was maintained through complex and multi-layered social networks that exceeded linguistically defined “territories.” “Sharing” rather than “trade” best describes the exchange that facilitated resource allocation and exchange. Some commodities were indeed traded; for instance, at the end of the 1800s, Susie Dick reported that one deer hide could bring enough pinenuts for the winter (Dangberg 1920s, in Price 1980). But access to specific resource areas is described in terms of visiting relations and bringing gifts. Roasted pinyon nuts or salt from Topaz Lake were often taken to Miwok relations and hosts in acorn country.

Acorn was gathered by populations throughout Washoe territory as a valued supplemental staple and celebration food, and as a contingent staple in the event the pine-nut harvest failed. Families with Miwok connections trekked to the western foothills “outside” their core area for acorn, and often stopped “outside” (east) of areas habitually harvested by the Miwok. Frank Morgan recounted to D’Azevedo that a camp at Kyburz (at the junction of the Silver Fork and the South Fork of the American River) was a Washoe area where people could go without encountering anybody, and if there was enough acorn, they would stop there. Alternatively, if the acorn harvest at Kyburz was insufficient or if people wanted to visit, they would continue west to Camino (D’Azevedo 1955). Some of d’Azevedo’s consultants related that they rarely encountered Miwok even as far as Camino in the fall, but that they were wary and would stay only a “few days” to pick acorn; they were never bothered by the Miwok, “except once when some came and chased after them...”

As D’Azevedo (1984:23) states, boundaries “ventilated by corridors of tolerated access,” incorporated areas of joint or overlapping land use and the South Fork of the American River, and perhaps the Mokelumne River as well, appear to have been just such corridors of mutual tolerance as long as exclusive-use areas and rules of exchange were observed. Knowledge about claimed resources owned by individuals of specific groups, such as Eagle’s Nest near Strawberry and the salt deposit near Riverton, were recognized and transmitted by stories or traditions. Washoe tradition indicates they were aware that Miwok and Maidu people from the Sacramento and San Joaquin valleys were pushing upslope, higher into the foothills, fleeing forced labor in Spanish missions and mines, and that they were affected by Spanish-borne disease (D’Azevedo 1986).

3.2.2 SIERRA MIWOK

Barrett and Gifford (1933), Davis-King (2003, 2007), and Levy (1978) present Sierra Miwok ethnography. At the time of non-native contact, Sierra Miwok territory stretched from the Cosumnes River to the north to the Fresno River at the south and included the central Sierran foothills up into the mountains as far as Yosemite and the headwaters of the Merced River (Levy 1978:400). This sizable region provided them access to a range of plant and animal resources, accessed on a seasonal basis. Tragically, Sierra Miwok territory included the Mother Lode, which resulted in a massive influx of miners, settlers, and capitalists during the California Gold Rush of the 1840s through the 1860s. Spanish “mission-ization” of Native Californians previously had impacted Miwok people, including those from villages at the Mokelumne and Cosumnes rivers, at Mission San Jose as early as 1817 (Cook 1954).

3.3 HISTORICAL SETTING

Historical events in the western Great Basin, the Sierra Front, and across the central High Sierra and west slope entail early exploration, emigrant and mining-related travel, transportation and communication, extractive industries (mining and timber harvesting), settlement, and recreation (Orvald and Young 2014). The West Fork of the Carson River and Ebbetts Pass were important travel routes from pre-contact time through westward California Gold Rush and eastward Comstock periods and into the modern highway-recreation era. Although the study area is south of the Carson River’s West Fork, historic-era events, including exploration by John C. Frémont, use of the Mormon-Carson and Emigrant Trail, construction and use of the Carson-Amador Stage Route, and the construction of SR-88, SR-4, and State Highway 89 have undoubtedly helped shape Woodfords, Markleeville, Bear Valley, and Alpine County.

3.3.1 EXPLORATION

Detailed discussions of the early explorers and travelers in the project vicinity, including Frémont, Carson, Ebbetts, the Mormon Battalion, and scores of settlers and gold seekers, can be found in a variety of documents (Bennyhoff et al. 1982; Crystal Range Associates 1997; Jones & Stokes Associates 1997; Owens 1989, 1992; Supernowicz 1983).

JOHN C. FRÉMONT

John C. Frémont led the first Euro-American incursion into the region and the project area as part of a US government-sponsored exploration party. During his second exploration survey for the US Topographic Engineers in 1843, Frémont led a party of around 40 men, including Kit Carson and Joseph Walker, from the Oregon territory southward into the northeastern portion of the Great Basin. Frémont continued southward to the Carson River and the Carson Sink, where he then turned westward after a short stay in Carson Valley (McBride 2002). During the winter of 1844, his westward route crossed through the project area, where he noted Grover Hot Springs. The party then crossed the snowy Sierra Nevada near Carson Pass, and, from a distance, was one of the first Americans to view Lake Tahoe (Garrotto 2010; McBride 2002).

3.3.2 TRANSPORTATION

Euro-American settlement of California immediately followed the Treaty of Hidalgo with Mexico and the discovery of gold at Sutter's Mill in 1848. The Gold Rush sparked instant demand for transportation and communication networks across the Sierra Nevada. A network of routes, including trails, wagon and stage roads, telegraph lines, and ultimately, the transcontinental railroad, soon rapidly evolved to connect California with the rest of the country. As mining activity declined in California, news of the 1859 discovery of the Comstock Lode resulted in the "Rush to Washoe," which essentially reversed the westward flow of miners and those intending to do business supporting them.

One consequence of the reversal manifested itself in a heavily used and rapidly changing web of stage and freight routes with supporting way station nodes along the transportation corridors (Orvald and Young 2014:55). As a new industrial landscape emerged in the region, the need for forest products resulted in a local transportation network for timber and milled wood, including timber harvesting trails, roads, and flumes.

The primary routes into California across the eastern Sierra Nevada consisted of trails and roads used by emigrants and would-be miners to access the farmlands and the gold fields of the western foothills. It was inevitable that modifications to the original routes would occur after the region was better known, and following the development of more settlements in Truckee Meadows, Eagle Valley, Carson Valley, and in the Lake Tahoe Basin.

The silver rush to Washoe, as the mining district centered on Virginia City was known, was a great stimulus to the pace of road development in the central Sierra. The rush to Washoe began late in the fall of 1859 and resumed with renewed force in the spring of 1860. Greatly increased traffic over the mountains stimulated road entrepreneurs to supplement the efforts of state and local government in creating faster, more efficient stage and freight routes. In response to the demand for improved transportation, California and the Territory of Nevada allowed private toll roads to be constructed on public land alongside existing roads such as the "Day Route" between Placerville and Carson Valley and the Kingsbury-McDonald Toll Road (Howard 1998). Entrepreneurship, ingenuity, and the desire for more efficient routes over the Sierra and throughout the region resulted in a widely splayed eastern end of the trunk road between the Sierra foothills of California and the Territory of Nevada, which soon became the state of Nevada.

Most trans-Sierran wagon traffic was eliminated in 1868 upon completion of the Sacramento-to- Reno reach of the Central Pacific Railroad over the mountains, and much of the stage and freight wagon road network was converted to local use. By the early twentieth century, the speedy incorporation of the automobile into American life for

commerce and private use led to realignments and improvements (including graveling and paving) to the former wagon roads.

Many of the early emigrant trails evolved over time into wagon roads and paved highways. Portions of the Mormon-Carson route are now part of SR 88 and Mormon Emigrant Trail/Iron Mountain Road. Both are major travel routes through the Eldorado National Forest.

Another route, now abandoned or subsumed into SR 88 and other modern roads, was the Old Alpine Highway (cultural resource nos. CA-ALP-196H/AMA-382H/ELD-949H). In 1911, the California state government formally established the Alpine State Highway, defining its route as follows:

Calaveras big tree grove, located in Calaveras County, thence running to Dorrington...then easterly following what is known as the Big Trees and Carson Valley Turnpike, to Mount Bullion, in Alpine County; thence along county road to Markleeville, in Alpine County; thence along that certain road via Kirkwood, Silver Lake, Pine Grove and Irishtown to Jackson in Amador County (California Division of Highways 1934:167-168 in Psota and Newland 2001:7).

According to Psota and Newland (2001:14), this became an important trans-Sierran road linking California's Central Valley to eastern California and western Nevada and the most direct route between Stockton and Lake Tahoe. Besides linking the valley with the east side, the road brought recreational traffic to Plasse's Resort at Silver Lake, Boy Scout and Girl Scout camps at Twin Lake (also Caples Lake) and Kirkwood Lake, and public campgrounds at several locations on the National Forest. The highway was not plowed or otherwise maintained in winter, making it a seasonal route.

MORMON-CARSON EMIGRANT TRAIL

Conducted on behalf of the Eldorado National Forest, the Bennyhoff et al. (1982) report provides substantial context for what is now called the Mormon-Carson Emigrant Trail, which locally runs along the West Fork of Carson River approximately five miles north of the current study area. Archaeologists and historians have documented well-preserved features of this trail dating to the 1850s between Woodfords and Sorensens.

Until 1848, the Truckee-Donner route was the only established segment of the California Trail crossing the Sierra. This route was a difficult one, involving navigating the Truckee River Canyon and a high mountain pass. In July 1848, a group of Mormon Battalion veterans heading home to Salt Lake City from California blazed an easier route. They began in Pleasant Valley and followed the ridge between the American and Cosumnes River drainages, clearing a roadway as they went, ultimately navigating the West Fork of the Carson River eastward (Owens 1992). Over the next two years, the Mormon-Carson Emigrant Trail would become the most heavily traveled wagon route over the northern Sierra; in 1850, it carried "an estimated ninety-five percent of the total overland migrants to California" (Owens 1992:16). The discovery of gold in California resulted in even heavier use (Bennyhoff et al. 1982:100).

Arriving at Mormon Station (modern-day Genoa, Nevada) in the Carson Valley, travelers from the east rested and re-fueled for the final push westward over the mountains. However, as the number of emigrants and associated livestock increased along the trails, hardships increased as forage and supplies were reduced (Bennyhoff et al. 1982:108). Early season caravans often fared better than late-season stragglers, but productive forage was never guaranteed. At times, conditions deteriorated to such an extent that relief parties were organized in the central valley to assist suffering travelers (Bennyhoff et al. 1982:109).

Soon traders from the west began to take advantage of commercial possibilities by transporting hay and general goods into the mountains. Trading stops were often ephemeral tent camps, but others grew into significant settlements. Mormon Station had log buildings as early as 1849 (Langworth 1855:155, cited in Bennyhoff et al.

1982:110). The developing commercial interests at Mormon Station, along with its logical rest-stop on the Mormon-Carson Emigrant Trail, resulted in one of Nevada’s first Euro-American settlement, which would later become Genoa, Nevada.

Intensive use of the Mormon-Carson route was short-lived. In 1850, between 45,000 and 60,000 emigrants plied the trail (Bennyhoff et al. 1982:109). Gaining a reputation as relatively easy passage, use of the route increased significantly as travel along the more arduous routes (depending on the rumor of the day) dropped. Between 1850 and 1852, the “Emigrant Summit Trail” was a major artery of the Overland Trail, crossing the western half of the United States (Bennyhoff et al. 1982:99).

By the end of the 1850s, the mountainous sections of the Mormon-Carson route were mostly abandoned; nevertheless, the older route remained popular as a high-elevation summer grazing area for sheep and cattle. According to the 1854 stock register, more than 30,000 head of cattle and 8,550 sheep traveled the route in that year (Deal n.d.:7). With the discovery of gold and silver on the Comstock Lode in western Nevada in 1859, the Mormon- Comstock route may have seen significant use in an easterly direction—reverse emigration to the slopes of Mount Davidson and Virginia City.

BIG TREE-CARSON VALLEY TRAIL – EBBETT’S PASS

The present SR-4 alignment follows the approximate route of an early emigrant trail over the Sierra Nevada that was improved in 1855 and 1856 and known as the Big Tree Road and in the early 1860s as the Big Tree and Carson Valley Turnpike. Originally a free trail, it became a toll road from 1864 through 1910, and then a free county road in 1911. It was accepted into the state highway system in 1926 and portions were paved in the 1930s. The road was realigned in the mid-1960s when the Bear Valley Ski Resort was opened, making it an all-weather highway.

3.3.2 SETTLEMENT

Following exploration of the area by John C. Frémont, Kit Carson, and Joseph Walker in 1844, the entrance of Euro-Americans in the eastern Sierra progressed rapidly. This was in response to three significant historical developments: 1) the 1848 Treaty of Hidalgo, wherein Mexico ceded half a million square miles of western land, including California, to the U.S.; 2) the discovery of gold in the western Sierra foothills; 3) emigration to the attractive farmland of California; and 4) Silver Mountain ore deposit near Ebbetts Pass in 1858 and the 1859 discovery of the Comstock Lode. Although these events occurred outside of the local sphere of the project area, they had an impact on the influx of emigrants, would-be miners, and entrepreneurs through Ebbetts Pass and the Mormon-Carson Emigrant Road through the Woodfords-Markleeville area, and what was to become Alpine County.

WOODFORDS

Woodfords is a small town located at the lower end of the canyon of the West Fork of the Carson River at the SR-88/SR-89 junction. The town is located approximately 30 miles southeast of Lake Tahoe and eight miles west of the California- Nevada border near the West Fork of the Carson River. The town site of present-day Woodfords was first settled in 1847 by Euro-Americans as a temporary supply outpost when noted Mormon pioneer, Samuel Brannan, left a small contingent of men there to winter while he led a large group overland to Salt Lake City. Although Brannan did not return to the site of Woodfords, the place took the name “Brannan’s Springs.” The route used by Brannan became popular among overland travelers, leading to the construction of the first permanent building, a hotel built by Daniel Woodford in 1849. In 1860, Brannan’s Springs became a Pony Express station, and later in that decade, the name changed to Woodfords when a post office was established.

During the Comstock Lode silver rush of the 1860s, the road through Woodfords was among the most heavily traveled routes from California to the Carson Valley. Although located on a popular trans- Sierra wagon road, very

few people settled in Woodfords, and it did not become a large community. At its peak, it only had a few commercial buildings and houses. After the exhaustion the Comstock Lode, activity in Woodfords slowed considerably, but its location on a main road prevented it from disappearing completely (Centennial Book Committee 1964:13, 19; Kyle 1990:26).

Woodfords has remained a very small community in the twentieth century. Its main commercial activity centers on its role as a roadside stop at the junction of SR 88 and SR 89, and its commercial livelihood relies largely on the travelers and tourists that pass by. Current commercial businesses include a small motel, general store, and a café. The community has experienced some very modest residential construction in the post-World War II era with the establishment of the Sierra Pines Mobile Home Park and a small group of homes known as Alpine Village. Woodfords' position at the crossroads of two main Sierra highways also contributed to the decision to build an elementary school for the community.

MARKLEEVILLE

Markleeville originated following the discovery of ore in 1860 at Silver Mountain just east of Ebbetts Pass. Miners from Carson Valley had to pass through the area, which inspired Jacob J. Marklee to claim a 160-acre tract in 1861 and build a toll bridge across Millberry Creek. Marklee hoped to prosper from freight and miner transport to the mining camps, but was killed in a gunfight in 1863. His residence soon had houses and commercial buildings and the name Markleeville. The settlement initially served as a way station on the "Road from Woodfords" as depicted on the 1865 General Land Office (GLO) Plat for T.10N.-R.20E., a wagon route that connected Genoa with Woodfords, Silver Mountain City, and points further west via Ebbetts Pass (BLM 2020). By 1864, Markleeville had 168 houses, a population of 2,620, a spur of the transcontinental telegraph line from Genoa, a post office, and soon thereafter, a Wells Fargo Express Office and an armory with a company of Union troops (Maule 1938:88).

As the mining boom faded in the 1870s, so did the population of Markleeville, as most of the miners left the region (Centennial Book Committee 1964:19; Kyle 1990:26). Due to falling silver prices, the area saw an exodus of people and the county's primary economy shifted to farming, ranching, and logging. By 1875, the year in which the county seat was moved to Markleeville, the population had decreased to 172, largely due to the demonetization of silver.

In its heyday, Markleeville supported a wide range of businesses, including a 15-stamp mill and lumber mills (Garrotto 2010). The confluence of Markleeville Creek and the West Fork of the Carson River was a starting point for sawn logs to be transported to the mills of the Carson area, which supplied the Comstock. Initially, Markleeville was within Amador County, but due to relative isolation, the residents petitioned the State of California to create the county of Alpine and make Markleeville the county seat. Despite the petition, Silver Mountain City became the county seat, and remained so until voters selected Markleeville in 1875. Markleeville has served as the commercial center for nearby ranchers, farmers, and loggers. By the 1920s, Markleeville declined in population to around 200, its approximate population today. As World War II ended, tourism began its ascension as the primary economic driver in Markleeville, and Alpine County as a whole. Post-war tourism dramatically increased as California's thriving economy provided Americans with expendable income and more leisure time.

Tourism in the Markleeville area received another boost in the post-war era. The US Forest Service (USFS) had a long history in the region, dating back to the early-twentieth century with the establishment of what today is the Humboldt-Toiyabe National Forest. After World War II, the USFS expanded its long-established practice of building campgrounds, picnic areas, trails, and other accommodations to attract visitors. The USFS also continued its recreational residence program, which the agency started in the early-twentieth century to permit individuals to build private recreation cabins on National Forest land, usually in clusters, or tracts (Lux et al. 2000). By the 1920s, dozens of tracts had been developed and the program continued into the 1960s. One such tract, the Shay Creek Tract, was developed west of town near Grover Hot Springs. Surveyed in 1947, the 47-acre property originally had about 35 single-family cabins occupied as vacation residences during the summer (USFS 1947, 1988).

GROVER HOT SPRINGS

John C. Frémont noted Grover Hot Springs during his 1844 expedition, and Markleeville later became known for access to thermal waters. Early records note the hot springs became the property of John Hawkins, who leased land to C. H. Kilgore in 1854 to operate a dairy business (Garrotto 2010). The two entered into a partnership and later Hawkins took over the lease and improved the hot springs bathhouse and pool. During the 1870s, Hawkins entered into a partnership with A. M. Grover, who further developed the springs, which eventually were named after him (Garrotto 2010). Later, Grover's widow would charge visitors to bathe in the hot springs and pitch their tents nearby. By 1908, Charles Scossa, a local rancher, became the owner of the hot springs, and in 1935, he improved the pool and built a cabin that stands today. A tourist and health-seeker destination since the nineteenth century, California State Parks bought Grover Hot Springs in 1959 and developed it into a resort.

3.3.3 SIERRA NEVADA LOGGING

Timber was a critical resource for pioneers settling land, for mining and related industrial activity in the Comstock, and for the railroads. Timber harvesting operations ranked among the first major industrial activities in the region. The close proximity of the Carson Range, Lake Tahoe Basin, and the Sierran Front offered large reserve of timber that was readily exploited throughout the mid- to late-nineteenth century. Timber supplied firewood for domestic use, lumber for railroad ties, and the construction materials for domestic and commercial structures. Following the Comstock Lode strikes, the forests of the Sierra Nevada supplied lumber for commercial buildings, mills, telegraph poles, and thousands of support timbers lining the tunnels of the mines. Steam power in the region, either for industrial operations or transportation relied on cordwood for boiler fuel.

Wood was abundant on the eastern slope of the Sierras, and early logging enterprises quickly developed techniques for extracting it for milling in sawmills along the range front, from Verdi south to the upper reaches of the Carson River. Timber was initially transported from stump to mill using animal-power and log chutes, skidways of parallel logs notched together at the ends, slabbed on the inside faces, and greased. Timber and milled lumber was transported by small teams, steam donkeys, shortline railroads, steamers on Lake Tahoe, flumes, and via large drives on the Carson River. Lumber demands associated with the Comstock mining industry and related commercial endeavors, nearby communities, and regional mining districts were met by teams on developed roadways, flumes, inclines, and eventually, the Virginia and Truckee Railroad. The Sierra rapidly became the setting for intensive logging, milling, and lumber and cordwood transportation activities.

Mining and railroad enterprises were among the greatest customers for wood products of Sierra Nevada forests, and in catering to them, two boom periods in the lumber industry are generally recognized (Chung 2003). The first occurred during the initial boom of the Comstock in 1859 until its bust in 1877. The second began with construction of the Central Pacific Railroad through the state between 1867 and 1869 and associated short lines throughout the western Great Basin between 1864 and the early 1900s. By the early 1900s, the combination of improved extraction technology (including transportation systems), declining demand by railroads, mining interests, and deforestation resulted in a bust in lumbering activity (Goodwin 1971; Wilson 1992).

Timber harvesting resumed in the Sierras in the 1940s and 1950s by the Placerville Lumber Company and the Clover Valley Lumber Company (Lindström 1996, 2008). Local stands were harvested again in the 1960s and 1970s as the USFS engaged in timber sales throughout much of the Humboldt-Toiyabe and the Eldorado National Forests (Supernowicz 1983). Over the last 40 years, logging activities in the Sierra Nevada, including in and near the project areas, has consisted of forest health projects, including fuel reduction and erosion control projects.

3.3.4 RECREATION

By the early-twentieth century, land in the Tahoe Basin and surrounding area became increasingly valuable for residential, recreational, and commercial purposes. Previous use of the Sierra for timber harvesting and grazing gave way to new resource values, as outdoor recreation and associated services became the major forces governing growth. The new recreation economy accelerated the rate of development and increased permanent and seasonal residence in the Sierra Nevada, including seasonal residences in the Shay Creek Summer Home area along Hot Springs Road and in the High Sierra. This trend escalated with the establishment in the 1930s of a regional network of engineered roads throughout the montane environment.

As the Tahoe Basin and the Carson Range attracted more interest and more tourists, resorts appeared. Increasingly, tourists from all over the country joined members of the Bay Area's elite, and the wealthy mining and related business interests of the Comstock at the area's best hotels. People of modest means camped or vacationed at rustic motels and cottages. Recreational pursuits, aided by automobile transportation, filled the backcountry with swimmers, hikers, campers, and increasingly, skiers.

In the wake of the 1960 Winter Olympics at Squaw Valley, the first to be televised, an irreversible trend to a new era of upland land use was established with a demand for year-round residency and supporting infrastructure. Thereafter, the ski industry assumed a prominent position in the Tahoe Basin, the Carson Range, and the High Sierra and the USFS became the primary agency for public land management in the area.

4.0 RECORDS SEARCH

Archival research and literature review preceded field investigation to determine what could predicatively be said about built-environment and prehistoric/historic-period archaeological sensitivities in the three survey areas prior to fieldwork. GBCG reviewed site and report records maintained by the California Office of Historic Preservation's (OHP) California Historical Resources Information System (CHRIS), the National Register of Historic Places (NPS 2020), and relevant historical literature, historical maps, and General Land Office (GLO) records. A similar search was requested for Bureau of Land Management, Carson City District, USDA Humboldt-Toiyabe National Forest, and USDA Stanislaus National Forest records. To supplement this effort, GBCG completed additional research using available "gray literature" cultural resource reports and archaeological sites within and near the search area.

4.1 CENTRAL CALIFORNIA INFORMATION CENTER

Initial resource identification efforts for the project included pre-fieldwork record and historical document searches conducted by the Central California Information Center (CCIC). The purpose of research was the identification of previous cultural resource inventories and documented resources in and within a one-mile radius of each of the three study areas, identification of resources expected to occur, and development of historic contexts for potential cultural resource evaluation.

GBCG submitted a records search request to the Central California Information Center (CCIC) at California State University, Stanislaus on November 1, 2016. Staff at the CCIC completed the request on June 4, 2020, CCIC File #11413K (Appendix C). Results of the record search including Resource and Report Maps were provided to Darrel Cruz, Washoe Tribe of Nevada and California, Tribal Historic Preservation Officer prior to the field visit. Historic-period resources include Emigrant trails, roads and highways, ditches, grazing camps, refuse/debris scatters, and standing structures. Prehistoric sites include bedrock milling stations, lithic scatters, milling stations with flaked stone, and isolated finds (e.g., flaked-stone bifaces and projectile points). Table 1 summarizes the record search results for all three study areas. Map results and tables summarizing cultural resources and previous investigations for each project area's one-mile-radius search area are provided in Appendices D through F.

Table 1. Cultural Resource Inventories and Resources within One Mile of the Project Areas.

Project Area	Previous Inventories (1-mile radius)	Previous Inventories (Project Area)	Inventoried Acres (Project Area)	Recorded Resources (1-mile radius)	Recorded Resources (Project Area)
Manzanita; 469 acres	12	3	107 acres	53	0
Markleevillage; 296 acres	27	7	140 acres	80	7
Bear Valley; 138 acres	62	11	138 acres	42	0

4.1.1 MANZANITA RECORDS SEARCH

The CCIC records review indicates 51 previous studies and 30 recorded cultural resources in the one-mile-radius Manzanita treatment unit search area; with previous six studies and two archaeological isolates documented within the limits of the survey area (Table 2; Appendix D). Two projects conducted in the northern end project area (AP-21 and AP-6083) reduce necessary pedestrian survey coverage by approximately 107 acres (see map in Appendix D). Isolated finds are categorically not eligible for the National Register of Historic Places, and they do not qualify as important archaeological resources (with exceptions) under CEQA statutes and guidelines.

Table 2. Manzanita Survey Area Records Search Summary.

Resources in Survey Area	2	P-02-705, -707
Resources in 1-mile Radius	51	See Appendix D
Studies in Survey Area	6	AP-21, -5498*, 5501*, 5507*, 6083, 9146*
Studies in 1-mile Radius	30	See Appendix D

*Duplicate reports from other areas; table from CCIC.

ISOLATED FIND (P-02-705)

Resource P-02-705 is an isolated find, a hand-applied, olive-green glass bottle finish that Summit Envirosolutions documented on private land just within the northern boundary of the Manzanita unit (Bowers 2005a).

DEBRIS SCATTER ISOLATE (P-02-707)

Resource P-02-705 is a small post-1950 historic debris scatter that Bowers (2005b) documented just within the northern boundary of the Manzanita unit. Located within a bulldozer push pile presumably from a wildfire 1988, the scatter includes a toy wagon wheel, a kerosene can, a meat cleaver blade, and fragments of clear glass. Bowers (2005b) documented the find as an isolated find, as the artifacts were interpreted to post-date 1950.

4.1.2 MARKLEEVILLAGE RECORD SEARCH

The CCIC records review identified a small number of studies and a large number of resources documented in the Markleevillage search area (Table 3 Appendix E). Previous studies include inventories for highway improvement, electrical transmission lines, land exchanges, and timber stand management projects. Two projects conducted in the project area (AP-36 and AP-1487) reduce necessary survey coverage by 140 acres (see map in Appendix E).

Table 3. Markleevillage Survey Area Records Search Summary.

Resources in Survey Area	8	P-02-346, -347, -348, -349, -548, -658, -1056, -1057
Resources in 1-mile Radius	72	See Appendix E
Studies in Survey Area	10	AP-2, -4, -20, -36, -1477, -1478, 3050*, -4310, -4734, -8743
Studies in 1-mile Radius	17	See Appendix E

*Duplicate reports from other areas; table from CCIC.

THORNBURG SITE (P-02-346)

Native American archaeological resource P-02-346/CA-ALP-269 is a smallish “Bedrock mortar/occupation site” located at the bulldozer-disturbed confluence of Markleeville and Spratt creeks at the northwestern corner of the survey unit (Napton et al. 1990a). Two low, flat granitic boulders exhibited a total of four “grinding cups,” and portable artifacts include a handstone and scattered chert and quartz debitage 50 feet southeast of the milling station (Napton et al. 1990).

CHAVARIN SITE (P-02-347)

Native American archaeological resource P-02-347/CA-ALP-270 is a bedrock milling feature, a massive granitic boulder, with two pestles and five pieces of debitage (three obsidian and two CCS) located on the southern roadcut of Sawmill Road within the Markleevillage subdivision. Napton and Greathouse (1990a) documented seven “cups” on the boulder; the two pestles were found in the duff beside the boulder and debitage was observed in the roadcut itself.

LITHIC SCATTER (P-02-348)

Native American archaeological resource P-02-348/CA-ALP-271 is a small lithic scatter located at the northwestern corner of the survey unit south of Markleeville Creek and west of lower Spratt Creek in a logging roadcut. Napton and Greathouse (1990b) documented 10 pieces of obsidian exposed in the roadbed and rill channels in a 90-x-60-meter area approximately 800 feet southwest of the Thornburg Site.

LITHIC SCATTER (P-02-349)

Napton et al. (1990b) recorded historic-period archaeological resource P-02-349/CA-ALP-272H as a small “Refuse dump/tin can scatter” consisting of discarded 1930s-vintage household goods on the Thornburg Ranch in the southwest corner of the Markleevillage survey unit approximately 140 meters east of Spratt Creek. The dump is composed of milk cans, motor oil cans, paint cans, oxidized glass fragments, a ceramic tureen lid, and a child’s wagon.

ISOLATED FIND (P-02-548)

Resource P-02-548 is an isolated hand-soldered rectangular can that Hutchins (2001) documented on private land on the south-facing slope north of Markleeville Creek near Markleeville Town Ditch. Isolated finds are categorically not eligible for the National Register of Historic Places, and they do not qualify as important archaeological resources (with exceptions) under CEQA statutes and guidelines.

MARKLEEVILLE TOWN DITCH (P-02-658)

Historic-period linear resource P-02-659/ALP-512H is a segment of Markleeville Town Ditch, an open, earthen water conveyance feature located north of Markleeville Creek along parts of the northern margin of the Markleevillage survey unit (Garner et al. 2017). Depicted on the 1877 GLO, this ditch originates near the northwest corner of the survey unit and irrigates agricultural land north of Markleeville before debouching into Millberry Creek. The segment of the ditch within the project area is not eligible for the CRHR based on previous survey evaluation (Orvald et al. 2018).

HOT SPRINGS ROAD (P-02-1056)

Historic-period linear resource P-02-1056/ALP-779H is a segment of Hot Springs Road, the historical alignment of the road that appears on the 1889 Markleeville 1:250,000 map connecting Markleeville with Grover Hot Springs (Garner and Hartman 2016). The segment of the modern, paved road within the project area is not eligible for the CRHR based on previous survey evaluation (Orvald et al. 2018).

MULLER 1296 CIRCUIT (P-02-1057)

Historic-period linear resource P-02-1057/ALP-780H is a 17-mile segment of Liberty Utilities' Muller 1296 Circuit, an overhead, wooden-pole electrical transmission line in Alpine County constructed in 1947. The segment of the modern transmission line within the project area is not eligible for the National Register of Historic Places or the CRHR based on previous survey evaluation (Martin 2018).

4.1.3 BEAR VALLEY RECORDS SEARCH

The CCIC records review indicates a fair number of previous studies and recorded cultural resources in the Bear Valley search area; 11 previous studies and two archaeological sites are documented within the limits of the survey area (Table 4; Appendix F). Previous studies include inventories for highway improvement projects, hazard tree removal for electrical transmission lines, and timber stand management/harvest projects. Projects conducted in the project area reduce account for approximately all 137 acres (see map in Appendix F). Resources documented within the limits of the survey area include a sizable Native American archaeological site (P-02-182) and a segment of the Big Trees Route/Big Trees-Carson Valley Turnpike (P-02-364), both of which occur along the southern end of the unit.

Table 4. Bear Valley Survey Area Records Search Summary.

Resources in Survey Area	2	P-02-182, -364
Resources in 1-mile Radius	40	See Appendix F
Studies in Survey Area	11	AP-34, -168*, 169*, -1683*, -1787, -1935, -3324, 3510, 5527, -5748, -9146*
Studies in 1-mile Radius	49	See Appendix F

*Also reported on in Calaveras County with the same number; table from CCIC.

BLOODS MEADOW SITE (P-02-182)

Known also as the Bloods Meadows Site (Bryan 1961), archaeological resource P-02-182/APL-101 is scantily documented as a sizable Native-American site with "Bedrock Mortars in granite and many arrowheads and flint" with "Arrowheads (cigar box full) and [sic] (cliff Lombardo) pestle" on both sides of SR-4, 300 meters east of the county boundary marks. Informed with anecdotal evidence, Bryan (1961) notes the site consists of two to three camps that blend into one large site across the meadow area and includes bedrock milling features on granitic knolls, one of which is on the north side of the meadow. The site record indicates two localities: 1) an 800-x-200-foot southern area; and 2) a 400-x-200-foot northern area. Accurate location information is lacking in the site record, although the CCIC indicates the resource extends into the Bear Valley survey area.

CARSON VALLEY TO MURPHYS EMIGRANT TRAIL (P-02-364)

Archaeological and built-environment resource P-02-364/APL-288H documents Emigrant Trail segments crossing the Sierra via Ebbetts Pass, including the Big Trees Route (1856) and the Big Trees-Carson Valley Turnpike (1862-1864). A segment of this linear resource is documented along State Route 4. A across the southern end of the Bear Valley survey area. A 0.3-mile paved segment of the historical alignment of the trail and turnpike lies at the extreme southern end of the survey area, paralleling the highway. Much of the turnpike was constructed in 1862 and closely parallels or is built upon the earlier Carson Valley to Murphy's Emigrant Trail. This resource, also known as the Ebbetts Pass Route (No. 318), is one of several California Historical Landmarks in Alpine County. Early cattleman Harvey Blood collected tolls at a station just east of the project area between 1864 and 1910.

5.0 RESEARCH DESIGN

The objective of this cultural resource assessment was to identify archaeological, built-environment, and architectural resources that might be present in the project survey areas and any significant historical resources (i.e., cultural resources eligible for the CRHR) located within the project APE.

Following California BLM standards and California OHP guidelines, GBCG completed pedestrian survey in each of the three project areas. The goals of the inventory were: 1) to identify and document known and unidentified resources present within the survey areas; 2) to evaluate resources for CRHR eligibility as necessary; and 3) assess and potential adverse effects to any resources that may occur within the footprint each project area. An additional objective entailed an assessment of potential adverse impacts to identified historical resources and recommendations for avoidance.

5.1 FIELD METHODS

GBCG employed Class-III pedestrian survey as defined by the California BLM Guidelines for a Cultural Resources Inventory (BLM 2009). Five procedural rules guided the survey portion of the inventory (Table 5). As this inventory focuses on pieces of real estate, rather than at problem-oriented archaeological research, spatial control is key.

Table 5. Procedural rules for systematic pedestrian survey (Dancey 1974).

Rule 1.	Inspect the surface for artifacts and features.
Rule 2.	Sample the environmental diversity of the survey area.
Rule 3.	Work within explicitly defined units.
Rule 4.	Cover the ground in a patterned course.
Rule 5.	Record exact locations of artifacts and features in as many cases as possible.

GBCG used a global positioning system (GPS) receiver with sub-meter accuracy to locate survey area boundaries and to maintain survey accuracy for resource mapping. Individual survey transect spacing was maintained using a recreational Garmin GPS unit and Universal Transverse Mercator coordinates to achieve transit precision. Field data was recorded on a GPS receiver with sub-meter accuracy. GBCG collected all data necessary on newly identified cultural resources to complete the appropriate State of California Department of Parks and Recreation (DPR) Series 523 site forms. Digital images of the survey area, artifacts, features, and resource overviews, were taken with a Ricoh WG-4 16-megapixel digital camera with a 4.5-18mm lens, five feet above the ground surface.

6.0 RESULTS

Between August 17 and 21, 2020, previously un-surveyed portions of the three project areas were investigated for cultural resources; all previously recorded site locations within the project areas were visited, although one site could not be found (Table 6). Five new archaeological sites and two isolated finds were identified and recorded during the survey (see survey results maps in Appendix B). DPR 523 forms for these resources, as well as updated site forms for five previously recorded resources (CA-ALP-238, -269, -270, -271, and -272H) are presented in Appendix H. GBCG submitted all DPR 523 resources forms, as well as all digital geo-spatial data (GIS) to the CCIC to update the state CHRIS database.

Table 6. Archaeological resources identified in the Manzanita, Markleevillage, and Bear Valley project areas.

Project Area	State No.	Primary No.	Field No.	Age	Description	Resource Attribute & Code	Preliminary CRHR Status
Manzanita			ALP-1	H	Historic debris at spring on Davis Property	Stock Grazing Camp AH16	Not Eligible

Project Area	State No.	Primary No.	Field No.	Age	Description	Resource Attribute & Code	Preliminary CRHR Status
Manzanita			ALP-2	H	Possible Road on Davis Property	Roads-Trails-RR AH7	Not Eligible
Manzanita			ALP-3	H	Irrigation ditch on Davis Property	Water Conveyance Feature AH6	Not Eligible
Manzanita			ALP-4	H	Olympia Church-Key opened Can	Isolate/Other AH16	Not Eligible
Markleevillage Outside APE	CA-ALP-238	P-02-315	ALP-5	B	Lithic Scatter on Markleeville Creek Terrace	Lithic Scatter - AP2, Trash Scatter - AH4	Eligible; Update DPR 523
Markleevillage			ALP-6	B	Lithic Scatter on Markleeville Creek Terrace	Lithic Scatter - AP2; Trash Scatter - AH4	Eligible
Markleevillage <i>Outside APE</i>			ALP-7	B	Lithic Scatter at Miller Property	Lithic Scatter - AP2; Trash Scatter - AH4	Not Eligible
Markleevillage			ALP-8	H	Evaporated milk can	Isolate/Other AH16	Not Eligible
Markleevillage	CA-ALP-269	P-02-346	Thornburg	P	Bedrock Milling Feature	Bedrock Milling Feature AP4	Not Eligible; Update DPR 523
Markleevillage	CA-ALP-270	P-02-347	Chavarin	P	Bedrock Milling Feature	Bedrock Milling Feature AP4	Eligible; Update DPR 523
Markleevillage	CA-ALP-271	P-02-348		P	Lithic Scatter; <i>unable to re-locate</i>	Lithic Scatter AP2	Not Eligible; Update DPR 523
Markleevillage	CA-ALP-272H	P-02-349		H	Can Dump; Mis-plotted	Dump/Trash Scatter AH4	Not Eligible; Update DPR 523
Markleevillage	CA-ALP-512	P-02-0658		H	Markleeville Town Ditch	Water conveyance Feature AH06	Not Eligible; DPR adequate
Markleevillage	CA-ALP-779	P-02-1056		H	Hot Springs Road	Roads, Trails, RR AH07	Not Eligible; DPR adequate
Markleevillage	CA-ALP-780	P-02-1057		H	Muller 1296 Circuit Transmission Line	Public Utility/Building HP09; Engineering Structure HP11	Not Eligible; DPR adequate

BOLD: resource is eligible for the California Register of Historic Resources; P: Prehistoric, H: Historic, B: Historic & Prehistoric

6.1 MANZANITA UNIT RESULTS

The Manzanita project area lies along the west side of Hwy. 89 just south of Woodfords, California. The northern quarter of the project area has been inventoried previously, and pedestrian access was denied. Open meadows characterize the eastern portion of the project area, and steep slopes define the western edge. No archaeological sites or built-environment resources were previously recorded within the unit. The record search showed that most prehistoric sites or contact period Native American sites occur along meadow margins or at the forest/meadow interface. Historic trash dumps parallel Hwy. 89 and the historic "Road to Woodfords".

Three sites and one isolated find were identified during the Manzanita archaeological survey (see map in Appendix B). ALP-1 consists of scattered historic debris and possible tent platform or dugout adjacent to a spring in the

southwest corner of Alpine County parcel APN 002-230-040-0, the Davis Property. One brown stoneware sherd is in the vicinity and cast iron stove parts are present. A shallow, rectangular 10-x-20-foot platform is excavated into the hill slope. Split rail fence posts with cut nails are present on site. ALP-1 contains few artifacts and is not considered eligible to the California Register of Historic Resources.

ALP-2 consists of a 10-foot-wide road or trail trace that trends northeasterly through on the Davis property in APN 002-230-050-0 and APN 002-230-048-0. The road alignment is discernible for approximately 240 feet yards before it disappears into a forested area with heavy duff. Slight berms and cut banks were noted where the road is discernible, and it is heavily utilized by cattle. The site is not is not considered eligible to the CRHR.

ALP-3 is a shallow, inactive irrigation ditch that generally follows the meadow edge in parcel APN 002-230-048-0. The ditch is 18 inches deep and four feet wide from berm to berm at its maximum. Banks are heavily slumped, and the ditch does not appear to have been recently used. ALP3 is not is not considered eligible to the CRHR.

ALP-4 is an isolated find single, steel, key opened Olympia beer can. It roughly dates to the 1950s or early 1960s. This isolated historic-period artifact is not considered eligible for the CRHR.

6.1.1 MANZANITA UNIT RECOMMENDATIONS

None of the resources identified within the Manzanita project area are considered eligible to the California Register of Historic Resources. Proposed fuel treatment activities will have no effect on historic resources within the fuel treatment unit.

Given poor ground surface visibility and dense vegetation encountered during fieldwork, archaeological, paleontological, and historical features could be encountered during any of the ground disturbance associated with the proposed projects. As always, if any human burials are encountered, work in that area must cease and the immediate area secured, so that the lead agency can contact the county coroner and, if appropriate, interested Tribes and the Native American Heritage Commission.

6.2 MARKLEEVILLAGE UNIT RESULTS

The Markleevillage project area is located south of Hot Springs Road 0.25 to 1.5 miles southwest of Markleeville. Scattered homesites characterize the core of Markleevillage. A large agricultural parcel, APN 002-340-001-0, lies west of Markleevillage and four undeveloped or lightly parcels lie to the east. Approximately 300 acres within and surrounding Markleevillage will be treated. Both APN 002-340- 001-0 and APN002-340-011-0 (160 acres) were previously inventoried for cultural resources. Seven previously recorded resources occur within the project area (see map in Appendix B). The sites within the project area were re-visited and resource documentation was updated, as necessary.

One dual-component site (ALP-238/P-02-315) lies just outside of the project area but was visited due to its proximity to proposed fuels reduction activities. That site along with CA-ALP-270/P-02-347, contains bedrock milling features, and lithic waste materials. Both sites retain integrity however, CA-ALP-270 lies just off Sawmill Road and no pestles or lithic materials were observed in the vicinity of the bedrock mortars, as indicated in the original site from. Both sites are considered eligible to the CRHR.

ALP-269/P-02-346 was originally recorded in 1990 and contained milling features along with a sparse lithic scatter. When revisited, the site location was re-mapped within an area 250 feet southeast of its original recording. Lithic materials were not observed and the bedrock grinding feature locations were not consistent with the site sketch map. The location was verified based upon the site location narrative, a standing water pipe, and utility pole depicted on the site sketch map. Slight grinding surfaces were present on the sides of two boulders. Water pipe

fragments were present in the vicinity, and light surface disturbance was present suggesting that the site may have been disturbed since its 1990 recording. The lack of site integrity suggests that ALP-269 is no longer eligible to the CRHR.

Based upon descriptions in the site record, ALP-272H/P-02-349 was re-located approximately 565 feet northeast of its mapped location. The site is a domestic refuse dump dating from the late 1930s to the 1940s. The site description is consistent with the 1990 site record; however the “bed spring” is actually springs from a car or truck seat. ALP272H is not eligible to the CRHR. The road bisecting ALP-271H/P-02-348 was walked from Markleeville Creek to the ridgetop in an attempt to relocate that site. No lithic materials were noted anywhere along the road as described in the 1990 site record. The site could not be re-evaluated.

Three linear cultural resources have previously been documented and evaluated along Hot Springs Road (Orvald et al. 2018). They consist of the Hot Springs Road alignment (ALP-779/P-02- 1056), the Muller 1296 Circuit Transmission Line (ALP-780/P-02-1057), and Markleeville Town Ditch (ALP-512/P-02-0658). Segments of each linear feature bisect portions of the Markleevillage project area. These historic resources were recorded/updated and evaluated in 2018. None meet the eligibility requirements of the CRHR.

Two new archaeological sites were located within the Markleevillage project area. ALP-6 consists of a dispersed scatter of debitage, glass, and ceramic fragments located on a terrace between Hot Springs Road and an along Markleeville Creek. The site contains two distinct concentration areas. No temporally diagnostic tools or groundstone are present. It is confined to a 270 sq. meter area along an open, southwest side of the low ridge. CA-ALP-238/P-02-315 lies atop another terrace 100 meters southeast of ALP-6. Additional research at ALP-6 could address pertinent research questions relating to ethno-historic land use within the eastern Sierra (CRHR Consideration D). Site ALP-6 is considered eligible to the CRHR.

Archaeological ALP-7 consists of a very small lithic scatter and tin cans located outside of the project area just south of APN 002-250-015-0 above a bend in Markleeville Creek. No temporally diagnostic tools or groundstone were observed at the site. Cultural materials appear to be confined to the site surface. Site ALP-7 is not considered eligible to the CRHR.

Resource ALP-8 consists of a single hole-in-top evaporated milk can located at the eastern edge of parcel APN 002-250-015-0. The isolated artifact not considered eligible for the CRHR.

Markleevillage subdivision proper consists of 136 parcels ranging in size from 0.27 to 5.0 acres. Nineteen of these parcels are undeveloped/vacant lots (see parcel map in Appendix G). Occupied lots were not surveyed for cultural resources. Vacant lots were photographed from adjacent streets and if potential resources (bedrock mortar stations, historic structures, etc.) were visible, they were physically inspected. No cultural resources were apparent on vacant lots within the Markleevillage subdivision.

6.2.1 MARKLEEVILLAGE UNIT RECOMMENDATIONS

Two previously recorded sites and one newly recorded site are considered eligible the CRHR within the Markleevillage project area. Site ALP-238/P-02-315 and ALP-270/P-02-347 contain bedrock grinding features and a surface archaeological component. ALP-6 is a lithic scatter with a historic component that may address important research questions. CA-ALP-269 consists of a disturbed milling station. While the site lacks integrity, it may be of cultural significance to the Washoe Tribe and should be treated as a significant resource.

Treatment activities within a 100-foot radius of each site boundary should be limited to hand thinning. Prior to initiation of fuels management activities, the buffered area surrounding the sites should be flagged for avoidance.

Mechanical thinning, access roads, skid trails, and staging should not be permitted within the buffered site boundary. Pile burning should not be conducted within the flagged boundaries.

ALP-238/P-02-315 lies just south of the Markleevillage project boundary. All fuels treatment activities should be restricted to the project boundaries to avoid adverse effects to this site. Adherence to the avoidance measures will result in no adverse effects to known cultural resources.

Given poor ground surface visibility and dense vegetation encountered during fieldwork, archaeological, paleontological, and historical features could be encountered during any of the ground disturbance associated with the proposed projects. As always, if any human burials are encountered, work in that area must cease and the immediate area secured, so that the lead agency can contact the county coroner and, if appropriate, interested Tribes and the Native American Heritage Commission.

6.3 BEAR VALLEY UNIT RESULTS

The Bear Valley project area is located within the western half of the Bear Valley Community in western Alpine County. It is bordered by Stanislaus Forest managed lands that have been previously treated. The project area covers approximately 130 acres, comprising 269 platted lots. The entire Bear Valley project area and its periphery have been previously inventoried for cultural resources. Four prehistoric archaeological sites have been recorded in or near the Bear Valley Community. While outside of the project area, they are a concern of the Washoe Tribe.

Of the 269 platted lots within the Bear Valley project area, 34 are undeveloped/vacant lots. Occupied lots were not surveyed for cultural resources. Vacant lots were photographed from adjacent streets and if potential resources (bedrock mortars, historic structures, etc.) were visible, they were physically inspected. An open meadow adjacent to SR-4 in the southeast corner of the project area was traversed at 15-meter intervals. Approximately 0.78 acres were inspected. No cultural resources were apparent on vacant lots within the Bear Valley project area.

6.3.1 BEAR VALLEY UNIT RECOMMENDATIONS

Hand thinning and community collection sites are prescribed for the Bear Valley project area. No cultural resources are located within the project boundaries. Proposed fuel treatment activities will have no effect on cultural resources within the Manzanita project area.

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APPENDIX A – KEY PERSONNEL RESUMES

Michael Drews



Education: B.A. Anthropology, University of San Francisco

Professional Experience

Great Basin Consulting Group, LLC - Carson City, Nevada, April 2014 to present

Director: Michael Drews created Great Basin Consulting Group, LLC (GBCG) in April 2014 after a long tenure with Gnomon, Inc. GBCG specializes in cultural resource consulting, inventory, and predictive modeling for Section 106, NEPA, and CEQA regulatory compliance for federal, state, and municipal governments; private industry and development; the military; and the scientific community in the western United States. Mr. Drews has over 40 years of experience conducting archaeological research with 13 years of experience developing and implementing cultural resource models using Geographic Information Systems (GIS).

Mr. Drews has provided expertise for a wide range of cultural resource management projects in the Great Basin, California, and the Pacific Northwest, including archaeological survey/testing/data recovery; geomorphology; faunal analysis; collections management; public outreach; built-environment assessment; and National Register of Historic Places (NRHP) and California Register of Historic Resources (CRHR) resource evaluation. Mr. Drews is proficient with ESRI software and GPS mapping systems, and Total Station survey. Mr. Drews has been listed as Principal Investigator in Prehistoric and Historic archaeology on BLM Nevada, Oregon, and Washington Cultural Resource Permits.

Gnomon, Inc., Carson City, Nevada, 2000 – March 2014

Cultural Resource Project Manager: Michael Drews managed cultural resource related projects for Gnomon, specializing in creation of cultural resource management systems, cultural resource inventories, predictive models, and NRHP evaluation.

Nevada Department of Transportation, Carson City, Nevada, 1991 – 2000

Archaeologist II: Nevada Department of Transportation, Carson City. Plan, coordinate, and supervise archaeological field projects related to development of highway right-of-way and materials sources.

Intermountain Research, Silver City, Nevada, 1982 – 1991

Staff Archaeologist: Coordinated and supervised field projects, mapping, drafting, and graphics department.

Ancient Enterprises, Santa Monica, California, 1978 – 1982

Staff Archaeologist: Supervised archaeological field projects in the Great Basin and Chumash cultural area of Southern California. Responsible for project budget, logistics, and report preparation.

ARCHEOTEC, Inc., Oakland California, 1976 – 1978

Archaeologist: Testing & monitoring for historic-period sites and cargo ship remains in San Francisco.

Appointments

Carson City Historic Resources Commission, 1989 – Present

Appointed to the Carson City Historic Resources Commission by the Carson City Board of Supervisors. Advises Board of Supervisors on matters concerning identification, designation, preservation and enhancement of sites and structures of historic significance. Elected Commission chairman 2004-2013 and 2016.

Preserve Nevada, 2015 – present

Preserve Nevada is a statewide nonprofit organization dedicated to the preservation of Nevada's cultural, historical, and archeological heritage. In partnership with the University of Nevada and the National Trust for Historic Preservation, Preserve Nevada's purpose is to help identify and meet the special needs of the state's preservation community - Member of Board of Directors.

Michael Drews



Sierra Front, Northwest Great Basin Resource Advisory Council, 2009 – 2012

Appointed to the Sierra Front/Northwest Great Basin Resource Advisory Council (RAC) by the Secretary of the Interior. RAC recommendations address public land issues, including: land-use planning, recreation, noxious weeds, and wild horse and burro herd management.

Carson River Advisory Committee, 1994 – 1997

Appointed to the Carson River Advisory Committee representing Cultural Resource, Native American and Virginia & Truckee Railroad (V&T) issues. Development and implementation of the Carson River Master Plan.

Select Cultural Resource Projects

2014-2019: Conducted various Cultural Resource Inventory, Cultural Resource Monitoring, Cultural Resource Sensitivity Modeling, GIS development and spatial analysis projects for Great Basin Consulting Group, LLC. Clients included engineering firms, local governments, mining companies, and public utilities.

2000-2014: Cultural Resource Inventory projects, Cultural Resource Information System Development and Cultural Resource Sensitivity Modeling for Gnomon, Inc. GIS/database programming and spatial analysis.

2007: Data conversion of selected archival records and maps at the Northwest Information Center and North Coastal Information Center/ California Office of Historic Preservation for Natural Resource Conservation Service.

2005: Examination of Fire Effects on Prehistoric Period Cultural Resources in Nevada. With MACTEC Engineering, conducted a study on the effects of fire on selected classes of cultural resources for the Nevada Bureau of Land Management.

2004: Cultural Resources Predictive Modeling for the Humboldt Toiyabe National Forest. Created an environmental based cultural resource model for fire management and grazing on Forest Service lands.

2004-1979: Principal Investigator, Field Supervisor and Crew Chief for various cultural resource inventory and mitigation projects in Nevada, California, Oregon, and Wyoming.

Professional Affiliations

Great Basin Archaeological Association
Society for California Archaeology
Society for Historic Archaeology
Society for American Archaeology

Tucker Orvald, M.S., RPA



Education

M.S., Cultural Resource Management, Central Washington University (CWU), Ellensburg
B.A. Anthropology, University Washington, Seattle

Professional Profile

Tucker Orvald is a Secretary-of-Interior (SOI) Qualified Archaeologist with proven skill developing and implementing effective cultural resource regulatory compliance strategies for a wide range of undertakings. Mr. Orvald has 25+ years experience in professional archaeology with focus on prehistory, contextual history, pedestrian survey, Section-106 assessment, technical reporting, editing, and mapping systems. He has served as faculty research associate and as professional archaeologist for several consulting shops and has with sound experience working in Nevada, California, Washington, Oregon, Utah, and Idaho. He is author, co-author, and editor of more than 250 technical reports.

Tucker has a broad knowledge base in North American archaeology, cultural resource management (CRM), and the rigors of conducting fieldwork across the Intermountain West. He has proficiency conducting cultural resource investigations for compliance with Sections 106 and 110 of the National Historic Preservation Act, CEQA, Washington's State Environmental Quality Act (SEPA), and NEPA team experience. He has operated as a professional archaeologist conducting records searches, pedestrian surveys, testing, treatment plan formulation, data recovery, and monitoring projects under review of the Bureau of Land Management (BLM), National Park Service, Bureau of Reclamation, Army Corps of Engineers, Forest Service, Department of Defense, and the FCC. He also has completed 100 Section 106/NEPA telecom projects.

Work History

Principal Investigator - Great Basin Consulting Group, Carson City, Nevada, April 2020 – Present

Principal Investigator - Trileaf Corporation, Carson City, Nevada, 2019-2020

Principal Investigator - Farwestern Anthropological Research Group, Carson City, Nevada, 2013-2018

Principal Investigator - ASM Affiliates, Reno, Nevada, 2011-2012

Co-Director Central Washington Archaeological Survey & Faculty Research Associate - CWU, 2005-2011

Principal - Northwest Geocultural Consulting, Ellensburg, Washington, 2006-2013

Field Director - Tetra Tech FW, Bothell, Washington, 2004-2005

Field Director & GPS Mapping Specialist - Earth Imaging Associates, Ellensburg, Washington, 2000-2004

GIS Technician - Yakima County GIS Department, 1999-2001

Archaeologist - Archaeological & Historical Services, Cheney, Washington, 1996-1999

Crew Chief & Cartographer - Far Western, Davis, California, 1993-1996

Lead Archaeological Field Technician - InfoTech Research, Eugene, Oregon, 1991-1992

Archaeological Technician - Mendocino National Forest, Stonyford, California, 1989-1990 (summers)

Certifications & Affiliations

Register of Professional Archaeologists (RPA No. 9089383)

State of Nevada Antiquities Permit: Principal Investigator/Field Director

BLM Nevada Permitted Principal Investigator (statewide prehistoric & historic archaeology)

BLM California Permitted Principal Investigator

State of Utah Permitted Principal Investigator (No. 316)

Oregon Qualified Archaeologist (ORS 390.235)

Washington State Department of Archaeology & Historic Preservation WISAARD access

Barrick Gold Courageous Leadership Training, Elko, Nevada

Mine Safety & Health Administration (MSHA) surface miner training certificate

Earthwatch Institute Research Project Training, Ipswich Massachusetts

APPENDIX B – INVENTORY RESULTS MAPS

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APPENDIX C – CCIC RECORDS SEARCH LETTER



CENTRAL CALIFORNIA INFORMATION CENTER

California Historical Resources Information System
Department of Anthropology - California State University, Stanislaus
One University Circle, Turlock, California 95382
(209) 667-3307

Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus & Tuolumne Counties

Date: 6/11/2020

Records Search File No.: 11413K
Access Agreement: #281
Project: Alpine County Wildland Urban
Interface Fuels Management Project:
Bear Valley, Manzanita, Markleevillage
Project Areas

Michael Drews
Great Basin Consulting Group, LLC
200 Winters Drive
Carson City, Nevada 89703
775-560-5807

mdrews@greatbasingroup.com

Dear Mr. Drews:

The Central California Information Center received your record search request for the project areas and radii referenced above, located on the Markleeville, Tamarack and Woodfords 7.5' quadrangles in Alpine County and Calaveras County. The following reflects the results of the records search for the project study area and radius:

As per data currently available at the CCalC, the locations of resources/reports are provided in the following format: custom GIS maps shape files hand-drawn maps

Summary Data: Bear Valley

Resources within the project area:	2: P-02-000182, 364
Resources within the 1-mile radius:	40: See Resource Database List and Excel Spreadsheet
Reports within the project area:	11: AP-00034, 168*, 169* 1683*, 1787, 1935, 3324, 3510, 5527, 5748, 9146* *Also reported on in Calaveras County with the same number; duplicate reports not sent
Reports within the 1-mile radius:	49: See Report Database List and Excel Spreadsheet

(See Bear Valley folder for copy of Reply letter)

Summary Data: Manzanita

Resources within the project area:	2: P-02-000705, 707
Resources within the 1-mile radius:	51: : See Resource Database List and Excel Spreadsheet
Reports within the project area:	6: AP-00021, 5498*, 5501*, 5507*, 6083, 9146* *Duplicate reports for other areas, copy sent only once
Reports within the 1-mile radius:	30: See Report Database List and Excel Spreadsheet

Summary Data: Markleevillage

Resources within the project area:	8: P-02-000346, 347, 348, 349, 548, 658, 1056, 1057
Resources within the 1-mile radius:	72: : See Resource Database List and Excel Spreadsheet
Reports within the project area:	10: AP-000002, 4, 20, 36, 1477, 1478, 3050*, 4310, 4734, 8743 *Duplicate report for other area, copy sent only once
Reports within the 1-mile radius:	17: See Report Database List and Excel Spreadsheet

- Resource Database Printout (list):** enclosed not requested nothing listed
- Resource Database Printout (details):** enclosed not requested nothing listed
- Resource Digital Database Records:** enclosed not requested nothing listed
- Report Database Printout (list):** enclosed not requested nothing listed
- Report Database Printout (details):** enclosed not requested nothing listed
- Report Digital Database Records:** enclosed not requested nothing listed
- Resource Record Copies:** enclosed not requested nothing listed
- Report Copies:** enclosed not requested nothing listed

- OHP Historic Properties Directory: New Excel File: Built Environment Resource Directory (BERD) Dated 12/17/2019 (no charge)** enclosed not requested nothing listed
- Archaeological Determinations of Eligibility:** enclosed not requested nothing listed
- CA Inventory of Historic Resources (1976):** enclosed not requested nothing listed

Complete Alpine County information for the three data-sets above is provided for your use in determining if any of the resources are listed in your project areas/radii. **See Bear Valley folder.**

- Caltrans Bridge Survey:** enclosed not requested nothing listed
- Ethnographic Information:** enclosed not requested nothing listed
- See data in reports
- Historical Literature:** enclosed not requested nothing listed
- See data in reports

Historical Maps:

Data not available at this time

enclosed not requested nothing listed

Local Inventories:

enclosed not requested nothing listed

GLO and/or Rancho Plat Maps:

enclosed not requested nothing listed

T7N R17E 1879

T10N R20E 1877

See Bear Valley folder.

Shipwreck Inventory:

not available at CCIC; please go to

http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp

Soil Survey Maps:

not available at CCIC; please go to

<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Note: Billing will be transmitted separately via email by our Financial Services office *(\$4797.88), payable within 60 days of receipt of the invoice.

If you wish to include payment by Credit Card, you must wait to receive the official invoice from Financial Services so that you can reference the CMP # (Invoice Number), and then

contact the link below:

<https://commerce.cashnet.com/ANTHROPOLOGY>

Sincerely,

E. A. Greathouse

E. A. Greathouse, Coordinator
Central California Information Center
California Historical Resources Information System

* Invoice Request sent to: Laurie Marroquin CSU Stanislaus Financial Services
lamarroquin@csustan.edu

APPENDIX D – MANZANITA RECORDS SEARCH

PREVIOUSLY RECORDED CULTURAL RESOURCES

CONFIDENTIAL - Portions Redacted for Public Review

MANZANITA RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000100	CA-ALP-000404H	TY-4158; Old Alpine State Highway	Historic	AH07	AP-02933, -05498, -05501, -05507, CA-05498	-
P-02-000101	CA-ALP-000405H	-	Historic	AH04; AH05; AH06; AH11	AP-02933, -05498, -05501, -05507, CA-05498	-
P-02-000102	CA-ALP-000406H	-	Historic	AH07	AP-02933, -05498, -05501, -05507, -08916, CA-05498	-
P-02-000108	CA-ALP-000006	-	Prehistoric	AP14	AP-01441	-
P-02-000110	CA-ALP-000008	Votaw 1	Prehistoric, Proto-historic, Historic	AH16; AP16	AP-01441	-
P-02-000115	CA-ALP-000013	-	Prehistoric	AP02; AP16	-	-
P-02-000116	CA-ALP-000014	-	Prehistoric	AP02; AP04; AP16	-	-
P-02-000158	CA-ALP-000056	-	Prehistoric	AP04; AP16	AP-00013	-
P-02-000165	CA-ALP-000063	-	Prehistoric	AP02; AP04	AP-00013, -00022, -01480, -03016, -07055	-
P-02-000186	CA-ALP-000105	-	Prehistoric	AP02; AP15	AP-00005, -01481, -05498, -05501, -05507, CA-05498	-
P-02-000202	CA-ALP-000121H	-	Historic	AH04	AP-00039	-
P-02-000203	CA-ALP-000122H	JS-SLT-3; Combined with P-02-000408 under that number	Historic	AH02	AP-00039, -03016	-
P-02-000204	CA-ALP-000123H	-	Historic	AH04	AP-00039	-

MANZANITA RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000205	CA-ALP-000124	JS-SLT-5	Prehistoric	AP02	AP-00039, -03016, AP-07055	-
P-02-000228	CA-ALP-000147	-	Prehistoric	AP02; AP05; AP15		-
P-02-000277	CA-ALP-000196H	Mormon-Carson Emigrant Trail; Carson Pass Emigrant Road; Old Emigrant Road; CHL No. 661	Historic	AH07; HP37	AP-00014, -00025, -00037, -00038, -03465, -05498, -05501, -05507, -07409, -07430, CA-05498	-
P-02-000332	CA-ALP-000255H	Woodfords Washoe Tribe Cemetery	Historic	AH12; HP40	AP-00055, -05498, -05501, -05507, CA-05498	-
P-02-000337	CA-ALP-000260/H	Fowler Site	Prehistoric, Historic	AH04; AH16; AP02; AP04	AP-00021, -05498, -05501, -05507, CA-05498	-
P-02-000407	CA-ALP-000407/H	HR-1	Prehistoric, Historic	AH04; AP04	AP-03016	-
P-02-000408	CA-ALP-000408H	HR-2; Combined Sites CA-ALP-408H & -122H	Historic	AH02; AH03; AH04; AH05; AH06; AH07; AH11	AP-03016, -05498, -05501, -05507, CA-05498	-
P-02-000409	CA-ALP-000409H	Hawkins Ranch; Milberry Home	Historic	HP02; HP04; HP33	AP-03016, -05498, AP-05501, -05507, CA-05498	-
P-02-000486	-	Pony Express Remount Station at Woodfords; CHL 805	Historic	HP26	-	-
P-02-000531	CA-ALP-000482/H	WQ-1	Prehistoric, Historic	AH04; AP02; AP04	AP-04209, AP-05507	-

MANZANITA RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

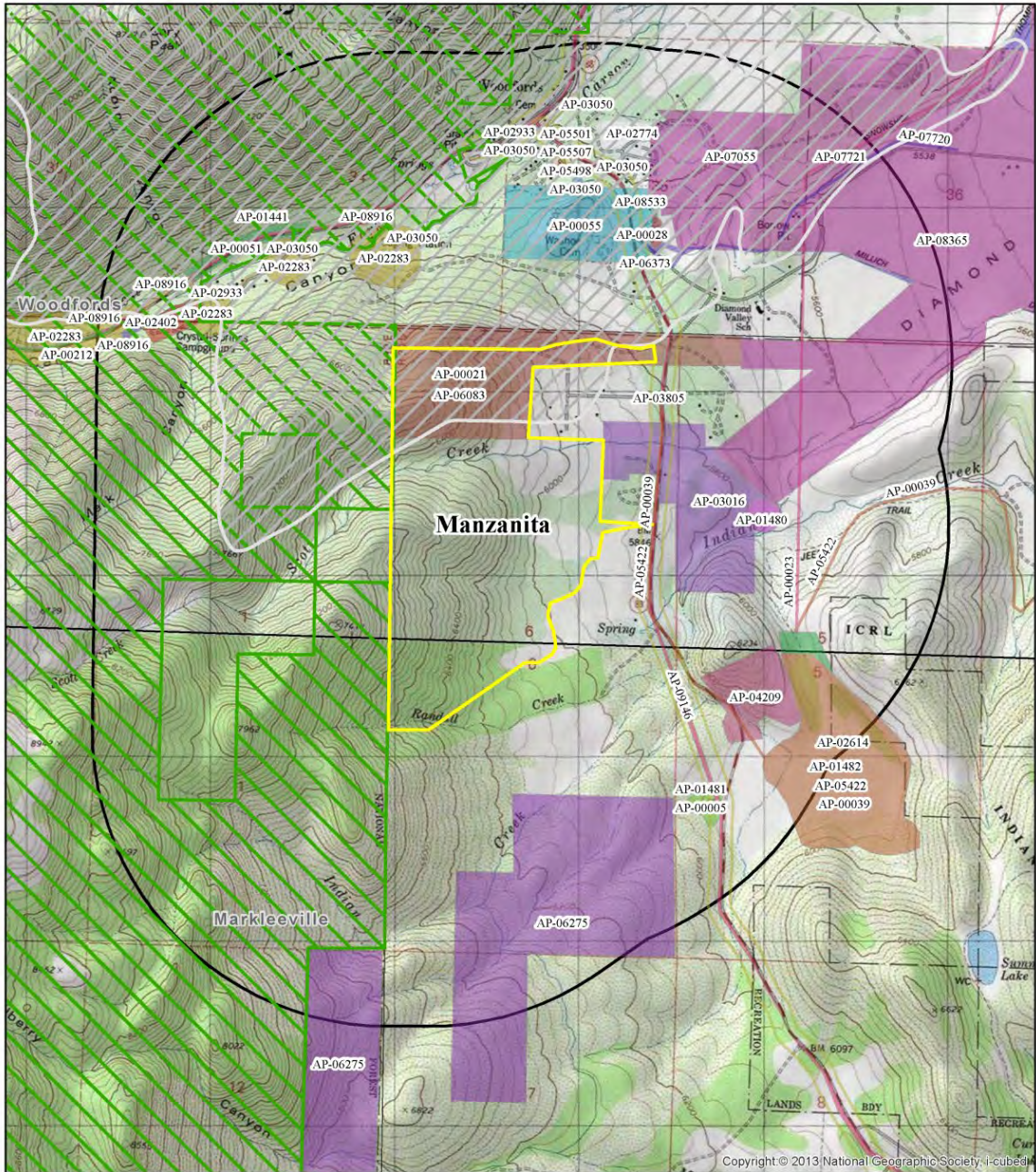
PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000532	CA-ALP-000483H	JR-6 / Old Highway 89	Historic	AH04; HP19; HP37	AP-04209, -05431, -05498, -05501, -05507, -08101, CA-05498	-
P-02-000533	-	WQ-FL-1	Historic	HP46	AP-04209, -05498, -05501, -05507, CA-05498	-
P-02-000534	-	WQ-LF-2	Historic	HP46	AP-04209	-
P-02-000535	-	WQ-IF-1	Prehistoric	AP02	AP-04209	-
P-02-000536	-	WQ-IF-2	Prehistoric	AP02	AP-04209	-
P-02-000537	-	WQ-IF-3	Prehistoric	AP02	AP-04209	-
P-02-000538	-	WQ-IF-4	Prehistoric	AP02	AP-04209	-
P-02-000539	-	WQ-IF-5	Prehistoric	AP02	AP-04209	-
P-02-000612	CA-ALP-000716	FL-104; 4170613366	Prehistoric	AP02; AP04	AP-05498, -05507	-
P-02-000704	CA-ALP-000531H	RB-1	Historic	AH04; AH07	AP-06083	-
P-02-000705	-	ISO-1	Historic	AH16	AP-06083	Yes; Isolated Find
P-02-000706	-	ISO-2	Prehistoric	AP02	AP-06083	-
P-02-000707	-	ISO-3	Historic	AH04	AP-06083	Yes; Isolated Find
P-02-000712	-	-	Prehistoric	AP04	-	-
P-02-000716	CA-ALP-000539H	RKL-4	Historic	HP20	AP-06275	-

MANZANITA RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000720	CA-ALP-000543H	RKL-8	Historic	AH04	AP-06275	-
P-02-000721	CA-ALP-000544H	RKL-9	Historic	AH04; AH10	AP-06275	-
P-02-000738	-	Iso-O	Prehistoric	AP16	AP-06275	-
P-02-000739	-	Iso-P	Prehistoric	AH16	AP-06275	-
P-02-000740	-	Iso-Q	Prehistoric	AH16	AP-06275	-
P-02-000741	-	Iso-R	Prehistoric	AH15	AP-06275	-
P-02-000742	-	Iso-S	Prehistoric	AH16	AP-06275	-
P-02-000743	-	Iso-T	Prehistoric	AP16	AP-06275	-
P-02-000821	CA-ALP-000584H	04170107097	Historic	AH04; HP30	AP-06948	-
P-02-000838	CA-ALP-000599/H	PA-07-G58	Prehistoric, Historic	AH03; AP04; HP02	AP-07055	-
P-02-000956	CA-ALP-000709H	4170613367; Irrigation Ditch 1	Historic	AH06	-	-
P-02-000957	CA-ALP-000710	4170613368; BRM 1	Prehistoric	AP04	-	-
P-02-000958	CA-ALP-000711H	4170613369; Meadow Debris	Historic	AH04	-	-
P-02-001043	CA-ALP-000769H	Alpine County Road House, Road Commissioner's House	Historic	AH04; HP01; HP02	AP-08533	-
P-02-001057	CA-ALP-000780H	Muller 1296 Circuit Transmission Line	Historic	HP09; HP11	AP-08743, -08916	-

BOLD: Resource is located in the survey area.

MANZANITA SURVEY AREA – PREVIOUS STUDIES

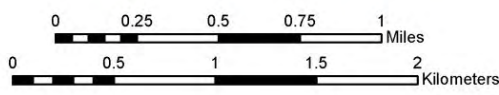


USGS Woodfords, USGS Markleeville 7.5 min
T.11N. R.19E., T.10N. R.20E., T.10N. R.21E.

Legend

- Project Area
- Record Search Buffer
- NV_Fires_1910_1999
- BasicOwnershipR4_HTNF_20180924

Report Number	AP-00055	AP-02283	AP-03050	AP-06083	AP-08365	AP-00039
AP-00005	AP-00212	AP-02402	AP-04209	AP-06275	AP-08533	AP-03059
AP-00021	AP-01441	AP-02614	AP-05422	AP-06373	AP-08916	AP-05422
AP-00028	AP-01480	AP-02774	AP-05498	AP-07055	AP-03805	AP-07720
AP-00039	AP-01481	AP-02933	AP-05501	AP-07564	AP-00023	AP-09146
AP-00051	AP-01482	AP-03016	AP-05507	AP-07721		



MANZANITA RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-00005	<i>Final Report: Phase II Archaeological Investigations at 4-ALP-105 on Highway 89 Between Woodfords and Markleeville, California</i>	1976	Cook, R. A.	Office of Environmental Planning	NADB-R-1360010
AP-00021	<i>Fowler Fire Salvage Timber Sale, Cultural Resources Survey Report</i>	1989	Hardy, K. D.	Kathryn D. Hardy, Archaeologist; for James Oden, RPF, for CDF project	NADB-R-1360033
AP-00023	<i>Cultural Resources Report Addendum: Alpine County, California, An Archaeological Survey of Proposed Wastewater Facilities Modifications, Diamond Valley, Alpine County, California (IMR #442A)</i>	1983	Elston, R. G., and C. Callaway	Intermountain Research	NADB-R-1360020
AP-00028	<i>A Cultural Resources Reconnaissance of the Fire Station at the Public Works Complex, Woodfords, Alpine County, California</i>	1984	Lindstrom, S. G.	Susan G. Lindstrom, Archaeological Consultant; for Alpine County	NADB-R-1360051
AP-00039	<i>Cultural Resource Assessment of the Proposed South Lake Tahoe Public Utilities District Wastewater Treatment Facilities, Phase II</i>	1978	Peak, A. S.	Ann S. Peak and Associates, Consulting Archaeology; for South Lake Tahoe Public Utilities District	NADB-R-1360061
AP-00051	<i>Negative Archaeological Survey Report; 10-Alpine-88; PM 17.9/18.3</i>	1990	Schulte, J. L.	Department of Transportation	NADB-R-1360078
AP-00055	<i>Cultural Resources Report; Woodfords Land Exchange; Report TY-87-451; Carson Ranger District</i>	1987	Turner, A. L.	Carson Ranger District, Toiyabe National Forest; USDA USFS	NADB-R-1360081; TY-87-451
AP-00212	<i>Cultural Resources Scoping on Alp-88, P.M. R16.3/17.3</i>	1991	Nissen, K.	Karen Nissen, Dist. 6, Environmental Analysis Branch B	NADB-R-1360057
AP-01441	<i>Some Archaeological Sites and Cultures of the Central Sierra Nevada [EXCERPT]. Reports of the University of California Archaeological Survey No. 21:8-9</i>	1953	Heizer, R. F., and A. B. Elsasser	University of California Berkeley Dept. of Anthropology	NADB-R-1360038
AP-01480	<i>Test Excavation of 4-ALP-63, Alpine County, California</i>	1985	Zeier, C. D., C. Callaway, R. Clerico, and D. Zerga	Intermountain Research	NADB-R-1360085

MANZANITA RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-01481	<i>Draft Report: Phase II Archaeological Investigations at 4-ALP-105 on Highway 89 Between Woodfords and Markleeville, California</i>	1975	Cook, R. A.	Office of Environmental Planning	NADB-R-1360008
AP-01482	<i>Cultural Resources Assessment for the Tahoe Regional Environmental Evaluation Study</i>	1979	Desgrandchamp, C., and D. Chavez	Sedway/Cooke, Urban and Environmental Planners and Designers	NADB-R-1360013
AP-02283	<i>A Cultural Resources Inventory Report of the Woodfords Salvage Timber Sale Alpine County, California, USFS Report No. TY-93-774</i>	1993	Lang, S., D. Lanner, and R. Palmer	Carson Ranger District, Toiyabe National Forest; for USDA USFS	NADB-R-1361110
AP-02402	<i>Toiyabe National Forest Cultural Resource Narrative Report: Crystal Springs and Silver Creek Campground Maintenance Project</i>	1994	Baldrice, M.	Toiyabe National Forest	NADB-R-1361023
AP-02614	<i>Cultural Resources Assessment for the Tahoe Regional Environmental Evaluation Study</i>	1979	Desgrandchamp, C., and D. Chavez	Cindy Desgrandchamp and David Chavez	NADB-R-1361991
AP-02774	<i>Archaeological Survey of the Proposed Flora James Homestead in Woodfords, Alpine County, California</i>	1996	Stornetta, S.	Intermountain Research; for Washoe Tribe of Nevada and California	NADB-R-1362396
AP-02933	<i>South Tahoe Public Utility District C-Line Emergency Pipeline Replacement Project, Cultural Resources Investigation</i>	1996	Brown, J. L. M. A.	Harland Bartholomew & Associates; for STPUD and USDA USFS Toiyabe National Forest	NADB-R-1362445
AP-03016	<i>Cultural Resources Investigations of Hawkins Ranch Near Woodfords, Alpine County, California</i>	1997	Shapiro, L. A.	Pacific Legacy & Foothill Resource; for R.O. Anderson Engineering	NADB-R-1363617
AP-03050	<i>Cultural Resources Worksheet for Use if Activity is an Intrusive Undertaking (Cat. A or B) [various projects for repair and stabilization of fluvial damage]</i>	1997	Durham, G.	NRCS, US Department of Agriculture	NADB-R-1362503
AP-03059	<i>Historic Property Survey Report (No Effect) for a Proposed Truck Climbing Lane on Highway 88, Alpine County, California; 10-ALP-88 PM 16.5/17.3, EA 351800</i>	1995	Page, S. E.	Environmental Branch "B" Department of Transportation District 10	NADB-R-1362859

MANZANITA RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-03805	<i>Department of Transportation Negative Archaeological Report 10-ALP-89 PM 20.1 10-170, 10-926932</i>	1999	Hibbard, C.	Caltrans District 10	NADB-R-1363806
AP-04209	<i>Heritage Resource Inventory, Woodsfords Quarry, 40 Acres near Woodsfords, California, Alpine County</i>	1998	Lindstrom, S.	Susan Lindstrom, Consulting Archaeologist	NADB-R-1364097
AP-05422	<i>South Lake Tahoe Public Utility District Wastewater Disposal, El Dorado and Alpine Counties, California; Phase I</i>	1978	Peak and Associates, Inc.	Ann S. Peak & Associates, Consulting Archeology; for South Lake Tahoe Public Utilities District	NADB-R-1365306
AP-05498	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume I: Summary of Methods and Findings</i>	2004	Leach-Palm, L., P. Mikkelsen, J. King, J. Hatch, and B. Larson	Far Western	NADB-R-1366177
AP-05501	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume III: Geoarchaeological Study</i>	2004	Rosenthal, J. S. and J. Meyer	Far Western	NADB-R-1365435
AP-05507	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume II A: Alpine County</i>	2004	Leach-Palm, L., J. King, J. Hatch, and B. Larson	Far Western	NADB-R-1365429
AP-06083	<i>A Class III Cultural Resources Inventory of 148 Acres for the Granite Ridge Development Project, Alpine County, California (DRAFT)</i>	2006	Bowers, R. J.	Summit EnviroSolutions; for Greg Painter, Genoa, NV	NADB-R-1365986
AP-06275	<i>A Class III Cultural Resources Survey of 800 Acres Between Woodfords and Markleeville, Alpine County, California</i>	2006	Bowers, R. F.	Summit EnviroSolutions	NADB-R-1366501
AP-06373	<i>Cultural Resources Inventory Negative Report, Alpine County Health and Human Services Building Expansion and Woodfords Fire Department Water Tank Survey.</i>	2007	Hall, S.	Summit EnviroSolutions; for Alpine County and Woodfords Fire Dept.	NADB-R-1366598

MANZANITA RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-07055	<i>Determination of Eligibility and Effect for the South Tahoe Public Utilities District Recycled Water Facilities Master Plan, Diamond Valley, Alpine County, California.</i>	2008	Peak & Associates. Inc.	Peak & Associates; for Stantec Consulting	NADB-R-1367364
AP-07564	<i>Figuroa Masonry Stone Collection Sites in Cloudburst Canyon and Crystal Springs, R2012041702179, Humboldt-Toiyabe National Forests, Cultural Resource Narrative Report, Negative Inventory, Alpine County, CA</i>	2011	Garotto, J.	Carson Ranger District	NADB-R-1367924; USFS - R2012041702179
AP-07720	<i>Determination of Eligibility and Effect for the Diamond Valley Ranch Pipeline Project, Alpine County, California</i>	2011	Peak & Associates, Inc.	Peak & Associates; for SLTPUD	NADB-R-1368094
AP-07721	<i>Determination of Eligibility and Effect for the Diamond Valley Ranch Pipeline Project, Alpine County, California.</i>	2010	Peak & Associates, Inc.	Peak & Associates; for Hauge Brueck Associates	NADB-R-1368095
AP-08365	<i>Determination of Eligibility and Effect for the Diamond Valley Irrigation Improvements Project, South Tahoe Public Utilities District Recycled Water Facilities Revised Phase I Project Area, Diamond Valley, Alpine County, California; Clean Water State Revolving Fund (CWSRF) No. 5608-110.</i>	2013	Peak, M.A., and Gerry, R.A.	Peak & Associates; for Hauge Brueck Associates & South Tahoe Public Utility District	-
AP-08533	<i>A Cultural Resource Inventory and Architectural Evaluation for the Proposed Alpine County Behavioral Health Center, nar Woodfords, Alpine County, California</i>	2016	Schmitter, M. and M. Drews	Great Basin Consulting Group; for Alpine Co. Community Development	-
AP-08916	<i>Cultural Resources Inventory of State Routes 4, 88, and 89 in Humboldt-Toiyabe National Forest, Alpine County, California</i>	2018	Higgins, C., A. Whitaker, A. McCabe, S. Waechter, K. Colligan, and M. Sanchez	Far Western	USFS - R2018041702755
AP-09146	<i>Archaeological Survey Report, 2018 Hazard Tree Removal Project, State Routes 4, 26, 88, 89, and 207, Caltrans District 10, Alpine, Amador and Calaveras Counties, California</i>	2019	Waechter, S.	Far Western	-

BOLD: Previous study footprint located within the survey area.

APPENDIX E – MARKLEEVILLAGE RECORDS SEARCH

MARKLEEVILLAGE SURVEY AREA – PREVIOUSLY RECORDED CULTURAL RESOURCES

CONFIDENTIAL - Portions Redacted for Public Review

MARKLEEVILLAGE RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000111	CA-ALP-000009	-	Prehistoric	AP02	AP-01441	-
P-02-000200	CA-ALP-000119/H	Mose Joe Place; Simpson Joe Place	Prehistoric, Historic	AH04; AH16; AP02; AP04; AP09; AP16	AP-00020	-
P-02-000311	CA-ALP-000234	Prehistoric #7	Prehistoric	AP02; AP12	-	-
P-02-000314	CA-ALP-000237/H	#60-Gigli Hill Site	Prehistoric, Historic	AH16; AP02; AP15; AP16	AP-02785	-
P-02-000315	CA-ALP-000238	#20-Ted Bacon Forest Site	Prehistoric	AP15	AP-02785	-
P-02-000316	CA-ALP-000239	Mortar Rock-2 (PVCr)	Prehistoric	AP04	AP-02785	-
P-02-000317	CA-ALP-000240	Gigli Mortar Rock	Prehistoric	AP04	AP-02785	-
P-02-000318	CA-ALP-000241	Mortar Rock-1 (PVCr)	Prehistoric	AP04	AP-02785	-
P-02-000319	CA-ALP-000242/H	#10-Ted Bacon Camp Site	Prehistoric, Historic	AH04; AP15	AP-02785	-
P-02-000320	CA-ALP-000243	#40-Hot Springs Roadside Site	Prehistoric	AP02	AP-02785	-
P-02-000321	CA-ALP-000244	#140-Ditch Site	Prehistoric	AP02	AP-02785	-
P-02-000322	CA-ALP-000245	#30-Three Bead Site	Prehistoric	AP15	AP-02785	-
P-02-000323	CA-ALP-000246/H	#170-Susie Site	Prehistoric, Historic	AH16; AP15	AP-02785	-
P-02-000324	CA-ALP-000247	Peninsula Site	Prehistoric	AP02; AP15	AP-02785	-
P-02-000346	CA-ALP-000269	Thornburg	Prehistoric	AP02; AP04	AP-00036	Yes

MARKLEEVILLE RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000347	CA-ALP-000270	Chavarin	Prehistoric	AP02; AP04; AP15	AP-00036	Yes
P-02-000348	CA-ALP-000271	-	Prehistoric	AP02	AP-00036	Yes
P-02-000349	CA-ALP-000272	-	Historic	AH04	AP-00036	Yes
P-02-000350	CA-ALP-000273/H	Alpine County Museum (site)	Prehistoric, Historic	AH04; AH15; AP04	AP-00052, -05498, -05501, -05507, CA-05498	-
P-02-000448	CA-ALP-000439H	Big Trees-Carson Valley Turnpike (Big Trees Road); FS # TY-4080; TY-4080; 04170115028	Historic	AH07; HP11; HP37; HP46	AP-03275, -05498, -05501, -05507, -06848, -08916, -09146, CA-05498	-
P-02-000462	-	Alpine County Library	Historic	HP15	AP-02212	-
P-02-000463	-	Alpine County Courthouse	Historic	HP14	AP-02212, -05498, -05501, -05507, CA-05498	-
P-02-000464	-	6120-0007-0000, on Main St.	Historic	HP02	AP-02212	-
P-02-000465	-	Alpine Hotel / Cutthroat Saloon / Hot Springs Hotel	Historic	HP05	AP-02212	-
P-02-000466	-	Markleeville General Store	Historic	HP06	AP-02212	-
P-02-000467	-	6120-0010-0000, 39 Montgomery St.	Historic	HP02	AP-02212	-
P-02-000468	-	6120-0011-0000, 41 Montgomery St.	Historic	HP02	AP-02212, -05431	-
P-02-000469	-	6120-0012-0000, 43 / 45 Montgomery St.	Historic	HP02	AP-02212, -05431	-
P-02-000470	-	6120-0013-0000, 47 Montgomery St.	Historic	HP02	AP-02212, -05431	-

MARKLEEVILLAGE RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000471	-	New Webster School House	Historic	HP15	AP-02212	-
P-02-000473	-	Bridge 31-0002 (SR 89 at Markleeville Creek)	Historic	HP19	-	-
P-02-000474	-	Old Log Jail	Historic	HP14	AP-00052, -02212, -05498, -05501, -05507, CA-05498	-
P-02-000475	-	Old Webster Schoolhouse	Historic	HP15	AP-00052, -02212	-
P-02-000476	-	Historical Complex (Old Log Jail, Old Webster Schoolhouse, and the modern museum)	Historic	HP14; HP15; HP39	AP-00052, -02212	-
P-02-000488	-	Markleeville Guard Station; Alpine Ranger Station; FS # TY-4425	Historic	HP14; HP35	AP-03453, -05498, -05501, -05507, CA-05498	-
P-02-000547	-	AP 4310-1	Prehistoric	AP02	AP-04310	-
P-02-000548	-	AP 4301-2	Prehistoric	AP02; AP08	AP-04310	Yes
P-02-000549	-	AP 4301-3	Prehistoric	AP02; AP08	AP-04310	-
P-02-000550	-	AP 4301-4	Prehistoric	AP16	AP-04310	-
P-02-000597	-	I-1	Prehistoric	AH16	AP-04734	-
P-02-000598	-	I-2	Prehistoric	AP16	AP-04734	-
P-02-000599	-	I-3	Prehistoric	AP16	AP-04734	-
P-02-000600	-	I-4	Prehistoric	AP16	AP-04734	-
P-02-000601	-	I-5	Historic	AH16	AP-04734	-

MARKLEEVILLE RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000602	-	Red House THP Site 1-Historic Camp Site	Historic	HP27	AP-04811	-
P-02-000647	CA-ALP-000506H	JL-45; Mayo Ditch	Historic	AH06; HP20	AP-05507	-
P-02-000648	CA-ALP-000507H	JL-47	Historic	AH06; HP11	AP-05431, -05507, -07474, CA-07474	-
P-02-000655	CA-ALP-000509/H	JR-2	Prehistoric, Historic	AH04; AH09; AP02	AP-05431, -08101	-
P-02-000656	CA-ALP-000510/H	JR-3	Prehistoric, Historic	AH04; AH16; AP04	AP-05431, -08101	-
P-02-000657	CA-ALP-000511H	JR-4	Historic	AH01; AH04	AP-05431, -08101	-
P-02-000658	CA-ALP-000512H	JR-5; Old Markleeville Town Ditch	Historic	AH06	AP-05431, -08101, -08743	Yes
P-02-000659	CA-ALP-000513/H	JR-1	Prehistoric, Historic	AH02; AH04; AH06; AH15; AP02; AP04; HP09; HP20	AP-05431, -08101	-
P-02-000862	CA-ALP-000621	BLM # CrNV-03-6835; Pacific Legacy # ALP-A22	Prehistoric	AP02	AP-07349	-
P-02-000863	CA-ALP-000622H	BLM # CrNV-03-6836; Pacific Legacy # ALP-A23	Historic	AH04; AH11	AP-07349	-
P-02-000864	CA-ALP-000623	BLM # CrNV-03-6837; Pacific Legacy # ALP-A24	Prehistoric	AP02	AP-07349	-
P-02-000865	CA-ALP-000624H	BLM # CrNV-03-6838; Pacific Legacy # ALP-A25	Historic	AH04	AP-07349	-

MARKLEEVILLE RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

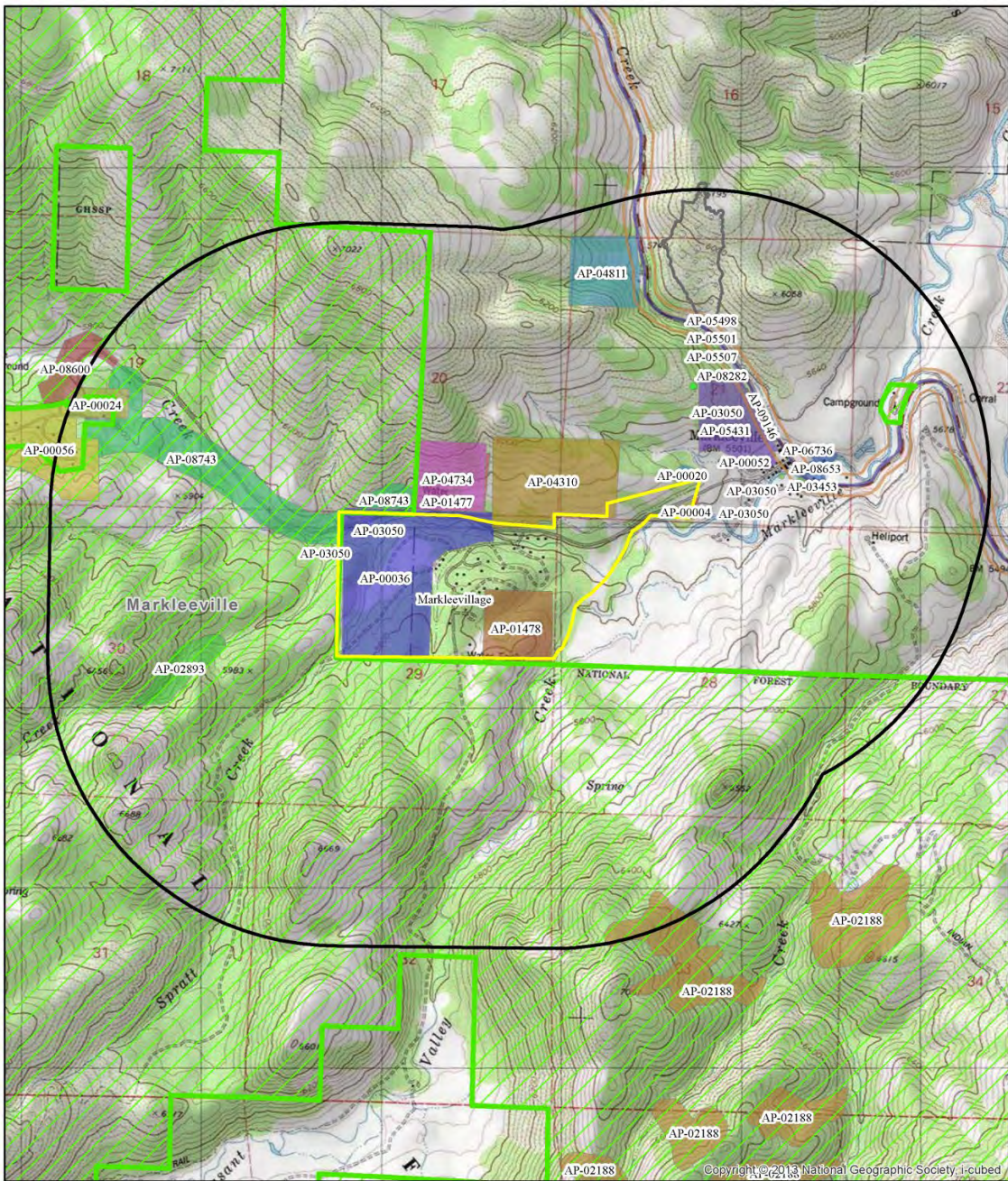
PRIMARY NO.	TRINOMIAL	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000866	CA-ALP-000625H	Markleeville Toll Road and Road from Woodfords"; Pacific Legacy # ALP-A26	Historic	AH07	AP-07349	-
P-02-000867	CA-ALP-000626	BLM # CrNV-03-6840; Pacific Legacy #ALP-A27	Prehistoric	AP02	AP-07349	-
P-02-000868	CA-ALP-000627	BLM # CrNV-03-2841; Pacific Legacy # ALP-A28	Prehistoric	AP02	AP-07349	-
P-02-000869	CA-ALP-000628H	BLM # CrNV-03-6842; Pacific Legacy # ALP-A29	Historic	AH11	AP-07349	-
P-02-000870	CA-ALP-000629	BLM # CrNV-03-6843; Pacific Legacy # ALP-A30	Prehistoric	AP02	AP-07349	-
P-02-000871	CA-ALP-000630H	BLM # CrNV-03-6844; Pacific Legacy # ALP-A31	Historic	AH09	AP-07349	-
P-02-000873	CA-ALP-000632H	BLM # CrNV-03-6847; Pacific Legacy # ALP-A34	Historic	AH06	AP-07349	-
P-02-000914	CA-ALP-000673H	BLM # CrNV-03-6882; Pacific Legacy # ALP-B35	Historic	AH04	AP-07349	-
P-02-000915	CA-ALP-000674	BLM # CrNV-03-6883; Pacific Legacy # ALP-B36	Prehistoric	AP02	AP-07349	-
P-02-000916	CA-ALP-000675	BLM # CrNV-03-6884; Pacific Legacy # ALP-B37	Prehistoric	AP02	AP-07349	-
P-02-000917	CA-ALP-000676/H	BLM # CrNV-03-6885; Pacific Legacy # ALP-B38	Prehistoric, Historic	AH04; AP02	AP-07349	-
P-02-000918	CA-ALP-000677/H	BLM # CrNV-03-6886; Pacific Legacy # ALP-B39	Prehistoric, Historic	AH04; AP02	AP-07349	-

MARKLEEVILLAGE RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000919	CA-ALP-000678	BLM # CrNV-03-6887; Pacific Legacy # ALP-B40	Prehistoric	AP02	AP-07349	-
P-02-000920	CA-ALP-000679H	BLM # CrNV-03-6888; Pacific Legacy # ALP-B41	Historic	AH04	AP-07349	-
P-02-000921	CA-ALP-000680/H	BLM # CrNV-03-6889; Pacific Legacy # ALP-B42	Prehistoric, Historic	AH04; AP02	AP-07349	-
P-02-000922	CA-ALP-000681H	BLM # CrNV-03-6890; Pacific Legacy # ALP-B43	Historic	AH07	AP-07349	-
P-02-000925	-	BLM # CrNV-03-5965; Pacific Legacy # PB-2	Prehistoric	AP02; AP12	AP-07349	-
P-02-000926	-	BLM # CrNV-03-5971; Pacific Legacy # PB-8	Historic	AH06	AP-07349	-
P-02-000927	-	BLM # CrNV-03-1363; Fremont Trail	Historic	AH07	AP-07349, -07368	-
P-02-000928	-	Shay Creek Isolated Mano	Prehistoric	AH16	AP-07368	-
P-02-001032	-	Site A	Historic	AH02; AH04	AP-08101	-
P-02-001056	CA-ALP-000779H	HSC-1, FS #04170114725, Hot Springs Road	Historic	AH04; AH07; AH16	AP-08600, -08743	Yes
P-02-001057	CA-ALP-000780H	Muller 1296 Circuit Transmission Line	Historic	HP09; HP11	AP-08743, A08916	Yes
P-02-001058	CA-ALP-000781H	FS #04170114727; LM-03; Shay Creek Tract Lot 1 Cabin; Fell Cabin	Historic	AH06; AH15; HP02; HP04	AP-08743	-

BOLD: Resource is located in the survey area.

MARKLEEVILLE SURVEY AREA – PREVIOUS STUDIES



USGS Markleeville 7.5 min
T.10N. R.20E.

Legend

- Project Area
- Record Search Buffer
- BasicOwnershipR4_HTNF_20180924
- NV_Fires_2000_2013

 AP-00036	 AP-02188	 AP-04734	 AP-05507	 AP-09146
 AP-00002	 AP-00052	 AP-02893	 AP-04811	 AP-06736
 AP-00004	 AP-00056	 AP-03050	 AP-05431	 AP-08600
 AP-00020	 AP-01477	 AP-03453	 AP-05498	 AP-08653
 AP-00024	 AP-01478	 AP-04310	 AP-05501	 AP-08743

AP-08282

Miles
Kilometers

GreenDawn Consulting Group, LLC

MARKLEEVILLE RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-00002	<i>Cultural Resources Short Report; Kirk Properties, Markleeville</i>	1980	Budy, E.	Nevada State Museum	NADB-R-1360005
AP-00004	<i>Cultural Resource Inventory Report; Angus Fuelwood Sale</i>	1989	Colston, D.	Stanislaus National Forest	NADB-R-1360007
AP-00020	<i>Archaeological Reconnaissance of THP 4-79-172/AI-1</i>	1979	Foster, J. W.	California Department of Forestry and Fire Protection	NADB-R-1360028
AP-00024	<i>Observations: Cultural Resources; United States Department of Agriculture, Forest Service, Nevada Zone, Region 4: Grover Hot Springs Land Exchange</i>	1980	Johnson, F., P. Stearns, and R. J. Fitzwater	Toiyabe National Forest	NADB-R-1360043
AP-00036	<i>Cultural Resource Investigation of the Thornburg CFIP Project Area (100 acres), Alpine County, California</i>	1990	Napton, L. K., and E. A. Greathouse	Institute for Archaeological Research, CSUS	NADB-R-1360056
AP-00052	<i>Archeological Survey of the Alpine County Museum Site</i>	1990	Slymaker, C., and S. Griset	C. Slymaker, PhD & S. Griset; for Alpine County Dept. of Public Works	NADB-R-1360079
AP-00056	<i>Cultural Resources Short Report and Encoding Form; Intermountain Region; Report TY-88-0504; Shay Creek Summer Homes Land Exchange</i>	1988	Turner, A. L.	Carson District, Toiyabe National Forest	NADB-R-1360082
AP-01477	<i>United States Department of the Interior, Bureau of Land Management: Cultural Resources Report No. 3-1315(N); CA-25680, Trust for Public Lands - Proposed Exchange of Lands in Bagley Valley for Public Lands Near Markleeville</i>	1989	Hatoff, B. W., S. Weiss, and R. Dunn	Bureau of Land Management	NADB-R-1360035
AP-01478	<i>United States Department of the Interior, Bureau of Land Management: Cultural Resources Report No. 3-1133(N); Thornburg Timber Sale</i>	1987	Hatoff, B. W., and M. McGinty	Bureau of Land Management	NADB-R-1360034
AP-02188	<i>Upper Poor Boy Project, Cultural Resources Survey Report # TY-93-772</i>	1993		Carson District, Toiyabe National Forest	NADB-R-1361152; Other-TY-93-772
AP-02893	<i>Cultural Resources Short Report, TY-92- 0762, Musser-Jarvis Water Shed</i>	1992	Milner, Kathy	US Forest Service, Toiyabe National Forest	NADB-R-1362331

MARKLEEVILLE RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-03050	<i>Cultural Resources Worksheet for Use if Activity is an Intrusive Undertaking (Cat. A or B) [various projects for repair and stabilization of fluvial damage]</i>	1997	Durham, Gail	NRCS, US Department of Agriculture	NADB-R-1362503
AP-03453	<i>Markleeville Guard Station Narrative Report and Evaluation; Heritage Resource Report TY-98-1258.</i>	1998	Kumiega, K.	Carson City Ranger District, HTNF, USDA FS	NADB-R-1363464
AP-04310	<i>Letter Report: Cultural Resources Inventory Survey of a 70-acre Parcel in Markleeville, California</i>	2001	Hutchins, J.	Kautz Environmental Consultants	NADB-R-1364221
AP-04734	<i>Cultural Resources Inventory Report, Department of the Interior, Bureau of Land Management, Carson City Field Office, Survey Project No: CR 3-2089, Markleeville Fuels Treatment Project</i>	2002	McCabe, S.	Bureau of Land Management	NADB-R-1364643
AP-04811	<i>Confidential Archaeological Addendum for Timber Operations on Non-Federal Lands in California: Red House THP (4-02-52/ALP-1)</i>	2002	Kral, James	Progressive Forestry	NADB-R-1364727
AP-05431	<i>A Class III Inventory of a 33.98 Acre Parcel for the Markleeville Village Development</i>	2004	Brown, B. C. et al.	Summit Envirosolutions; for CSCON	NADB-R-1365362
AP-05498	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; District 10 Rural Conventional Highways; Volume I: Summary of Methods and Findings</i>	2004	Leach-Palm, L., P. Mikkelsen, J. King, J. Hatch, and B. Larson	Far Western Anthropological Research Group	NADB-R-1366177
AP-05501	<i>Cultural Resources Inventory of Caltrans</i>	2004	Rosenthal, J. S., and J.	Far Western	NADB-R-1365435
AP-05507	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume II A: Alpine County</i>	2004	Leach-Palm, L., J. King, J. Hatch, and B. Larson	Far Western	NADB-R-1365429
AP-06736	<i>Archaeological Monitoring of Sierra Pacific Power Company's Markleeville Over/Under Conversion, Alpine County, California</i>	2008	Bloomer, W., and D. C. Young	Lithic Arts & Far Western for Sierra Pacific Power Company and Caltrans District 10	NADB-R-1366969

MARKLEEVILLE RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-08282	<i>Archaeological Survey Report Markleeville/Ensite #25569 (314163) CA-89 S Markleeville, Alpine County, California, 96120 NE 1/4, SW 1/4 S21 T10N R20E EBI Project No. 6115002750</i>	2015	Etheridge, J. and M. Cornelius	EnviroBusiness, Inc. for Verizon Wireless	-
AP-08600	<i>Historic Property Survey Report, 10-ALP- BRLS-5931(030), Hot Springs Road over Hot Springs Creek</i>	2016	Starkey, A.	California Department of Transportation	-
AP-08600A	<i>Hot Springs Road Bridge (31C-0005) Replacement Project, Archaeological Survey Report, Alpine County, California, Federal Aid No. BRLS 5931 (030), 7.5' USGS Quadrangle: Markleeville, California (1979), Archaeological APE Acreage = 4.0+-Acres</i>	2016	Starkey, A.	California Department of Transportation	-
AP-08653	<i>Toiyabe National Forest Cultural Resource Narrative Report, Markleeville Campground Water System, TY-00-1329, Alpine County, CA</i>	1999	Kumiega, K.	U.S. Forest Service, Toiyabe National Forest	USFS - TY-00-1329
AP-08743	<i>Cultural Resource Inventory for Liberty Utilities' Muller Circuit Pole Replacement Project, Alpine County, California</i>	2018	Orvald, T., A. Garner, and S. Melvin	Far Western & JRP Historical Consulting; for Liberty Utilities	-
AP-09146	<i>Archaeological Survey Report, 2018 Hazard Tree Removal Project, State Routes 4, 26, 88, 89, and 207, Caltrans District 10, Alpine, Amador and Calaveras Counties, California</i>	2019	Waechter, S.	Far Western	Extends into another county as CA-09146

BOLD: Previous study footprint located within the survey area.

APPENDIX F – BEAR VALLEY RECORDS SEARCH

BEAR VALLEY SURVEY AREA – CULTURAL RESOURCES

CONFIDENTIAL - Portions Redacted for Public Review

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000015	-	Isolate 2018-1	Prehistoric	AP16	AP-01935	-
P-02-000016	-	Isolate 2018-2	Prehistoric	AP16	AP-01935	-
P-02-000017	-	Isolate 2018-3	Prehistoric	AP16	AP-01935	-
P-02-000018	-	Isolate 2019-1	Prehistoric	AP02	AP-01936	-
P-02-000023	CA-ALP-000339	FS 05-16-52-826	Prehistoric	AP02; AP04; AP15; AP16	AP-02276, -03510	-
P-02-000024	CA-ALP-000340	FS 05-16-52-953	Prehistoric	AP02; AP04; AP15; AP16	AP-02276, -03510	-
P-02-000025	CA-ALP-000341	FS 05-16-52-954	Prehistoric	AP02; AP04	AP-02276, -03510	-
P-02-000026	CA-ALP-000287/H	FS 05-16-52-39	Prehistoric, Protohistoric, Historic	AH16; AP02; AP04; AP16	AP-01683, -02279, - 05498, -05501, -05507, CA-01683, CA-02279, CA-05498	-
P-02-000096	CA-ALP-000401	Single Cup	Prehistoric	AP02; AP04	AP-02867	-
P-02-000181	CA-ALP-000100	Blood Site	Prehistoric	AP04; AP16	-	-
P-02-000182	CA-ALP-000101	Blood Meadow Site	Prehistoric	AP02; AP04	-	Yes: Along the southern boundary
P-02-000208	CA-ALP-000127	-	Prehistoric	AP16	AP-00007, -03832	-
P-02-000210	CA-ALP-000129	-	Prehistoric	AP02	AP-00007, -03832	-
P-02-000212	CA-ALP-000131	-	Prehistoric	AP16	AP-00007, -03832	-
P-02-000215	CA-ALP-000134	-	Prehistoric	AP16	AP-00007, -03832	-

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

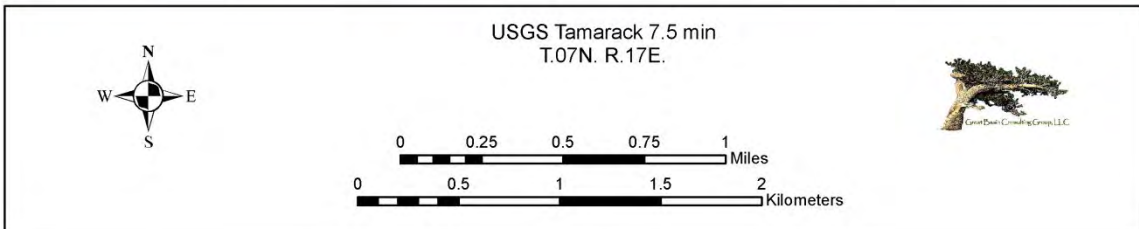
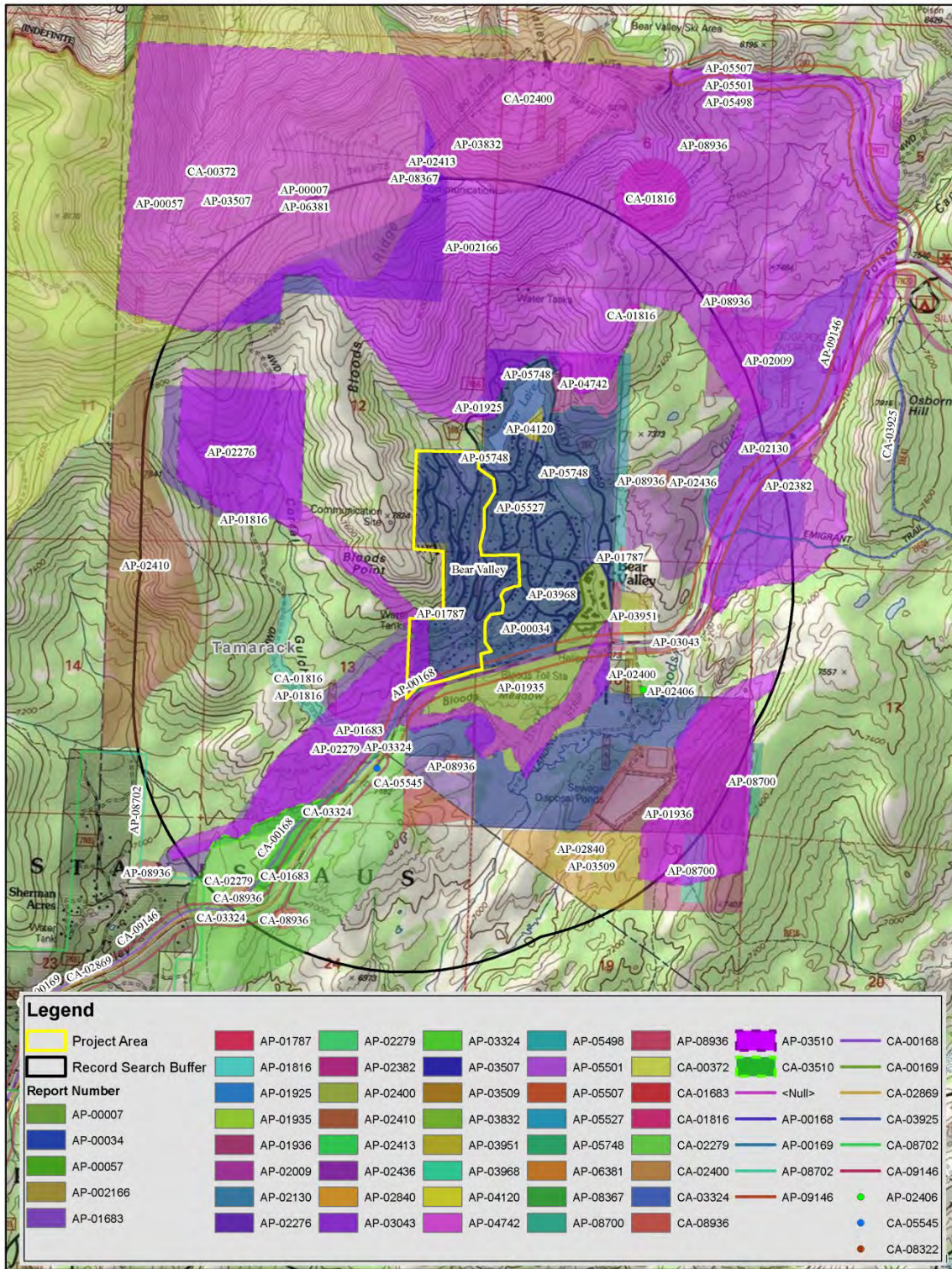
PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000216	CA-ALP-000135	-	Prehistoric	AP16	AP-00007, -03832	-
P-02-000218	CA-ALP-000137/H	-	Historic	AH16	AP-00007, -03832	-
P-02-000219	CA-ALP-000138	-	Prehistoric	AP02; AP04	AP-00034, -03968	-
P-02-000220	CA-ALP-000139	-	Prehistoric	AP02	AP-00034, -01935	-
P-02-000221	CA-ALP-000140	-	Prehistoric	AP02	AP-00034	-
P-02-000222	CA-ALP-000141	-	Prehistoric	AP02; AP04	AP-00034	-
P-02-000223	CA-ALP-000142	-	Prehistoric	AP02	AP-00034	-
P-02-000224	CA-ALP-000143	-	Prehistoric	AP02	AP-00034	-
P-02-000225	CA-ALP-000144	Site #7	Prehistoric	AP16	AP-00034	-
P-02-000226	CA-ALP-000145H	05-16-52-0528; Site #8	Historic	AH02; AH11	AP-00034, -02382, -02400, -05498, -05501, -05507, -09146, CA-02400, CA-05498, TO-02400	-
P-02-000364	CA-ALP-000288H	Emigrant Trail and Turnpike Segments A thru M	Historic	AH07; HP37	AP-01683, -02279, -02382, -05498, -05501, -05507, -07172, -08701, CA-01683, CA-02279, CA-05498	Yes; Along the southern boundary
P-02-000366	CA-ALP-000290	-	Prehistoric	AP02	AP-00216, -03510	-
P-02-000391	CA-ALP-000316	-	Prehistoric	AP04; AP08	AP-01936	-
P-02-000392	CA-ALP-000317	-	Prehistoric	AP02; AP08	AP-01936	-
P-02-000393	CA-ALP-000318	-	Prehistoric	AP02	AP-01936	-

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUSLY RECORDED CULTURAL RESOURCES

PRIMARY NO.	TRINOMIAL (26-)	NAME/OTHER NO.	AGE	SITE ATTRIBUTE CODE(S)	ASSOCIATED REPORT(S)	RESOURCE IN SURVEY AREA
P-02-000394	CA-ALP-000319	-	Prehistoric	AP02	AP-01936	-
P-02-000401	CA-ALP-000328	FS 05-16-52-037/111	Prehistoric	AP02; AP04; AP08	AP-02382, -03043, -05498, -05501, -05507, -09146, CA-05498	-
P-02-000478	-	Ebbetts Pass Route, CHL 318	Historic	AP16; HP26	AP-05498, -05501, -05507, CA-05498	-
P-02-000603	-	FL-1	Prehistoric	AP02	AP-05507	-
P-02-000604	-	05-16-52-0213; FL-2	Prehistoric	AP04	AP-05507, -09146	-
P-02-000758	CA-ALP-000563	FS 05-16-52-884	Prehistoric	AP02; AP04	AP-06381	-
P-02-001164	CA-ALP-000844H	2488-SJN-711-01	Historic	AH04	AP-09146	-
P-02-001167	CA-ALP-000847/H	2488-STM-711-01	Prehistoric, Historic	AH04; AP02	AP-09146	-
P-02-001168	CA-ALP-000848	2488-STM-711-02	Prehistoric	AP04	AP-09146	-
P-05-001632	CA-CAL-001320H	FS 05-16-52-577	Historic	AH04	AP-01683, -05501, CA-01683, CA-02869, CA-05498, CA-05501, CA-05506, CA-05545, CA-09146, MP-05545, TO-05545	-
P-05-003552	-	Ebbetts Pass Route, CHL #318 (# filed in Alpine Co.)	Historic	AH07; HP37	CA-08747, CA-08891, CA-08934, CA-09146	-
P-05-003872	CA-CAL-002279H	2488-STA-710-01	Historic	AH04	CA-09146	-

BOLD: Resource is located in the survey area.

BEAR VALLEY SURVEY AREA – PREVIOUS STUDIES



BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-00007	<i>Archaeological Reconnaissance Report for Mt. Reba Winter Sports Development</i>	1974	Daniels, E.	Stanislaus National Forest	NADB-R-1360011
AP-00034	<i>Archaeological Survey of Bear Valley, Alpine County</i>	1978	McGuire, K.	Consultant for Western Planning and Research	NADB-R-1360055
AP-00057	<i>Stanislaus National Forest Winter Sports Development, Environmental Analysis Report, Public Review Draft Expansion of Mt. Reba Ski Area into Grouse Valley Bowl</i>	1975	Cargill, G. E.	G. E. Cargill, Forest Supervisor	NADB-R-1360083
AP-00168	<i>Cultural Resources Inventory Report for the Pacific Bell Buried Cable Project, Arnold to Bear Valley, Calaveras and Alpine Counties, California</i>	1990	Heipel, S.	PAR Environmental Services,	NADB-R-1367037
AP-00169	<i>Addendum Report: Cultural Resources Inventory Report for the Pacific Bell Buried Cable Project, Arnold to Bear Valley, Calaveras and Alpine Counties, California, Final</i>	1990	Heipel, S.	PAR Environmental Services	NADB-R-1365786
AP-00216	<i>An Archaeological Survey of Proposed Snow Making Line Routes Within the Bear Valley Sports Area Expansion, Alpine County, California</i>	1991	Dougherty, J. W., and R. H. Werner	Archaeological Services	NADB-R - 1360015
AP-01683	<i>Cultural Resource Survey of the Proposed Red Blood Insect Salvage Sale; Cultural Resource Management Report 05-16-0446 in Calaveras and Alpine Counties, California</i>	1992	Dreyer, C., and W. Wulzen	Stanislaus National Forest	NADB-R-1360016
AP-01787	<i>Cultural Resource Survey of the Proposed Calaveras Water Project; Cultural Resource Management Report 05-16-0783 in Calaveras and Alpine Counties, California</i>	1992	Asquith, H.	Stanislaus National Forest, Calaveras Ranger District	NADB-R-1360002
AP-01816	<i>Cultural Resource Survey of the Proposed Soil Mapping Pits Project; Cultural Resource Management Report 05-16-0796 in Alpine and Calaveras Counties, California</i>	1992	Asquith, H. E.	Stanislaus National Forest	NADB-R-1360003

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-01925	<i>Cultural Resource Survey of the Proposed Bear Valley Lodge Fuelwood Sale; Cultural Resource Management Report 05-16-2015 in Alpine County, California</i>	1993	Deis, R. W.	Stanislaus National Forest	NADB-R-1360460
AP-01935	<i>Cultural Resource Survey of the Proposed Bear Valley Hayrides; Cultural Resource Management Report 05-16-2018 in Alpine County, California</i>	1993	Deis, R. W.	Stanislaus National Forest, Calaveras Ranger District	NADB-R-1360464
AP-01936	<i>Cultural Resource Survey of the Proposed Bear Valley Sewage Spray Expansion; Cultural Resource Management Report 05-16-2019 in Alpine County in Alpine County, California</i>	1993	Deis, R. W.	Stanislaus National Forest	NADB-R-1360465
AP-02009	<i>Cultural Resource Survey of the Proposed Overflow Campground Water Drilling; Cultural Resource Management Report 05-16-2023 in Alpine County, California</i>	1993	Punter, L.	Calaveras Ranger District, Duck Compartment	NADB-R-1360624
AP-02130	<i>Cultural Resource Survey of the Proposed Overflow Insect Salvage Sale CRMR 05-16-494 in Alpine County, California</i>	1992	Punter, L.	Stanislaus National Forest	NADB-R-1361171
AP-02276	<i>Cultural Resource Survey of the Proposed Corral Gulch OHV Trail Obliteration Project CRMR 05-16-2004, in Alpine County, California</i>	1993	Punter, L.	Stanislaus National Forest	NADB-R-1361170
AP-02279	<i>Cultural Resource Survey of the Proposed Red Blood Insect Salvage Timber Sale Add On, CRMR 05-16-2026 in Alpine and Calaveras Counties</i>	1993	Anderson, P.	Stanislaus National Forest	NADB-R-1361022
AP-02382	<i>Cultural Resource Survey of the Proposed Bear Valley to Lake Alpine Recreation Trail in Alpine County, California</i>	1994	Abernathie, J.	Stanislaus National Forest, Calaveras Ranger District	NADB-R-1360992
AP-02400	<i>Cultural Resource Survey of the Proposed 1993 Hazard Tree Removal Sales CRMR 05-16-2053 in Alpine, Calaveras and Tuolumne Counties, California</i>	1994	Abernathie, J.	Stanislaus National Forest	NADB-R-1361008

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-02406	<i>Short Form CRMR 05-16-2049, Soil Studies Pits (Ecological Unit Inventory)</i>	1994	Abernathie, J.	Stanislaus National Forest	NADB-R-1360998
AP-02410	<i>Cultural Resource Survey of the Proposed Del Orto Fence Relocation Project CRMR 05-16-2060 in Alpine and Calaveras Counties, California</i>	1994	Deis, R.	Stanislaus National Forest	NADB-R-1361045
AP-02413	<i>Short Form Cultural Resource Management Report. Tuck's Run Obstacle Removal Program. CRMR 05-16-2069</i>	1994	Abernathie, J.	Stanislaus National Forest	NADB-R-1361002
AP-02436	<i>Cultural Resource Survey of the Proposed Bear Boogie Motorcycle Trails and Snowmobile Routes. CRMR 05-16-2051 Alpine County, California</i>	1994	Abernathie, J.	Stanislaus National Forest, Calaveras Ranger District	NADB-R-1361009
AP-02840	<i>Bear Valley Sewer Spray Expansion (Addendum), An Addendum to CRMR 05-16-2019 "Cultural Resource Survey of the Proposed Bear Valley Sewage Spray Expansion," Cultural Resource Management Report 05-16-2080 in Alpine County, California</i>	1995	Goldsmith, Eric	Calaveras Ranger District	NADB-R - 1362250
AP-03043	<i>Cultural Resource Testing of Two Sites Along the Proposed Bear Valley to Lake Alpine Recreation Trail, CA-ALP-104 and CA-ALP-328, Cultural Resource Management Report 05-16-2061</i>	1994	Robinson, M., R. Dies, and J. Abernathie	Robinson, M.	NADB-R-1363239
AP-03324	<i>Cultural Resource Management Report, Highway 4 Projects, 1995, Highway 4 Hazard Tree Removal, Daylighting, CAL/PG&E Settlement Sale, Cultural Resource Management Report 05-16-2084 in Calaveras and Alpine Counties, California</i>	1995	Goldsmith, E.	Stanislaus National Forest District	NADB-R-1363406
AP-03507	<i>Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification: Bear Valley Ski Area Run Widening</i>	1997	Balen, B.	Stanislaus National Forest	NADB-R-1363242

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-03509	<i>Bear Valley Sewer Spray Expansion (Addendum), An Addendum to CRMR 05-16-2019 "Cultural Resource Survey of the Proposed Bear Valley Sewage Spray Expansion", Cultural Resource Management Report 05-16-2080 in Alpine County, California</i>	1995	Goldsmith, E.	Stanislaus National Forest	NADB-R-1363408
AP-03510	<i>Cultural Resource Survey of the Proposed Alpine Water Co. Water System, Cultural Resource Management Report 05-16-2112 in Alpine County, California</i>	1996	Dean, M.	Merideth Dean	NADB-R-1363319
AP-03832	<i>Cultural Resource Survey of the Proposed Bear Valley Ski Area Timber Settlement Sale, Cultural Resource Management Report 05-16-2085 in Alpine County, California, October 16, 1995</i>	1995	Davis, P. H.	Stanislaus National Forest	NADB-R - 1363762
AP-03951	<i>Stanislaus National Forest, Heritage Resources 1996 Sierra Nevada Programmatic Agreement Project Certification: Alpine County Service Yard (05-16-2135)</i>	1999	Montgomery, B.	Stanislaus National Forest, Calaveras Ranger District	NADB-R-1363938
AP-03968	<i>Pine Tree Village Condominium Project, Alpine County, California</i>	2000	Davis-King, S.	Davis-King & Associates	NADB-R-1363772
AP-04120	<i>Archaeological Survey Report for Lake Alpine Water Company (Bear Valley) Treatment Plant Upgrade, California Department of Health Services, Safe Drinking Water State Revolving Fund Project No. 0210001-01</i>	2000	Wilcox, S.	Susan Wilcox	NADB-R-1363854
AP-04742	<i>Cultural Resource Assessment, Bear Valley Tract 9 - Bear Paw Ridge Units 2 & 3, Alpine County, California</i>	2002	Francis, C. M.	C. M. Francis	NADB-R-1364658
AP-05498	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume I: Summary of Methods and Findings</i>	2004	Leach-Palm, L., P. Mikkelsen, J. King, J. Hatch, and B. Larson	Far Western	NADB-R-1366177
AP-05501	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways; Volume III: Geoarchaeological Study</i>	2004	Rosenthal, J. S., and J. Meyer	Far Western	NADB-R-1365435

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUS STUDIES

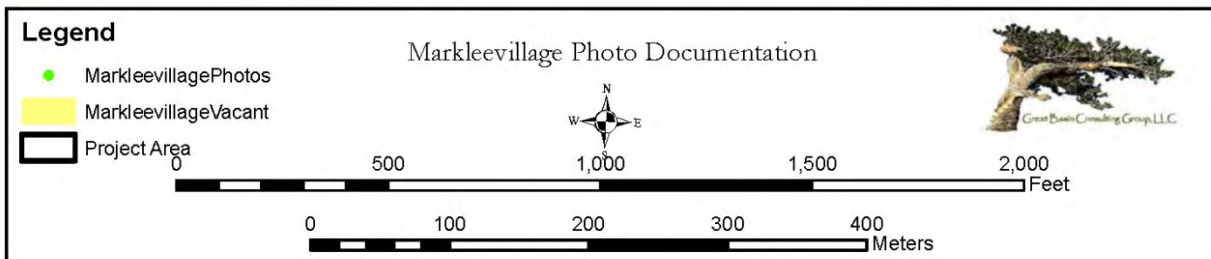
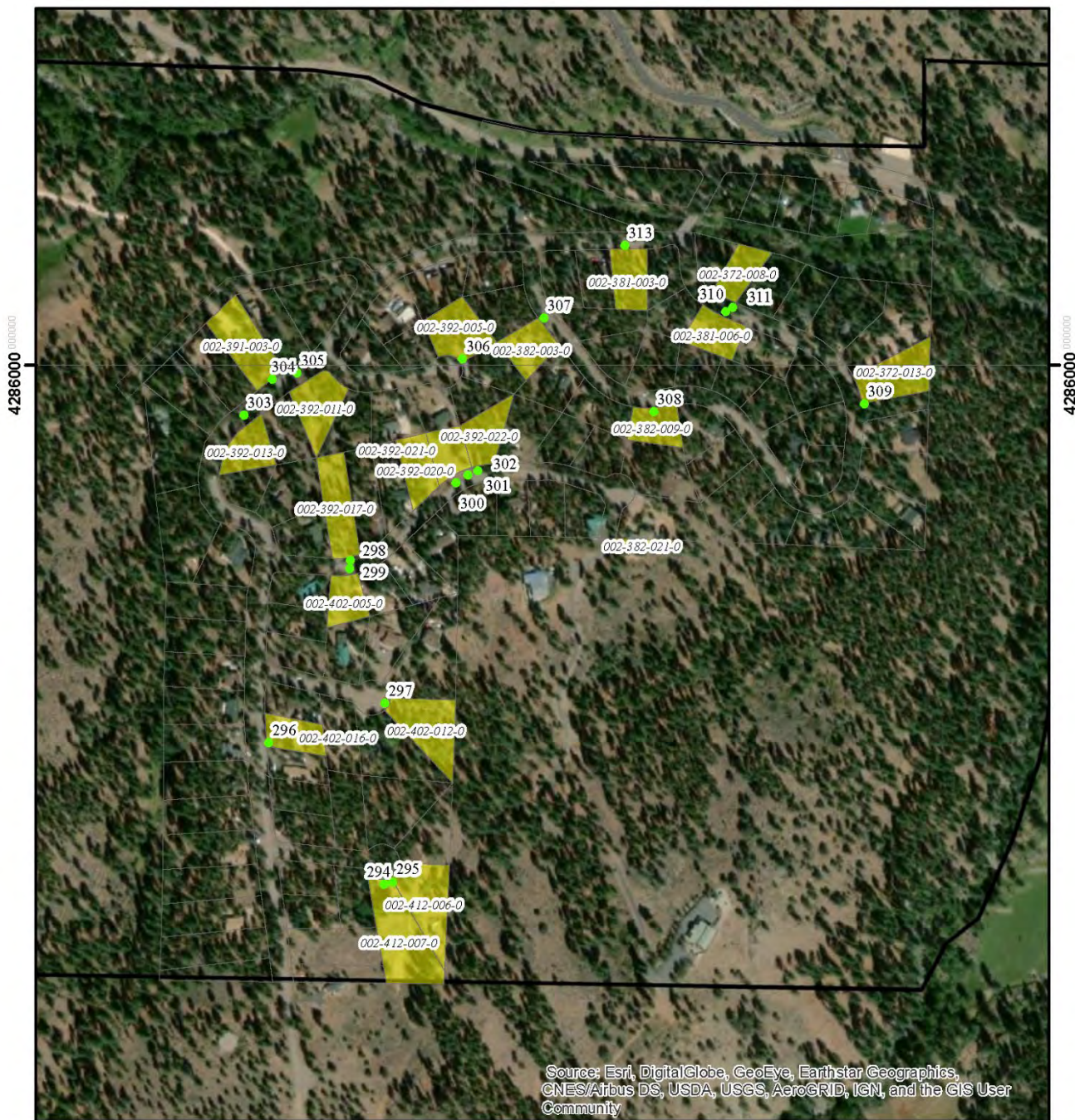
REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-05507	<i>Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways: Volume II A: Alpine County</i>	2004	Leach-Palm, L., J. King, J. Hatch, and B. Larson	Far Western	NADB-R-1365429
AP-05527	<i>Emergency Notice Confidential Archaeological Letter: Fuel Hazard Reduction, Bear Valley, Alpine County</i>	2004	Stickers, D.	RPF for Cal Fire	NADB-R-1365400
AP-05748	<i>An Archaeological Survey Report for the Bear Valley Timber Harvest Plan, Alpine County, California. 4-05-4/ALP-1</i>	2005	Stickers, D.	RPF for Cal Fire	NADB-R-1365630
AP-06381	<i>Archaeological Survey, Evaluation, and Finding of Effects for Sites 05-16-52-484, 05-16-52-487, 05-16-52-488, 04-1652-884, Bear Valley Ski Lift Tower Replacement Project, Alpine County, California</i>	2007	Dougherty, J. W.	Par Environmental Services	NADB-R-1366611
AP-08367	<i>New Tower ("NT") Submission Packet FCC Form 620 Project Name: MT. Reba Project Number: CNU6314B, Bear Valley Ski Resort, Bear Valley, Alpine County, CA</i>	2015	Billat, L., and D. Supernowicz	EarthTouch; for AT&T	-
AP-08700	<i>Stanislaus National Forest, Heritage Resources 2013 Regional Programmatic Agreement Project Certification, Bear Valley Water District Sprayfields and HTR CRMR 05-16-2335 (Alpine County)</i>	2017	Strain, K.	USFS Stanislaus National Forest	USFS-CRMR 05-16-2335
AP-08702	<i>Stanislaus National Forest, Heritage Resources 2013 Regional Programmatic Agreement Project Certification, Tamarck/Sherman Acres Wildland Urban Interface (WUI) Fuelbreak, CRMR 05-16-2302 (Alpine and Calaveras Counties)</i>	2015	Stevenot, A., and K. Strain	USFS Stanislaus National Forest	USFS CRMR 05-16-2302
AP-08936	<i>Cultural Resources Constraints Report, Salt Springs 2101 17kV Routine Stanislaus National Forest EP 2018-158566</i>	2018	Crumpton, Brooke	Blue Rock Services	-

BEAR VALLEY RECORDS SEARCH RESULTS – PREVIOUS STUDIES

REPORT NO.	REPORT TITLE	YEAR	AUTHOR(S)	AFFILIATION	OTHER IDS.
AP-09146	<i>Archaeological Survey Report, 2018 Hazard Tree Removal Project, State Routes 4, 26, 88, 89, and 207, Caltrans District 10, Alpine, Amador and Calaveras Counties, California</i>	2019	Waechter, S.	Far Western	-

BOLD: Previous study footprint located within the survey area.

APPENDIX G – MARKLEEVILLAGE & BEAR VALLEY PARCELS





Lot overview, 002-412-007-0. View Southeast; Exp 294



Lot overview, 002-412-006-0. View East; Exp 295



Lot overview, 002-402-016-0. View East; Exp 296



Lot overview, 002-402-012-0. View East; Exp 297



Lot overview, 002-392-017-0. View North; Exp 298



Lot overview, 002-392-005-0. View South; Exp 299



Lot overview, 002-392-021-0. View North; Exp 300



Lot overview, 002-392-020-0. View Northeast; Exp 301



Lot overview, 002-392-022-0. View North; Exp 302



Lot overview, 002-392-013-0. View South; Exp 303



Lot overview, 002-391-003-0. View North; Exp 304



Lot overview, 002-392-011-0. View South; Exp 305



Lot overview, 002-392-005-0. View North; Exp 306



Lot overview, 002-382-003-0. View Southwest; Exp 307



Lot overview, 002-382-009-0. View Southeast; Exp 308



Lot overview, 002-372-013-0. View East; Exp 309



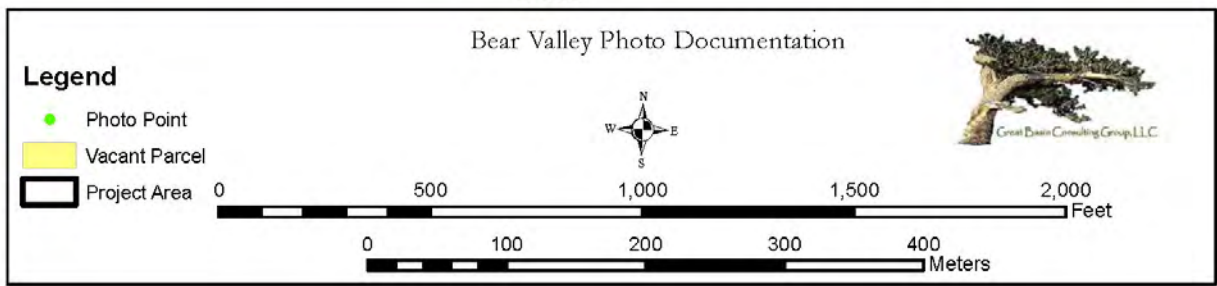
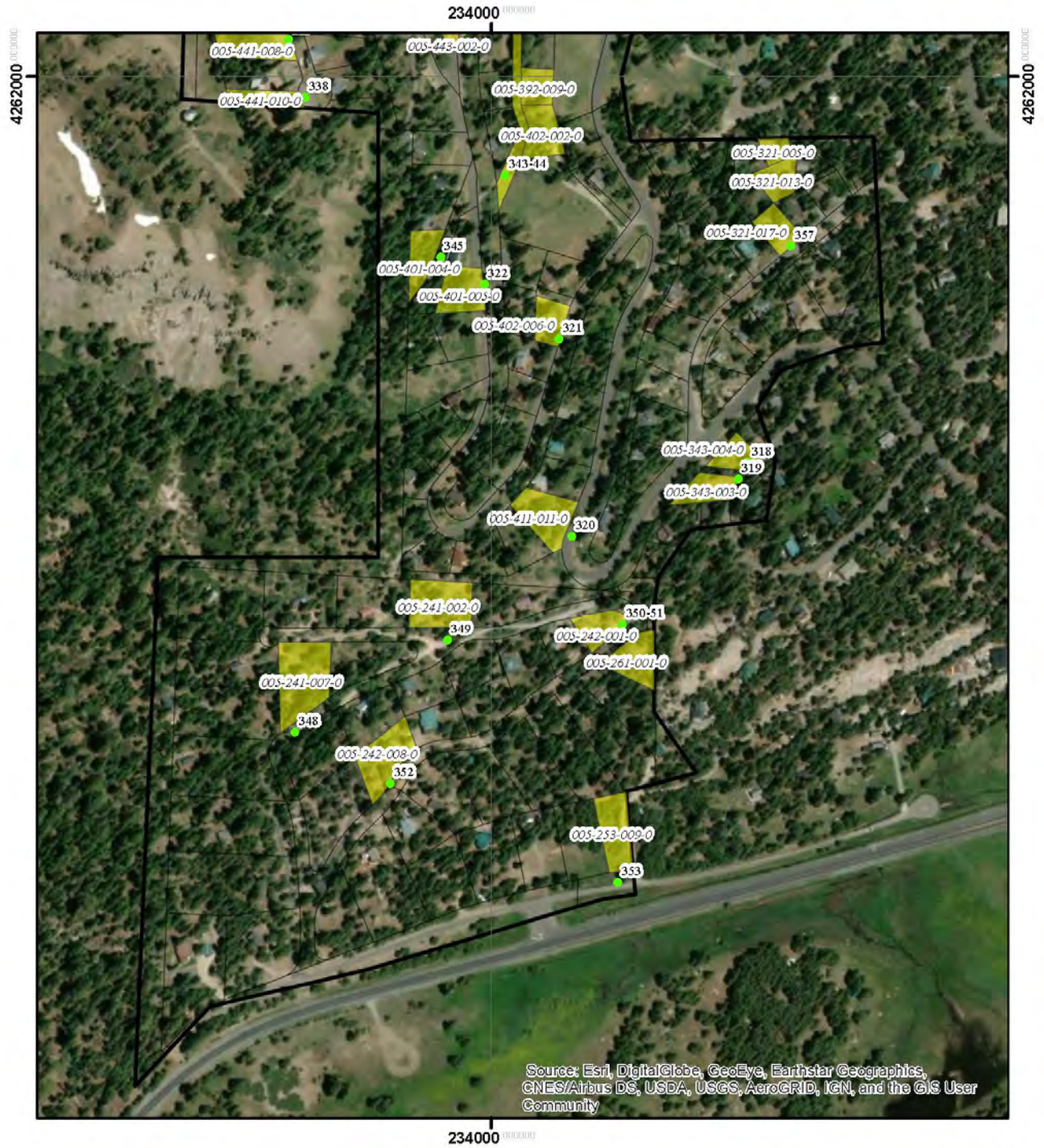
Lot overview, 002-372-008-0. View North; Exp 310

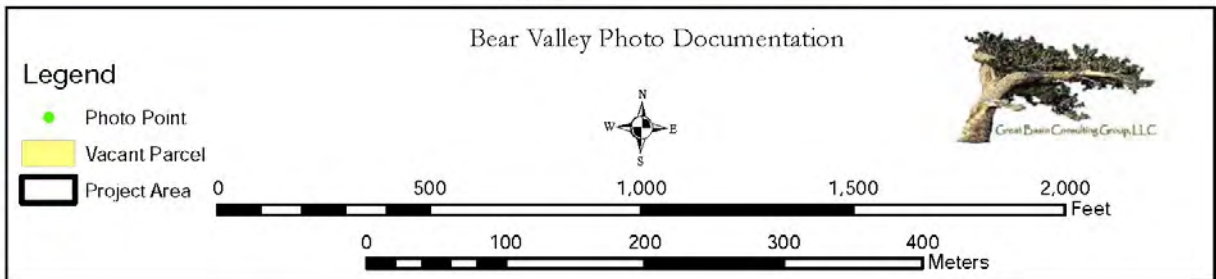
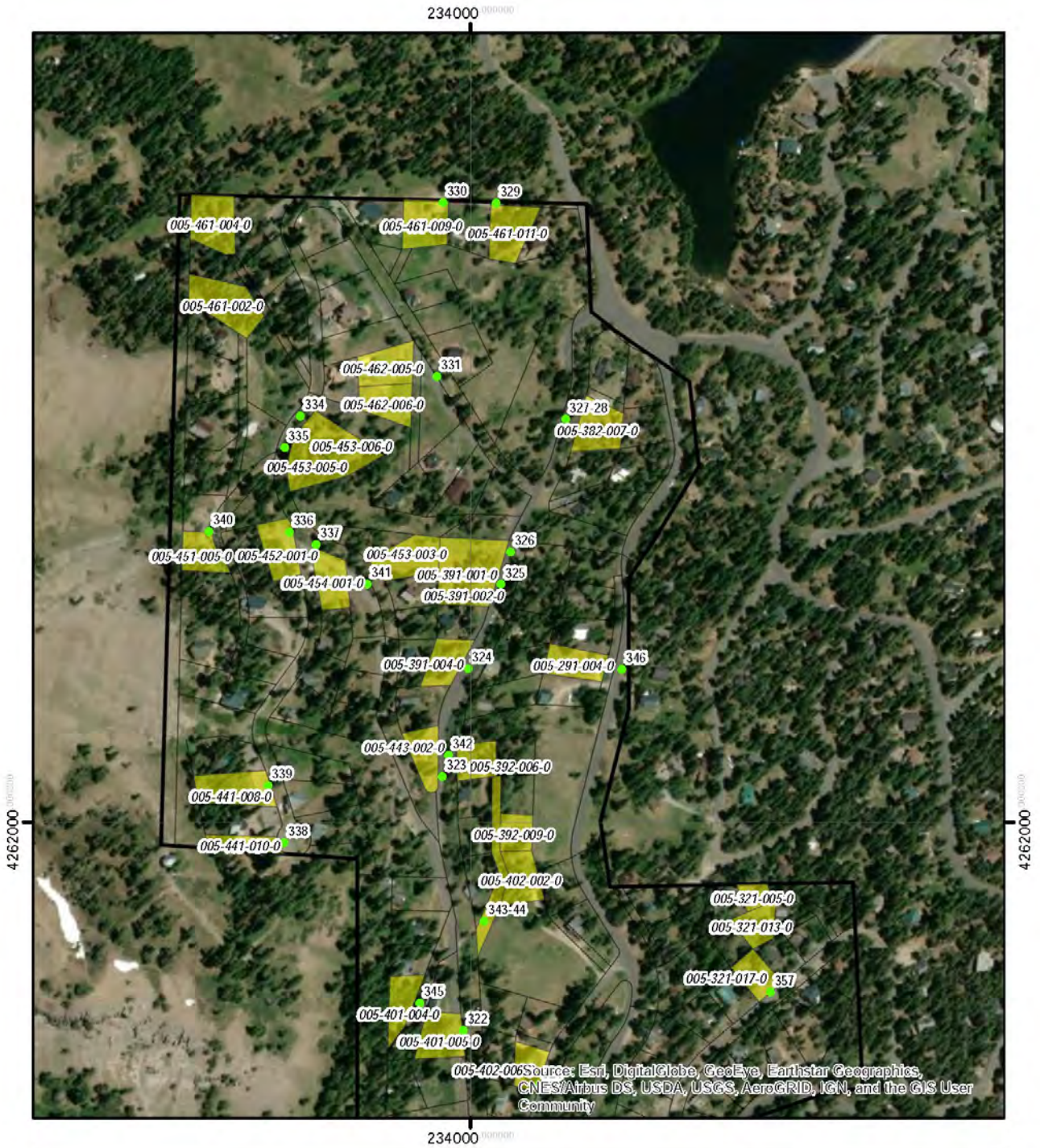


Lot overview, 002-381-006-0. View South; Exp 311



Lot overview, 002-381-003-0. View South; Exp 313







Lot Overview, 005-343-004-0. View Northwest; Exp 318



Lot Overview, 005-343-003-0. View West; Exp 319



Lot Overview, 005-411-011-0. View West; Exp 320



Lot Overview, 005-402-006-0. View West; Exp 321



Lot Overview, 005-401-005-0. View West; Exp 322



Lot Overview, 005-443-002-0. View Northwest; Exp 323



Lot Overview, 005-391-004-0. View West; Exp 324



Lot Overview, 005-391-002-0. View West; Exp 325



Lot Overview, 005-391-001-0. View West; Exp 326



Lot Overview, 005-382-007-0. View East; Exp 327



Lot Overview, 005-461-019-0. View West; Exp 328



Lot Overview, 005-461-011-0. View South; Exp 329



Lot Overview, 005-461-009-0. View Southwest; Exp 330



Lot Overview, 005-462-005-0. View West; Exp 331



Lot Overview, 005-453-006-0. View East; Exp 334



Lot Overview, 005-453-005-0. View East; Exp 335



Lot Overview, 005-452-001-0. View Southwest; Exp 336



Lot Overview, 005-454-001-0. View Northeast; Exp 337



Lot Overview, 005-441-010-0. View West; Exp 338



Lot Overview, 005-441-008-0. View West; Exp 339



Lot Overview, 005-451-005-0. View Southwest; Exp 340



Lot Overview, 005-453-003-0. View East; Exp 341



Lot Overview, 005-392-006-0. View Northeast; Exp 342



Lot Overview, 005-402-002-0. View Northeast; Exp 343



Lot Overview, 005-392-009-0. View Northeast; Exp 344



Lot Overview, 005-401-004-0. View West; Exp 345



Lot Overview, 005-291-004-0. View West; Exp 346



Lot Overview, 005-321-017-0. View Northwest; Exp 357



Lot Overview, 005-241-007-0. View Northwest; Exp 348



Lot Overview, 005-241-002-0. View North; Exp 349



Lot Overview, 005-242-001-0. View Northwest; Exp 350



Lot Overview, 005-261-001-0. View Southeast; Exp 351



Lot Overview, 005-242-008-0. View Northwest; Exp 352



Lot Overview, 005-253-009-0. View North; Exp 353

APPENDIX H - DPR 523 SITE FORMS

CONFIDENTIAL - Portions Redacted for Public Review

APPENDIX D

Response to Comments

D. Responses to Comments on the Draft IS/MND

D.1 Overview

The California Environmental Quality Act (CEQA) Guidelines Section 15074 requires a Lead Agency (Alpine County) to review and consider all comments received on the Draft Initial Study/Mitigated Negative Declaration (IS/MND) prior to making a determination on a proposed project. The purpose of this Response to Comments document is to provide responses to comments received on the Draft IS/MND, consistent with CEQA requirements. Responses to comments that do not relate to physical changes to the environment are provided for informational purposes only, to assist the County's Board of Supervisors in determining whether or not to authorize the project.

D.2 Comments Received

This appendix includes comments received during the circulation of the Draft IS/MND prepared for the Alpine County Wildfire Risk Mitigation Plan (project).

The Draft IS/MND was circulated for a 31-day public review period that began on December 9, 2020 and ended on January 8, 2021. A public informational meeting was held on December 17, 2020, to summarize the analysis completed in the Draft IS/MND and Wildfire Risk Mitigation Plan (WRMP) and to solicit comments from the public. A total of 19 people attended the public meeting and six members of the public participated in a discussion about the WRMP and the environmental issues addressed in the IS/MND. Discussion topics from the public meeting are summarized in Table D-1. The Alpine County Community Development Department received a total of eight written comment letters during the public review period. Written comment letters are listed in Table D-2. Responses to written comments are provided in Section D.3.

The comment letters and responses follow. The comment letters have been numbered sequentially and each separate issue raised by the commenter has been assigned a number. The responses to each comment identify first the number of the comment letter, and then the number assigned to each issue (for example, Response 1-1 indicates that the response is for the first issue raised in comment Letter 1).

Where appropriate, in response to the comments received, the text of the IS/MND has been revised. All changes are provided in the Final IS/MND. Text additions are indicated by underlined text. Deleted text is indicated by the use of ~~strikethrough text~~. The changes are summarized in this section, where appropriate.

RESPONSES TO COMMENTS

Table D-1 Public Meeting Comments

Commenter	Discussion Topic(s)
Randy Hanvelt	<ul style="list-style-type: none"> • Recommended including prescribed burning in the WRMP • Cited Dr. Scott Stephens who recommends that prescribed burn should be routine and occurring sooner than every 9 years • Recommended that the plan include follow-up maintenance on all activities • Recommended consideration of prescribed grazing to maintain fuels post treatment • Recommended that the County consider preparing a post-wildland fire response plan that will identify priorities for post-fire resources and clean-up efforts • Suggested the County investigate good-neighbor authority agreement with United States Forest Service (USFS) • Stated that mastication technology has improved and can now access steep slopes • Emphasized that homeowners should manage the fuels on their property
Rich Harvey	<ul style="list-style-type: none"> • Asked about how the WRMP considers treatment around utilities in forested areas • Asked about next steps for grant funding for project implementation once environmental review of the WRMP is complete • Asked who will be responsible for developing grant applications and how will grant funding be allocated, given that Alpine County has a lot of federally owned land • Commented that home insurance rates will increase drastically due to fire threat
David Griffith	<ul style="list-style-type: none"> • Stated that Dr. Scott Stephens will be present at the Alpine Biomass Collaborative February meeting • Stated that California has a good-neighbor authority agreement with USFS Region 4 and 5, Sierra Nevada Conservancy, and Caltrans
Terry Woodrow	<ul style="list-style-type: none"> • Commented that Bear Valley is within the Calaveras Fire Safe Council and they have been involved in master stewardship agreements
Tim Bottomley	<ul style="list-style-type: none"> • Asked how long CEQA documents remain valid
January Riddle	<ul style="list-style-type: none"> • Asked how to deal with landowners who do not manage the fuels on their property, especially along Hot Springs Road where evacuation is of concern

Table D-2 Letter Number and Commenter

Letter Number	Name of Commenter	Affiliation
1	Kelsey Vella	California Department of Fish and Wildlife
2	Gregoria Ponce	California Department of Transportation
3	Philip Bellman	Public
4	Nicholas Gadacz	Public
5	David Griffith	Public
6	Randy Hanvelt	Public
7	Mark and Patricia Schwartz; January Riddle	Public
8	Tom Fraser	Public

D.3 Responses to Comments

Letter 1: Kelsey Vella, California Department of Fish and Wildlife

Letter 1

From: Vella, Kelsey@Wildlife [mailto:Kelsey.Vella@wildlife.ca.gov]
Sent: Wednesday, January 6, 2021 11:57 AM
To: Zach Wood
Cc: Cashdollar, Shaundra@Wildlife; Wildlife R2 CEQA
Subject: Alpine County WRMP Draft IS/MND

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Zach,

Thank you for the opportunity to review and provide comments on the Alpine County Wildfire and Risk Mitigation Plan Draft Initial Study/Mitigated Negative Declaration. Thank you also for taking the time to discuss the plan further on the phone this morning. As I mentioned, I have a few comments:

1. MM Biology-3 on page MND-5 discusses protection measures for waterbodies and wetland protection zones. I wanted to point out that Notification of Lake or Streambed Alteration is required for any activity that will substantially divert or obstruct the natural flow or substantially change or use any material from the bed, channel or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If any of these activities will occur to implement the Project, the project applicant (or "entity") must provide written notification to CDFW pursuant to section 1602 of the Fish and Game Code. Based on this notification and other information, CDFW then determines whether a Lake or Streambed Alteration (LSA) Agreement is required. Informational materials on the Lake or Streambed Alteration notification process can be obtained at <https://www.wildlife.ca.gov/Conservation/LSA/Notify-CDFW>.
2. MM Biology-5 on page MND-6 shows an "Error!" where I believe Table 2-5 should be referenced. Please revise.
3. Bottom of page MND-8 where Sensitive Communities are discussed – I believe there is a typo in the first sentence where it says "To ensure that prescribed burn activities within non-priority PTAs do result..." Should probably say "do not". Please clarify.

1-1

1-2

1-3

Please let me know if you have any questions.

Thank you!

Kelsey Vella
Senior Environmental Scientist (Specialist)
Timberland Conservation and Wildfire Resiliency Program
California Department of Fish and Wildlife
Cell: 916-932-3015

Response to Comment 1-1

The County appreciates the clarification of the CDFW Streambed Alteration Agreement process and the explanation of the requirement to notify CDFW if project activities may divert or obstruct the natural flow, or substantially change or use material from the bed, channel, or bank of any river, stream, or lake.

RESPONSES TO COMMENTS

Response to Comment 1-2

The broken cross-reference in MM Biology-5 on page MND-6 has been corrected as shown in the excerpt below. The mitigation measure also appears on page MND-6 of the Initial Study.

Mammals. A qualified biologist shall conduct a pre-construction survey for special-status mammals identified in [Table 2-5](#) ~~Error! Reference source not found.~~ of this IS/MND and active special-status mammal forms or dens within the PTA...

Response to Comment 1-3

The typographical error in the last paragraph of MM Biology-6 has been corrected as identified by the commenter. MM Biology-6 includes specific actions intended to reduce or avoid potentially significant impacts to sensitive vegetation communities. The modification to MM Biology-6 appears on page MND-8 and page 2-42 of the final IS/MND.

Sensitive Communities: To ensure that prescribed burn activities within non-priority PTAs do not result in substantial adverse effects to sensitive upland communities, prescribed burn planning efforts shall identify all sensitive natural communities within the PTAs, including the community rarity ranking, according to the most recent edition of CDFW's Natural Community List. No prescribed burn is to be conducted within a sensitive community identified with a ranking of S1 (critically imperiled) or S2 (imperiled). Work may be completed within sensitive vegetation communities ranked S1 or S2 using mechanical or hand tools only and must include invasive-species controls identified in MM Biology-~~7~~6 of this IS/MND.

RESPONSES TO COMMENTS

Letter 2: Gregoria Ponce, California Department of Transportation

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY

GAVIN NEWSOM, Governor

DEPARTMENT OF TRANSPORTATION

DISTRICT 10
P.O. BOX 2048, STOCKTON, CA 95201
(1976 E. DR. MARTIN LUTHER KING JR. BLVD. 95205)
PHONE (209) 948-7325
FAX (209) 948-7164
TTY 711
www.dot.ca.gov

Letter 2



*Making Conservation
a California Way of Life.*

January 5, 2021

**ALP-4-PM R1.033
ALP County Wildfire Risk
Mitigation Plan
IS/MND**

Debbie Burkett
Community Development Department
50 Diamond Valley Road
Markleeville, CA 96120

Dear Ms. Burkett,

The California Department of Transportation (Caltrans) appreciates the opportunity to review and comment on the proposed Alpine County Wildfire Risk Mitigation Plan (WRMP) under a Fire Prevention Grant received from the California Department of Forestry and Fire Protection (CAL FIRE). The purpose of the project is to enable the County to implement activities that address the risk of wildfire and that can reduce wildfires that could impact communities. The project considers the implementation of wildfire fuel management activities in locations across Alpine County and identifies specific vegetation management activities that would occur in three high-priority locations in Markleeville, Manzanita, and Bear Valley. State Routes (SR) 4, 88, 89 are the three State Routes in Alpine County that would be affected in this mitigation plan.

Caltrans has the following comments:

The Draft Wildfire Risk Mitigation Plan, Section 4 of the Implementation Plan, shows two existing roads within the project boundary that may be used for project access. The plan does not describe which specific intersections/locations from SR 4 and SR 89 that will be used as the main access points to the three priority project sites: Project 1- Markleeville, Project 2- Manzanita, and Project 3- Bear Valley. Additionally, there is no description on how the project's vehicles/trucks, and heavy equipment will access the priority and non-priority projects from state highways.

For example, Project 1-Markleeville only indicates main access roads to conduct the work would include local roads Hot Springs Road, Pleasant Valley Road, and

2-1

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RESPONSES TO COMMENTS

Ms. Burkett
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Page 2

Sawmill Road. There is no description for which SR intersections/locations that will be used to access the project areas.

↑ 2-1

The proposed project will involve supplies and heavy equipment delivered and removed by large trucks such as mechanical equipment, excavators, tractors, mechanical mastication head, etc.

- Caltrans requires that all state highway intersections/driveways/locations to be used for the projects' Priority and Non-priority sites have a designated staging area and documented access points from all State Routes to be utilized by this project. Please describe access and staging for these activities.
- No staging of vehicles or equipment in the Caltrans right of way (ROW).
- Project work that requires movement of oversized or excessive load vehicles on state roadways requires a transportation permit that is issued by Caltrans. For more information please visit the Caltrans Website at: <https://dot.ca.gov/programs/traffic-operations/transportation-permits>

2-2

2-3

2-4

If project construction activities encroach into Caltrans ROW, the project proponent must submit an application for an Encroachment Permit to the Caltrans Permit Office. Appropriate environmental studies must be submitted with this application. These studies will include an analysis of potential impacts to any cultural sites, biological resources, hazardous waste locations, and/or other resources within Caltrans ROW at the project site(s). CEQA documentation with supporting technical studies will be required when submitting the Encroachment Permit. For more information please visit the Caltrans Website at: <https://dot.ca.gov/programs/traffic-operations/ep/applications>

2-5

If you have any questions or would like to discuss these comments, please contact Lloyd Clark at (209) 941-1982 (Email: Lloyd.clark@dot.ca.gov) or me at (209) 483-7234 (email: Gregoria.ponce@dot.ca.gov).

Sincerely,

Gregoria Ponce
Gregoria Ponce, Chief
Office of Rural Planning

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RESPONSES TO COMMENTS

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Page 3

bc: Environmental – Dominic Vitali, Abul Choudhry
Traffic Ops – Vu Nguyen, Sang Huynh
Encroachments—Francisco Rodriguez
IGR

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RESPONSES TO COMMENTS

Response to Comment 2-1

All three priority projects (i.e., Markleevillage, Manzanita, and Bear Valley) occur on private land. It is anticipated that project-related vehicles would use State Routes 89 and 4 for regional access; however, access to the PTA boundary would be provided via existing private driveways that spur from local roads such as Hot Springs Road and Pleasant Valley Road in the Markleevillage area; Manzanita Lane for the Manzanita area; and a variety of subdivision roads within Bear Valley. PTAs would not be accessed directly from State Route 89 or 4.

Section 2.3.17 Transportation has been modified to include Table 2-10, shown below, which identifies State Route intersections that will be used by crew while accessing the PTAs.

Table 2-10 State Route Intersections used to Serve the PTAs

PTA	Location	State Route Intersections	Potential Access Points to PTA
1	Markleevillage	State Route 89 and Montgomery Street	Private driveways or existing paved and unpaved spur roads from Hot Springs Road, Sawmill Road, Timber Lane, Ox Bow Road, Pinon Road, Pleasant Valley Road
2 and 9	Manzanita	State Route 89 and Manzanita Lane State Route 89 and private driveways	Private driveways or existing paved and unpaved spur roads from Manzanita Lane, Zellmer Lane, Hawkins Ranch Road, and State Route 89
3 and 8	Bear Valley	State Route 4 and Bear Valley Road State Route 4 and Immigrant Road	All subdivision roads within the Bear Valley subdivision
4	Grover Hot Springs	State Route 89 and Montgomery Street	Shay Creek Road, Hot Springs Road, private driveways, and existing paved and unpaved spur roads from Hot Springs Road
5	Mesa Vista	State Route 88 and Emigrant Trail	Existing paved and unpaved spur roads and private driveways from Carson River Road, State Route 89, Emigrant Trail, Wade Road, Diamond View Road, California Road, Larson Canyon Road
6	Hung-A-Lel-Ti	State Route 88 and Diamond Valley Road	Existing unpaved spur roads and private driveways from Diamond Valley Road, Washoe Boulevard, Dutch Valley Road
7	Turtle Rock Park	State Route 89 and Turtle Rock County Park Road	Turtle Rock County Park Road and existing paved and unpaved spur roads or private driveways from Turtle Rock County Park Road

RESPONSES TO COMMENTS

PTA	Location	State Route Intersections	Potential Access Points to PTA
10	Lake Alpine	State Route 4 and Silvertip Campground Road State Route 4 and West Lake Alpine Road State Route 4 and Lake Alpine Lodge driveway	Existing paved and unpaved spur roads and private driveways from State Route 4, West Lake Alpine Road, Lake Alpine Campground Road, Slick Rock 4WD Trail, Silvertip Campground Road, and Harry Thompson Road
11	Diamond Valley	State Route 89 and Diamond Valley Road	Access directly off Diamond Valley Road
12	Highway 89	None	Access directly off State Route 89 and private driveways spurring from State Route 89. No staging of vehicles or equipment would be allowed in the Highway 89 right-of-way, and at the time of the work, the designated point of turnoff from Highway 89 onto the properties would be identified.

Response to Comment 2-2

State highway intersections and access points have been identified in Table 2-10, shown above, which has been added to Section 2.3.17 of the IS/MND.

Access and staging for the priority PTAs (Markleevillage, Manzanita, and Bear Valley) is discussed in Section 4.1.3 Access and Staging/Landing of the WRMP. Access is anticipated to use any existing paved or unpaved road within the PTA. Private driveways of consenting landowners would also be used.

Staging for priority PTAs is expected to occur within the boundary of the PTA near existing access and outside of sensitive habitats. No staging is proposed within the Caltrans right-of-way. The County will develop non-priority PTAs to avoid staging within Caltrans right-of-way.

Response to Comment 2-3

The comment is noted. No staging of vehicles or equipment is proposed in the Caltrans right-of-way for any of the priority PTAs. Future development of the non-priority PTAs would be completed to avoid staging within Caltrans right-of-way.

Response to Comment 2-4

The comment regarding the requirement for a Caltrans transportation permit for oversized or excessive load vehicles on State roadways is noted. Project contractors will be required to obtain all required permits and to abide by all applicable regulations.

Although already required by State law, a discussion identifying the need to obtain the transportation permit from Caltrans has been added to Section 2.3.17 (c):

The proposed fuel-treatment activities would not intentionally increase hazards due to a design feature or incompatible use. Slow-moving trucks or equipment

RESPONSES TO COMMENTS

entering and exiting the PTAs could pose a hazard to other vehicles traveling on the nearby roadways; however, proposed activities would be temporary, and access to the sites is from existing roadways with adequate line of site.

Additionally, the contractor would be required by State law to obtain a transportation permit from Caltrans for any oversized or excessive load vehicles operated on State roadways...

Response to Comment 2-5

The County appreciates clarification of the requirement to obtain an encroachment permit for activities that occur within Caltrans ROW. Priority projects have been developed to avoid staging or implementing project activities within Caltrans right-of-way.

Non-priority projects will be further defined in the future and will be developed to avoid Caltrans right-of-way or, if activities must occur within Caltrans right-of-way, the County will consult with Caltrans to ensure all environmental and planning requirements have been satisfied to obtain an encroachment permit.

RESPONSES TO COMMENTS

Letter 3: Philip Bellman

Letter 3

Re: FW: Comments on Proposed Alpine County Wildfire Risk Mitigation Plan

1 message

From: Philip Bellman [REDACTED]
Sent: Saturday, January 2, 2021 5:25 PM
To: Zach Wood
Subject: Comments on Proposed Alpine County Wildfire Risk Mitigation Plan

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Zack—

I wish to submit the following comments regarding the Proposed Alpine County Wildfire Risk Mitigation Plan.

I have concerns about the proposed methods of reducing ground fuels, especially as it pertains to the Markleevillage zone.

1) Of the three methods proposed, prescribed burns, mastication, and hand clearing, recent mastication in the past few years in nearby Sawmill Road/Spratt Creek area (USFS) has been largely ineffective. While obliterating the natural soil surface, it has led to widespread new growth of flammable brush. In contrast, the use of prescribed burning along Pleasant Valley Road (USFS) did little to disturb soils and appears to have been highly effective in controlling new growth of fuels. Hand clearing was also used more recently along Spratt Creek leaving huge piles of cut trees and debris.

3-1

I believe that mastication would be completely inappropriate for the Markleevillage zone. If hand clearing is used, it should be done when it includes the removal of cut trees and brush. Wherever possible, I think prescribed burning provides a longer and more sustainable solution.

2) I support the reduction of fuel densities and stem densities in the Markleevillage zone. This will only be effective if the plan has a method to reduce fuels in adjacent properties. Despite county policy, I have complained about adjacent properties that have very high densities of small trees, and nothing has been done to get property owners to comply. The plan needs to specify how they will motivate, assist, and work with property owners to reduce fuels.

3-2

Sincerely,

Philip Bellman
[REDACTED]
[REDACTED]
[REDACTED]

Response to Comment 3-1

The commenter's description of mastication and prescribed burning on USFS land is noted. USFS projects are not representative of the Markleevillage PTA because the USFS areas are

RESPONSES TO COMMENTS

largely undeveloped. Prescribed burning was not included as a potential treatment method for PTAs where specific site conditions are not appropriate, due a combination of the proximity of houses or other structures near the treatment area, topography, fuel densities, and/or private landowner concern. The WRMP identifies both mastication and hand clearing as treatments for the Markleevillage PTA. Pile burning of treated vegetation was considered within the Markleevillage area and could be used to reduce litter from vegetation treatment activities.

Although the WRMP does not identify prescribed burning as a treatment method in the Markleevillage area, the County may consider the use of prescribed burning for future projects. Additional project planning, environmental review, public outreach, and landowner coordination would be completed as part of the consideration process.

Response to Comment 3-2

The County has invited all landowners within the Markleevillage PTA, as well as all identified priority PTAs, to participate in project vegetation management activities; however, participation is voluntary. State Public Resources Code (PRC) Section 4291 requires landowners to establish a minimum of 100 feet of defensible space around homes and structures. California Department of Forestry and Fire Protection (CAL FIRE) is responsible for enforcing PRC 4291.

The concern is well founded that to be effective, vegetation treatments need to be widespread and continuous. Continued outreach actions to landowners to educate and obtain approval for participation is described in Table 4-6 of the WRMP.

Separate from this project, the County may consider for future implementation, a standard condition of approval of all development plans that would require a program or procedure for ensuring defensible space and continued fuels treatment.

RESPONSES TO COMMENTS

Letter 4: Nicholas Gadacz

Letter 4

FW: questions about alpine county fire plan

1 message

From: Nicholas Gadacz [REDACTED]
Sent: Thursday, December 17, 2020 6:41 PM
To: Zach Wood
Subject: questions about alpine county fire plan

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hello Zack,

I am new to bear valley and trying to get more involved in local government. I attended the alpine county fire plan meeting, this was my first one and just getting context to how the group works. so my knowledge is coming in on the ground level. I really enjoyed the meeting.

My question is, how much is private enterprise involved in implementing the plan? Is it that public funds have to pay for actually implementing the plan, or is there any way the plan could be created so that it support some type of small local business and objectives the goals of the plan?

4-1

Nicholas Gadacz

Response to Comment 4-1

The WRMP documents potential funding sources in Section 4.6.2. The County intends to implement the WRMP projects using federal, State, or regional grant funding. The implementation would require hiring private contractors to perform the work. These contractors would need to meet the contracting requirements and goals of Alpine County. Local forestry and vegetation management businesses would likely be strong candidates to perform the work. While the intent of identifying a local contracting goal is appreciated, the goals of the program should remain focused on identifying wildfire risks and projects to effectively reduce those risks.

No edits to the WRMP or IS/MND have been made in response to Comment 4-1.

RESPONSES TO COMMENTS

Letter 5: David Griffith

Letter 5

From: David Griffith [REDACTED]
Sent: Thursday, December 17, 2020 6:38 PM
To: Zach Wood
Subject: WRMP

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Zach,

Only one comment/correction to the IS?MND (page 2-17, about half way down, which starts "Dust and smoke emissions ..."), which also was in one of the slides.

PM10 is normally for dust and particulate matter, PM2.5 is for smoke. That is the criteria used by the GBUAPCD.

Thanks for your work on this,

David

David Griffith

Alpine County Dist. 5 Supervisor
[REDACTED]

5-1

Response to Comment 5-1

The analysis on page 2-17 and page 2-18 has been updated to clarify the discussion related to PM₁₀ emissions from dust and exhaust and PM_{2.5} emissions from smoke. The minor clarifications to the analysis provided below do not result in additional impacts or new mitigation.

Only short-term, implementation-related activities and small-scale pile burning would produce **PM₁₀** emissions during implementation of the priority PTAs. Pile burning would not be implemented in the Bear Valley priority PTA. Dust and smoke emissions (typically, PM₁₀, **and PM_{2.5}** emissions, **respectively**) would be short term and are expected to remain localized and dissipate within the immediate vicinity.

PM_{2.5} emissions impacts from pile burning would be less than significant if all regulations are followed.

Because the GBVAB is a nonattainment area for PM₁₀ under the State air quality standards, a significant contribution of PM₁₀ emissions from implementation activities **in combination with prescribed burning** could result in a significant impact.

The WRMP would not result in a cumulatively considerable net increase of **PM_{2.5}**, PM₁₀ emissions or any criteria pollutants for which the GBVAB is in nonattainment.

RESPONSES TO COMMENTS

Letter 6: Randy Hanvelt

Letter 6

From: Randy Hanvelt [REDACTED]
Sent: Thursday, January 07, 2021 2:53 PM
To: Zach Wood
Subject: Alpine County Wild Fire Mitigation Plan

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Attached is Scott Stephens's presentation which I saw a couple of months ago.

Note the bottom of the Summary page: "WE are running our of time"

SO there is an urgency in what you are trying to do

You need prescribed fire in your plan.


You also need a maintenance program which should include prescribed fire under the right conditions.

There are a lot of lessons to be learned from prescribed fire experience.

Good luck and let me know how I can help.

Randy Hanvelt

Consultant
[REDACTED]

 03-Stephens-Amador-Calaveras-Consensus-Group-FFS-8-20_Lower_Res.pdf
4075K

Note: PowerPoint attachment included with Mr. Hanvelt's email comment is included with his comment email in Appendix E. No comments were identified in the PowerPoint content.

Response to Comment 6-1

Chapter 3 of the WRMP identifies large areas of opportunity to apply prescribed fire across multiple land ownerships within Alpine County. The WRMP includes prescribed fire as a potential treatment method for some non-priority projects and is described in Section 4.7.1 Vegetation Treatment Methods of the WRMP. Table 3-1 identifies all PTAs that have been considered for treatment under the WRMP, as well as the treatment methods that have been recommended for each PTA. Hung-A-Lel-Ti, Lake Alpine, Mesa Vista, and Turtle Rock Park non-priority PTAs have been identified as areas that may be treated with prescribed fire under the WRMP; however, additional planning to bring these non-priority projects to a "shovel-ready" stage is necessary.

RESPONSES TO COMMENTS

The County may consider applying prescribed fire to areas identified in Chapter 3 of the WRMP; however, future projects planned for areas outside of the PTAs identified in the WRMP would require additional definition around project boundaries and treatment methods, coordination with landowners, and potentially, supplemental environmental review.

Prescribed burning was not included as a potential treatment method for the top three PTAs because specific site conditions are not appropriate, due a combination of the proximity of houses or other structures near the treatment area, topography, fuel densities, and/or private landowner concern. The effectiveness and use of prescribed fire, however, is understood, which is why it has been incorporated as a tool into the larger program.

Response to Comment 6-2

The scope of the 2020 WRMP includes developing a set of vegetation treatment projects to address wildfire risk across the Alpine County for a period of 10 years. The County is aware of the need for regular re-treatment of the PTAs. Many of the PTAs occur on private land. Private landowners may complete vegetation management activities on their own land without the environmental review necessary for the County to conduct management activities. The County may conduct future re-treatment activities under the WRMP if environmental conditions and treatment activities considered within the PTA are consistent with those documented in the IS/MND. If treatment activities are inconsistent with the WRMP, additional environmental review may be necessary. In the event that the County considers re-treatment of PTAs, the County would coordinate with private landowners to ensure participation in re-treatment efforts.

As stated under Response to Comment 6-1, the Country recognizes the importance and effectiveness of prescribed fire as a tool to maintain vegetation, and as such, has incorporated it into the toolbox for the program, where it is appropriate to use.

RESPONSES TO COMMENTS

Letter 7: Mark and Patricia Schwartz and January Riddle

Letter 7

From: Mark & Patricia Schwartz [REDACTED]
Sent: Friday, January 8, 2021 3:04 PM
To: Zach Wood
Cc: january riddle
Subject: Comments on the Alpine Co. WRMP

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Zach and HNY!

I hope you and yours are all happy and healthy. Below you'll find our comments (italics) on the plan. We reviewed it together and formulated these comments together also. Do let us know if you have any questions.

Section 4.2.1 Description and Location

We're on board with methodology, including dealing with smoke from the burn piles, and might be able to offer parking (and even coffee and such!) for the crews or equipment. Let us know.

7-1

Section 5.1.1 Ingress/Egress

While we appreciate the constraints outlined in the evac. route we encourage the team to keep moving towards other egress routes, e.g. continued discussions with private landowners and agencies that might be able to offer other evacuation routes or community evacuation areas. Although Hot Springs Road is going to be wider, the number of people, combined with the emergency vehicles likely moving back and forth, will still be problematic in our opinion.

7-2

We think that the community evacuation areas shown in figure 5.1 on page 5-2 (with a purple designation) and figure 5.2 on page 5-3 should be specifically called out in writing as they are hard to discern on the map, which some may use as a reference.

7-3

When and if this all translates to a new Fire Safe Council brochure, we think this type of written detail should also be included.

7-4

We're very encouraged by the work done so far, and with the professionalism of the consultants and the county's team, and look forward to more progress. We'd like to remind everyone, including those in our community, that we need to keep the momentum going and not lose sight of the work that still has to be done. 2022 is pretty far away and we hope for an earlier start date. Let us know what we can do to help, and please continue to keep us informed.

Thank you,

Mark Schwartz

Pat Schwartz

January Riddle

Response to Comment 7-1

Support for the project activities is noted and appreciated.

Response to Comment 7-2

The commenter's suggestion for the County to continue to assess options for additional evacuation routes and community evacuation areas is noted. Both the WRMP and 2019 Community Wildfire Protection Plan document the need for continued effort to address evacuation along the Hot Springs Corridor. Section 5.1.2 of the WRMP includes four potential

RESPONSES TO COMMENTS

evacuation zones that were identified during the wildfire hazard and risk assessments, which include Turtle Rock Park, Diamond Valley Elementary School, Grover Hot Springs State Park, and Bear Valley Library and parking lot.

Response to Comment 7-3

As mentioned in Response to Comment 7-2, the WRMP identifies the evacuation zones in a bullet list in Section 5.1.2 of the WRMP. Evacuation zones include Turtle Rock Park, Diamond Valley Elementary School, Grover Hot Springs State Park, and Bear Valley Library and parking lot.

Response to Comment 7-4

Commenter's recommendation to include evacuation zones in a future Fire Safe Council brochure is noted.

RESPONSES TO COMMENTS

Letter 8: Tom Fraser

Letter 8

From: Tom Fraser
Sent: Friday, January 08, 2021 3:12 PM
To: 'zwood@alpinecountycal.gov' <zwood@alpinecountycal.gov>
Subject: Alpine County WRMP Draft IS/MND comments

Hi Zach,

Thanks for the opportunity to comment on the Wildfire Risk Mitigation Plan Mitigated Negative Declaration. Your staff and the associated consultants appear to have completed a very thorough set of documents. I appreciate the opportunity to provide a few comments. I have added underlines to emphasize the comment and question portions of my message.

My wife and I live in Bear Valley as our primary residence and our home falls within the 130-acre zone of the Bear Valley project. I spent most of my career as an environmental consultant reviewing and preparing documents such as this, and my prior education background focused on plant ecology. In Bear Valley we have been very good land stewards including felling dead trees on our property and adjacent common areas in a timely manner and keeping the ground surface in all these areas free of all dead vegetative matter. I have restored the vegetated areas of our lot and adjacent areas disturbed by construction of our home and driveway using the local seedbank. I spend time annually in the summer pulling non-native weeds that entered this pristine area during home construction and it is in pretty nice condition now.

The restoration of our local forest's health to reduce the threat of wildfire is critically important, but it is important that it be done correctly and with a lot of appreciation for the diversity and health of our local mix of ecosystems. I think these documents present a lot of good approaches and mitigation measures. There will be more community communication and information needed as you move forward. One of the key things that I don't understand is how we will understand the exact treatments proposed on an acre by acre basis. To get landowner MOAs signed, many people will want a better understanding of the specific approaches that will be taken on their land and adjacent areas. It would be great to include a brief explanation of how that part of the process will work either in a response to this comment or in another appropriate forum.

8-1

I am concerned about the loss of a diverse scrub understory habitat in the treatment area. Neither the WRMP or the MND give a good sense of what percentage of understory shrubs will be removed and how those decisions will be reached. The lack of special status species in Bear Valley gives little legal incentive to maintain a diverse, healthy plant community following the completion of this project. Will there be some input/recommendations from project biologists on the design and spacing of the understory treatments? Are there plans to only trim/cut shrubs or will complete removal of rootstock take place in certain locations? In general, people need to understand what the final aesthetic of this project will look like and how fragmented the remaining understory will be. We do not want to live in a land of barbered trees with just mulch underneath considering the biological wonderland we have now. Perhaps it could be made more clear what tree and shrub species will be the focus of the Hand Thinning treatment in Bear Valley.

8-2

8-3

8-4

8-5

Also, the removal of substantial shrub areas would remove large amounts of nesting habitat for common birds such as quail and other ground-nesting species. This shrub value receives limited attention in the documents, but is a key biological value of our area.

8-6

As indicated in the Biological Resources Assessment Report and in the WRMP, extensive ground disturbance has the potential to lead to widespread areas of non-native plant colonization. Currently the presence of non-native weeds in Bear Valley is extremely low and it would be great to keep it that way. Mitigation Measure Biology-7 is a good approach to reducing this impact. However, having worked on projects like this it is extremely important that this measure is strictly enforced on a daily basis or it will lose all its meaning. It would be great if project equipment could remain in Bear Valley throughout the treatment portion of the project to more easily prevent weed seed travel to our area and reduce the extent of daily equipment vehicle inspections and washing.

8-7

Neither the BRA report nor WRMP address the possibility of ecosystem type conversion from substantial shrub and understory removal. If native shrub areas turn into native or non-native grassland, the chance for flashy, fast-spreading fires could actually increase. The chance of this conversion occurring should be discussed as well as steps that will be taken to reduce/prevent it such as leaving shrub rootstock in place in locations where shrub trimming will occur. We don't want to trade one fire risk for another.

8-8

I would assume that limbing of trees up to 10 feet from the ground is a key treatment step that will reduce ladder fuels. It is important for residents to understand that this will be undertaken. I may have missed the discussion of this action in the reports, but it would be good to clearly describe this so that the rest of Bear Valley can follow the full treatment model in areas of the community not covered by this current program.

8-9

Finally, separate from CEQA but directed at the project implementation phase, will there be a community liaison or two that will oversee the project in Bear Valley? Will volunteer support be needed for this step where community members can get involved if they can invest time to help?

8-10

Thank you again for the opportunity to comment.

Tom Fraser
Bear Valley

RESPONSES TO COMMENTS

Response to Comment 8-1

The specific treatment acreage within a PTA is dependent on the level of funding secured for treatment of each PTA. Upon secure of funding, the County would work with participating landowners to determine a parcel-specific plan of treatment. During construction, contractors would hold tailboard meetings to discuss daily activities. Property owners would be encouraged to attend these meetings to communicate with contractors regarding specific locations that should be avoided.

Response to Comment 8-2

Chapter 4 of the WRMP identifies the treatment methods for each priority PTA. A description of vegetation treatments to be implemented is provided for each priority PTA and states that approximately 90 percent of shrubs would be treated (i.e., removed by cutting). Modifications to the percentage of understory treated could be made depending on coordination with private landowners, but removal of understory is important to achieve the necessary fire hazard reduction. Areas that have been determined to support special status plants or wildlife, or that have been identified as sensitive vegetation communities would be avoided (refer to response to Comment 8-3), but as noted by the commenter, not many special status species occur in these areas.

Response to Comment 8-3

The IS/MND was prepared in accordance with CEQA (PRC § 21000 *et seq.*) and the amended Guidelines for the Implementation of CEQA (CEQA Guidelines) (14 CCR § 15000 *et seq.*) to provide an assessment of the potentially significant environmental effects of the proposed WRMP. CEQA requires lead agencies to analyze the effect of a project on sensitive vegetation communities and special-status plants and wildlife. CEQA does not require an analysis of project impacts on common species or habitats.

A professional biologist familiar with the habitats in Alpine County conducted biological surveys within the priority PTAs, including the west side of Bear Valley. The biologist provided recommendations to ensure that potential impacts to sensitive vegetation communities and special status plant and wildlife species are minimized or avoided. The biologist did not provide recommendations to increase biological diversity following project implementation.

Response to Comment 8-4

The Markleevillage and Manzanita PTAs would receive both hand tool and mechanical treatment. Bear Valley would receive hand tool treatment only, as described in Section 4.4 of the WRMP. Mechanical treatment typically involves chipping or shredding ladder fuels using a mastication head attached to an excavator or small tractor. Mastication may remove vegetation including the rootstock. Hand treatment would be completed by crews using chainsaws, brushcutters, string trimmers, pole saws, as well as non-powered hand tools, and typically involves cutting vegetation at the ground surface; the rootstock would remain in place.

Visual impacts are addressed in Section 2.3.1 Aesthetics of the IS/MND. Immediately following treatment, vegetation treatment would be apparent, as noted by the commenter. Mulched vegetation would be visible on the ground and the boundary of the treated area would be

RESPONSES TO COMMENTS

obvious. Within one or two growing seasons, vegetation would begin to grow back. Although vegetation would begin to regrow within a year or two, the fire risk would still be reduced within the treatment area. Figure 2-2 in the IS/MND provides an example of how treated areas may appear after treatment. Long-term changes to the appearance of treated areas may include slightly altered landscapes with altered vegetation distribution. While the concerns of the commenter regarding the change in appearance of the landscape are noted, CEQA requires an evaluation of whether or not the project would result in substantial degradation of visual character. These changes were not found to be substantial degradation because similar fuel-reduction and vegetation-management projects have been conducted widely throughout the county, and the PTAs are small in comparison to the vast unaltered open space.

Response to Comment 8-5

The goal of the project is to reduce wildfire risk in the county ladder fuels to decrease fire intensity within the PTAs. Up to 90 percent of shrubs and other ladder fuels within the PTA will be removed, unless the species is a sensitive species. Section 4.4.1 of the WRMP provides a description of the fuels that would be targeted within Bear Valley. All live and dead vegetation with less than 10 inches diameter at breast height (dbh) would be removed. Approximately 90 percent of shrubs would be treated. Actual treatment within the PTA would depend on site conditions and coordination with the private landowner.

Response to Comment 8-6

CEQA requires lead agencies to determine whether a proposed project would have a substantial adverse effect on federally, state- or locally recognized special-status species. The CEQA Guidelines do not contain a question regarding substantial adverse effects on all common species. Nesting birds are protected under the Migratory Bird Treaty Act (MBTA) and under Fish and Game Code Sections 3503, 3503.5, 3511, and 3513. Section 2.3.4 Biological Resources discusses potential impacts on nesting birds. Vegetation treatment activities may occur during the nesting season (March through August on the East Slope, April through August on the West Slope). The IS/MND identifies potential impacts of vegetation removal during the nesting season and includes Mitigation Measure Biology-4, which requires pre-construction surveys for nesting birds and implementation of avoidance buffers around active nests. The project would result in removal of substantial ground cover of shrubs, as the commenter notes; however, vegetation removal would be limited to the area within the boundary of the PTA and would represent a fraction of the lands in the vicinity that are available for common wildlife. Given the abundance of shrubs in the vicinity of the PTAs, removal of shrubs within the boundaries of the PTA is not expected to substantially affect the population of common migratory bird species.

Response to Comment 8-7

The comment regarding spread of opportunistic non-native species within areas of disturbance is noted. The County intends to hire local contractors to complete vegetation management activities. Large equipment would likely be stored within a designated staging area within the PTAs. Depending on contractor preference, hand tools would be either stored in a trailer on site or transported to and from the PTA by the contractor each day. Mitigation Measure Biology-7 would be enforced to reduce the potential spread of non-native species to the PTAs.

RESPONSES TO COMMENTS

Response to Comment 8-8

The IS/MND discusses the potential for spread of invasive species and includes mitigation, as discussed in response to Comment 8-7, to reduce the impact. While the project involves removal of up to 90 percent of ladder fuels within the PTAs, the project would not involve removal of topsoil where the native seedbank exists. Treatment activities are unlikely to remove all rootstock from within treated areas; therefore, the County anticipates that treated shrubs will regrow within several years. Ecosystem conversion within the PTAs is unlikely to occur. Maintenance of the treated areas would also be important to ensure the desired long-term fire reduction benefits of the work.

A brief description of potential habitat alteration has been added to page 2-43 of the IS/MND and appears below:

Sensitive upland communities within the priority PTAs include Jeffrey pine forest and aspen forest alliances. All of the vegetation management techniques implemented under the WRMP could result in some form of habitat alteration within all vegetation communities. Alteration of habitats is anticipated to be temporary, given that vegetation management activities would often leave the rootstock in place and would not remove the seedbank present in topsoil. Impacts would be minor and would not result in substantial modification to habitats, including sensitive and non-sensitive vegetation communities.

Vegetation thinning, including mechanized removal of a substantial portion of the shrub layer anywhere within non-riparian sensitive communities, is very unlikely to change the overall extent of occurring sensitive communities unless new populations of invasive non-native plants are introduced (Paulus, 2020). The introduction of invasive plant species and subsequent loss of a sensitive upland community would be a significant impact. MM Biology-7 would reduce the potentially significant impact by avoiding introduction of weed seed, replacing disturbed soil, and application of mulch where necessary to cover disturbed soils. The impact to sensitive upland communities would be less than significant with implementation of mitigation.

Response to Comment 8-9

Treatment activities would involve removing limbs from trees up to 10 feet from the ground. A description of the vegetation treatment activities within the priority PTAs is provided in Section 4 of the WRMP. The description of treatment activities for each priority PTA has been clarified in response to this comment to clearly indicate that limbs within 10 feet of the ground surface would be removed.

Response to Comment 8-10

The County encourages members of the public to volunteer as a Community Organizer who can assist the County with communication to private landowners within the PTAs. The County's website will provide updates on the status of projects completed under the WRMP;

RESPONSES TO COMMENTS

however, additional outreach will be necessary as part project implementation for the priority PTAs and in order to organize future projects in the non-priority PTAs. Any member of the public who would like to be involved in future planning efforts should contact Zach Wood, Alpine County Planner III at zwood@alpinecountyca.gov.

Section 4.7.3 of the WRMP has been modified to include a discussion of volunteer Community Organizers for the PTAs and the role of a Community Organizer.

APPENDIX E

Comment Letters

From: Vella, Kelsey@Wildlife [mailto:Kelsey.Vella@wildlife.ca.gov]
Sent: Wednesday, January 6, 2021 11:57 AM
To: Zach Wood
Cc: Cashdollar, Shaundra@Wildlife; Wildlife R2 CEQA
Subject: Alpine County WRMP Draft IS/MND

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Zach,

Thank you for the opportunity to review and provide comments on the Alpine County Wildfire and Risk Mitigation Plan Draft Initial Study/Mitigated Negative Declaration. Thank you also for taking the time to discuss the plan further on the phone this morning. As I mentioned, I have a few comments:

1. MM Biology-3 on page MND-5 discusses protection measures for waterbodies and wetland protection zones. I wanted to point out that Notification of Lake or Streambed Alteration is required for any activity that will substantially divert or obstruct the natural flow or substantially change or use any material from the bed, channel or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If any of these activities will occur to implement the Project, the project applicant (or "entity") must provide written notification to CDFW pursuant to section 1602 of the Fish and Game Code. Based on this notification and other information, CDFW then determines whether a Lake or Streambed Alteration (LSA) Agreement is required. Informational materials on the Lake or Streambed Alteration notification process can be obtained at <https://www.wildlife.ca.gov/Conservation/LSA/Notify-CDFW>.
2. MM Biology-5 on page MND-6 shows an "Error!" where I believe Table 2-5 should be referenced. Please revise.
3. Bottom of page MND-8 where Sensitive Communities are discussed – I believe there is a typo in the first sentence where it says "To ensure that prescribed burn activities within non-priority PTAs do result..." Should probably say "do *not*". Please clarify.

1-1
1-2
1-3

Please let me know if you have any questions.

Thank you!

Kelsey Vella
Senior Environmental Scientist (Specialist)
Timberland Conservation and Wildfire Resiliency Program
California Department of Fish and Wildlife
Cell: 916-932-3015

DEPARTMENT OF TRANSPORTATION

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Letter 2



*Making Conservation
a California Way of Life.*

January 5, 2021

**ALP-4-PM R1.033
ALP County Wildfire Risk
Mitigation Plan
IS/MND**

Debbie Burkett
Community Development Department
50 Diamond Valley Road
Markleeville, CA 96120

Dear Ms. Burkett,

The California Department of Transportation (Caltrans) appreciates the opportunity to review and comment on the proposed Alpine County Wildfire Risk Mitigation Plan (WRMP) under a Fire Prevention Grant received from the California Department of Forestry and Fire Protection (CAL FIRE). The purpose of the project is to enable the County to implement activities that address the risk of wildfire and that can reduce wildfires that could impact communities. The project considers the implementation of wildfire fuel management activities in locations across Alpine County and identifies specific vegetation management activities that would occur in three high-priority locations in Markleeville, Manzanita, and Bear Valley. State Routes (SR) 4, 88, 89 are the three State Routes in Alpine County that would be affected in this mitigation plan.

Caltrans has the following comments:

The Draft Wildfire Risk Mitigation Plan, Section 4 of the Implementation Plan, shows two existing roads within the project boundary that may be used for project access. The plan does not describe which specific intersections/locations from SR 4 and SR 89 that will be used as the main access points to the three priority project sites: Project 1- Markleeville, Project 2- Manzanita, and Project 3- Bear Valley. Additionally, there is no description on how the project’s vehicles/trucks, and heavy equipment will access the priority and non-priority projects from state highways.

For example, Project 1-Markleeville only indicates main access roads to conduct the work would include local roads Hot Springs Road, Pleasant Valley Road, and

2-1

Ms. Burkett
January 5, 2021
Page 2

Sawmill Road. There is no description for which SR intersections/locations that will be used to access the project areas.

↑
2-1

The proposed project will involve supplies and heavy equipment delivered and removed by large trucks such as mechanical equipment, excavators, tractors, mechanical mastication head, etc.

- Caltrans requires that all state highway intersections/driveways/locations to be used for the projects' Priority and Non-priority sites have a designated staging area and documented access points from all State Routes to be utilized by this project. Please describe access and staging for these activities.
- No staging of vehicles or equipment in the Caltrans right of way (ROW).
- Project work that requires movement of oversized or excessive load vehicles on state roadways requires a transportation permit that is issued by Caltrans. For more information please visit the Caltrans Website at: <https://dot.ca.gov/programs/traffic-operations/transportation-permits>

2-2
2-3
2-4

If project construction activities encroach into Caltrans ROW, the project proponent must submit an application for an Encroachment Permit to the Caltrans Permit Office. Appropriate environmental studies must be submitted with this application. These studies will include an analysis of potential impacts to any cultural sites, biological resources, hazardous waste locations, and/or other resources within Caltrans ROW at the project site(s). CEQA documentation with supporting technical studies will be required when submitting the Encroachment Permit. For more information please visit the Caltrans Website at: <https://dot.ca.gov/programs/traffic-operations/ep/applications>

2-5

If you have any questions or would like to discuss these comments, please contact Lloyd Clark at (209) 941-1982 (Email: Lloyd.clark@dot.ca.gov) or me at (209) 483-7234 (email: Gregoria.ponce@dot.ca.gov).

Sincerely,

Gregoria Ponce

Gregoria Ponce, Chief
Office of Rural Planning

Ms. Burkett
January 5, 2021
Page 3

bc: Environmental – Dominic Vitali, Abul Choudhry
Traffic Ops – Vu Nguyen, Sang Huynh
Encroachments—Francisco Rodriguez
IGR

Re: FW: Comments on Proposed Alpine County Wildfire Risk Mitigation Plan

1 message

From: Philip Bellman [REDACTED]
Sent: Saturday, January 2, 2021 5:25 PM
To: Zach Wood
Subject: Comments on Proposed Alpine County Wildfire Risk Mitigation Plan

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Zack —

I wish to submit the following comments regarding the Proposed Alpine County Wildfire Risk Mitigation Plan.

I have concerns about the proposed methods of reducing ground fuels, especially as it pertains to the Markleevillage zone.

1) Of the three methods proposed, prescribed burns, mastication, and hand clearing, recent mastication in the past few years in nearby Sawmill Road/Spratt Creek area (USFS) has been largely ineffective. While obliterating the natural soil surface, it has led to widespread new growth of flammable brush. In contrast, the use of prescribed burning along Pleasant Valley Road (USFS) did little to disturb soils and appears to have been highly effective in controlling new growth of fuels. Hand clearing was also used more recently along Spratt Creek leaving huge piles of cut trees and debris.

3-1

I believe that mastication would be completely inappropriate for the Markleevillage zone. If hand clearing is used, it should be done when it includes the removal of cut trees and brush. Wherever possible, I think prescribed burning provides a longer and more sustainable solution.

2) I support the reduction of fuel densities and stem densities in the Markleevillage zone. This will only be effective if the plan has a method to reduce fuels in adjacent properties. Despite county policy, I have complained about adjacent properties that have very high densities of small trees, and nothing has been done to get property owners to comply. The plan needs to specify how they will motivate, assist, and work with property owners to reduce fuels.

3-2

Sincerely,

Philip Bellman

[REDACTED]
[REDACTED]
[REDACTED]

FW: questions about alpine county fire plan

1 message

From: Nicholas Gadacz [REDACTED]
Sent: Thursday, December 17, 2020 6:41 PM
To: Zach Wood
Subject: questions about alpine county fire plan

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hello Zack,

I am new to bear valley and trying to get more involved in local government. I attended the alpine county fire plan meeting, this was my first one and just getting context to how the group works. so my knowledge is coming in on the ground level. I really enjoyed the meeting.

My question is, how much is private enterprise involved in implementing the plan? Is it that public funds have to pay for actually implementing the plan, or is there any way the plan could be created so that it support some type of small local business and objectives the goals of the plan?

4-1

Nicholas Gadacz

Letter 5

From: David Griffith [REDACTED]
Sent: Thursday, December 17, 2020 6:38 PM
To: Zach Wood
Subject: WRMP

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Zach,

Only one comment/correction to the IS?MND (page 2-17, about half way down, which starts "Dust and smoke emissions ...") , which also was in one of the slides.

PM10 is normally for dust and particulate matter, PM2.5 is for smoke. That is the criteria used by the GBUAPCD.

Thanks for your work on this,

David

David Griffith
Alpine County Dist. 5 Supervisor

5-1

Letter 6

From: Randy Hanvelt [REDACTED]
Sent: Thursday, January 07, 2021 2:53 PM
To: Zach Wood
Subject: Alpine County Wild Fire Mitigation Plan

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Attached is Scott Stephen's presentation which I saw a couple of months ago.

Note the bottom of the Summary page: "WE are running our of time"

SO there is an urgency in what you are trying to do.

You need prescribed fire in your plan.

You also need a maintenance program which should include prescribed fire under the right conditions.

There are a lot of lessons to be learned from prescribed fire experience.

Good luck and let me know how I can help.

Randy Hanvelt

Consultant
[REDACTED]

I 6-1
I 6-2

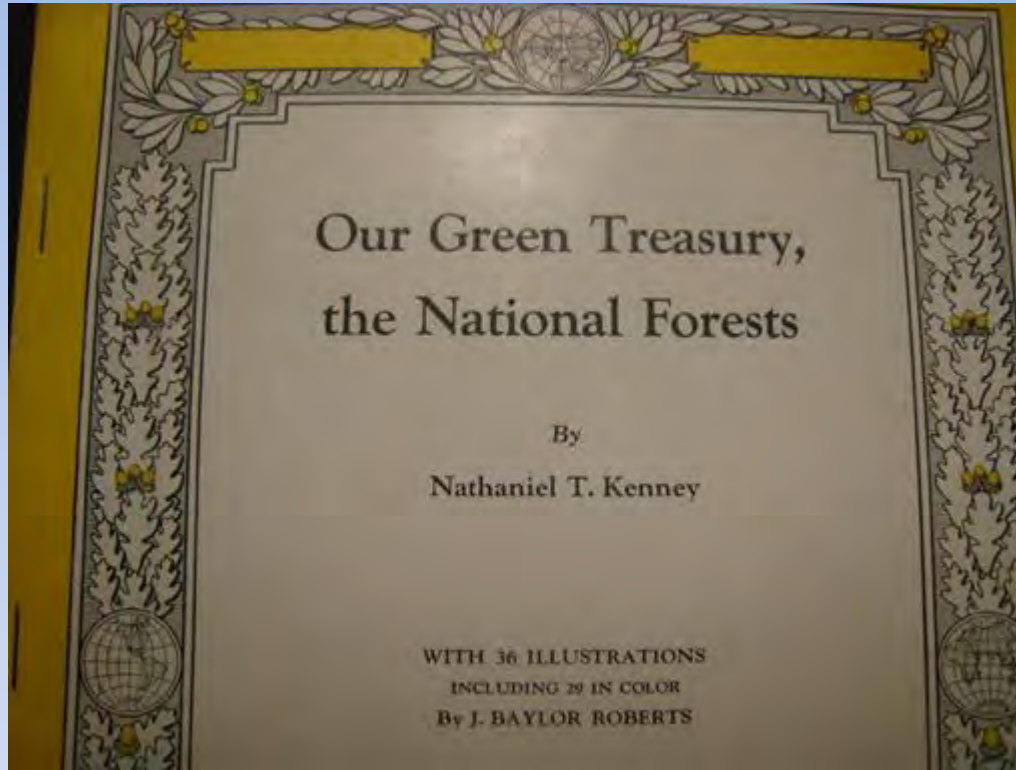


The Science Behind Forest Restoration in the Sierra Nevada

Scott Stephens, Department of Environmental Science, Policy, and Management, University of California, Berkeley

Connection to the Past

National Geographic 1956



As one fire expert told me 'I don't believe that equipment and development alone will show us how to keep having the relatively few big fires... Researchers must let their imaginations soar for answers that today would seem fantastic'.

Historical Fire Effects

Mixed-conifer and ponderosa pine forests:

Show and Kotok (1924):

“California pine forests* represent broken, patchy, understocked stands, worn down by the attrition of repeated light fires.”



Bear Creek Guard
Station - 1915
Plumas National Forest

“Extensive crown fires...are almost unknown to the California pine region.”

“The virgin forest, subjected to repeated surface fires for centuries has been exposed to... cumulative risk.”

Fire Suppression

- Begins around 1905
- Approximately 80,000 fires/year today
- 98-99 percent of all wildland fires out at less than 5 acres in size
- 95% of area burned today is from 1-2% of the fires that escape initial attack
- Before 1800, fires burned approximately 1.1 million acres of forests annually in California in an average year, 4.5 million acres total (*Stephens et al. 2007 For. Ecol. Man.*)
 - Lightning and Indigenous ignitions
 - Today we burn 10-25% of this area
- How have forests changed in Sierra Nevada?

The 1911 Historical Data

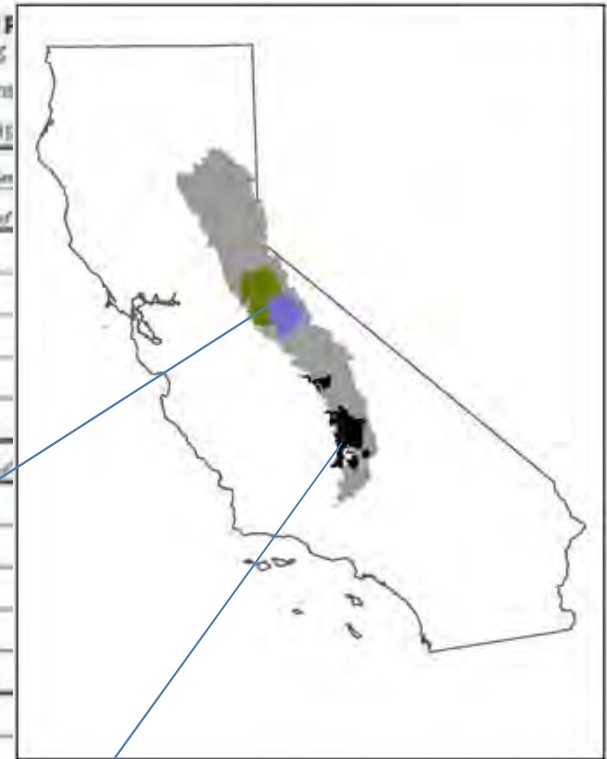
San Bruno Federal Archive



Form 321 a. UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE. *510 p 3*

Tp. *2.5*, R. *20 E*, M. Sec. *19* Forty *3* *SE 1/4* Course *DUP IV*
Sheet Number *293* Series _____ Date *2-8*, 19*11* Examiners _____ Estima
Comp _____

D. B. H.	Y P Species				S P Species				W F Species				K Species	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2
12														
14														
16														
18														
20														
22														
24														
26														
28														
30														
32														



Total count	Stanislaus NF & Yosemite NP	Sequoia (Kern) NF Greenhorn Mts.
Transects	294	378
Trees	20,700	18,052
Survey area (ac)*	41,496	28,405
*no prior timber harvesting, ~3% sample of total area		

Stanislaus NF, Sampling 1911 Location (15-Jul-2013)



Same Field Plot Within Rim Fire Post-fire (25-Sep-2013)



Field Plot Within Rim Fire Post-fire (August-2016)



Field plot within Rim Fire

Pre-fire (15-Jul-2013)



Post-fire (25-Sep-2013)

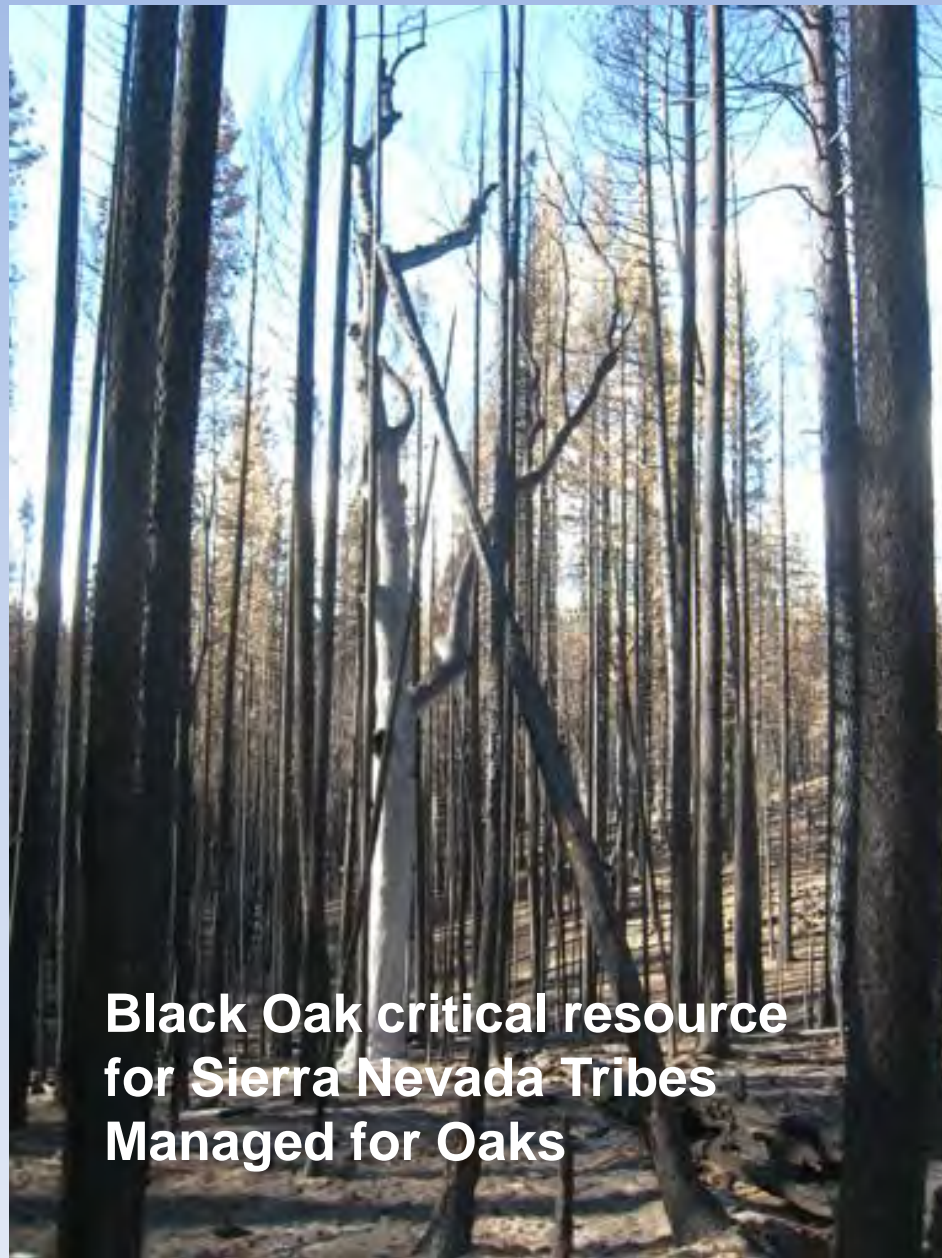


Field plot within Rim Fire

Pre-fire (15-Jul-2013)



Post-fire (25-Sep-2013)



**Black Oak critical resource
for Sierra Nevada Tribes
Managed for Oaks**

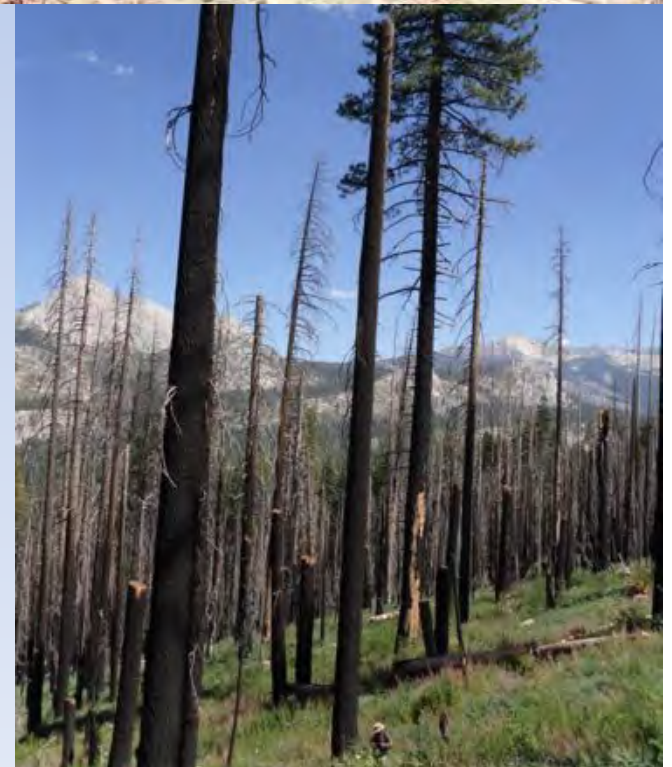
Stanislaus-YOSE Historical vs. current: re-measurement of 1911 timber surveys

Year	Basal area (ft ² ac ⁻¹)	Tree density (ac ⁻¹)		Pine proportion
		> 6 in.	>36 in.	
1911	87	22	5	0.56
2013	173	101	5	0.45



Forest management implications:

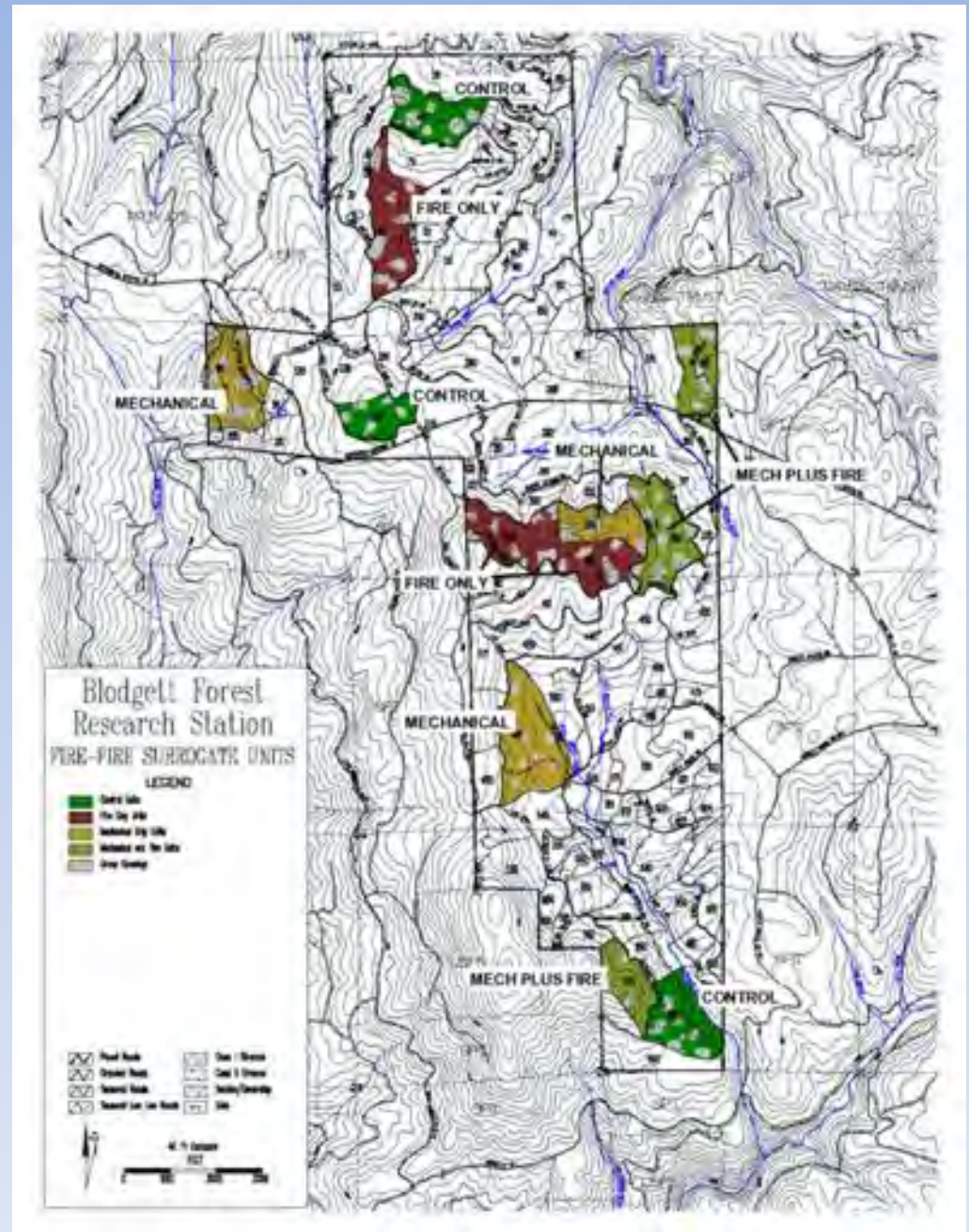
- **Contemporary stand-replacing fire is outside historical range of variability**
 - **Most pronounced in mixed-conifer and yellow pine types**
 - **Not only proportions, patch sizes as well**
- **Coordinated landscape treatments can mitigate uncharacteristic fire behavior (and effects)**
 - **Strategic treatments across 15-20% of landscape seems optimal**
 - **Cannot continue to use treatments to STOP fire**
 - **Manage landscapes to incorporate fire**
 - **Ecological Effects of Treatments**



Forest Restoration Fire Surrogate Study UC Blodgett Forest 12 Treatment Units

- 3 Control
- 3 Mechanical only
 - Thin and mastication
- 3 Mechanical plus fire
 - Same as mech + fire
- 3 Prescribed fire only
- All units 40-70 ac in size
- Pre-treatment all units had very high fire hazards

What do treatments look like?



Mechanical Only – Pre-Treatment (2001)



Rotary Masticator in Central Sierra



Crown thin, commercial thin from below, mastication

Mechanical Only – Post-1st Treatment (2003)



Mechanical Only – Post-1st Treatment (2010)



Mechanical Only – Post-1st Treatment (2015)



Watch →

09/09/2015

Mechanical Only – Post-2nd Treatment (2019)



Very effective at reducing potential fire behavior

Mechanical + Fire – Pre-Treatment (2001)



Mechanical + Fire – Post-Thin and Mast (2002)





Mechanical + Fire – Post-1st Treatment (2003)



Mechanical + Fire – Post-1st Treatment (2010)



Mechanical + Fire – Post-1st Treatment (2015)



Mechanical + Fire – 2nd Mast and Thin (2018)



Mechanical + Fire – 2nd Fire in Fall 2018



Mechanical + Fire – Post-2nd Fire and Thin (2018)

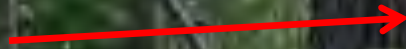


Crown damage/tree mortality higher than desired

Fire Only – Pre-Treatment (2002)



Watch



C400
P 103 S
SEP-24-02
F
PRE-BURN

UCB Blodgett Forest
prescribed fire



Fire Only – Post-1st Prescribed Fire (2003)



Fire Only – Post-1st Prescribed Fire (2009)



Fire Only – During 2nd Ignition (2009)



Fire Only – Post- 2nd Prescribed Fire (2010)



Fire Only – Post-2nd Fire 8 years (2017)



Fire Only – During 3rd Ignition (2017)



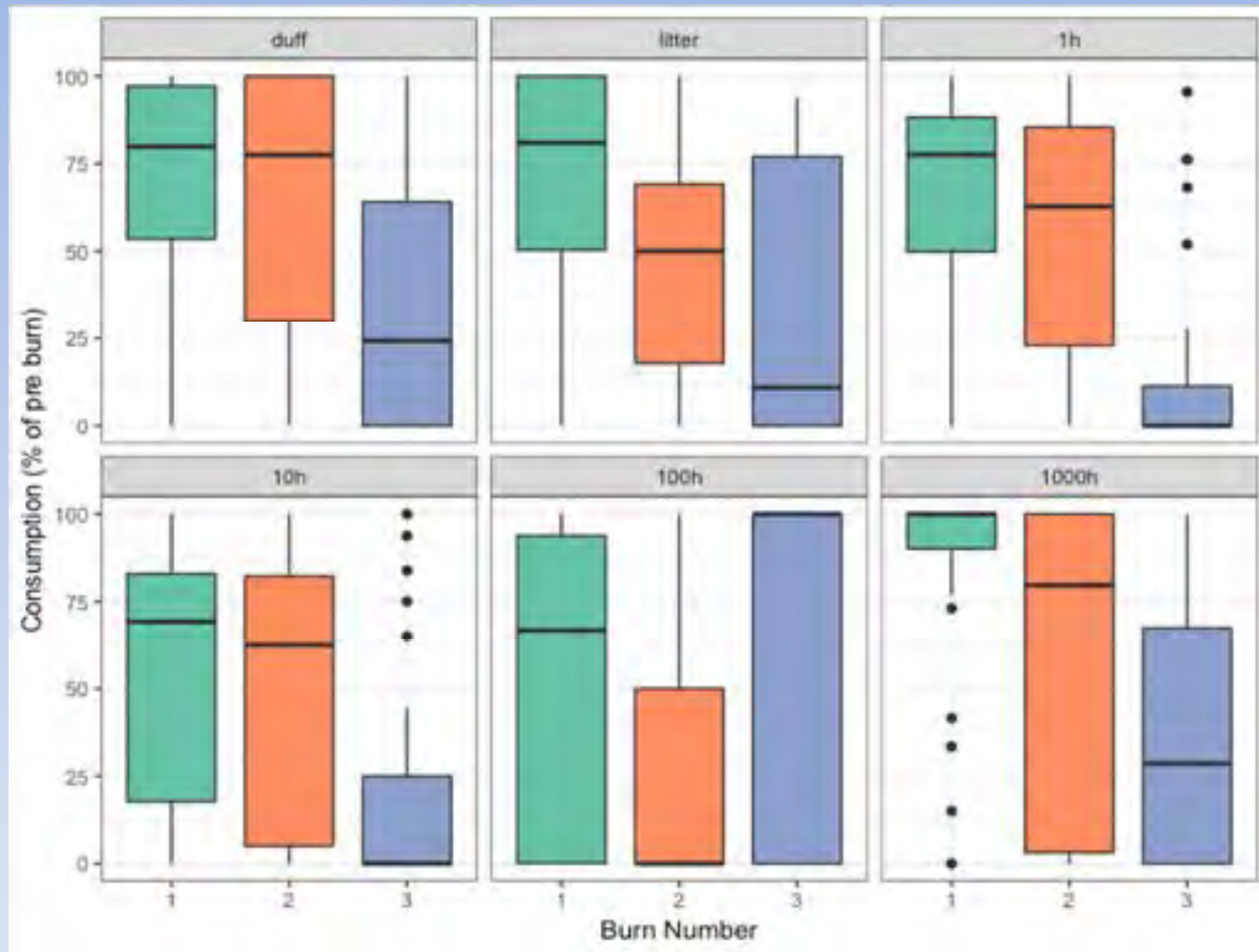
Fire Only – After 3rd Prescribed Fire (2018)

Desirable forest
structure needed
3 fires

10/30/2018



Fuel Consumption After 3rd Prescribed Fire



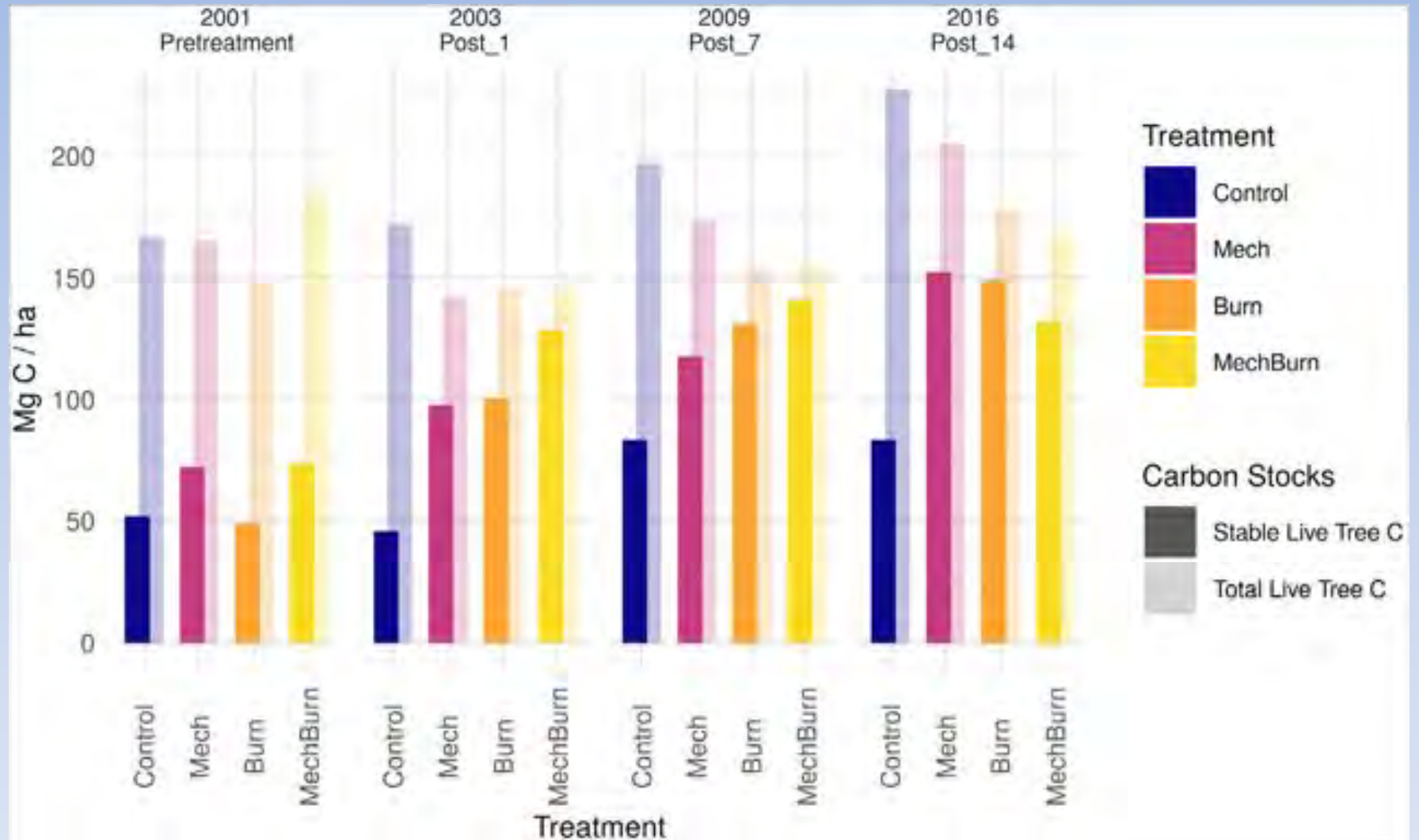
Green 1st fire Red 2nd fire Blue 3rd fire
More variability in fuel consumption in 3rd fire

Fuel Consumption with Multiple Prescribed Fires

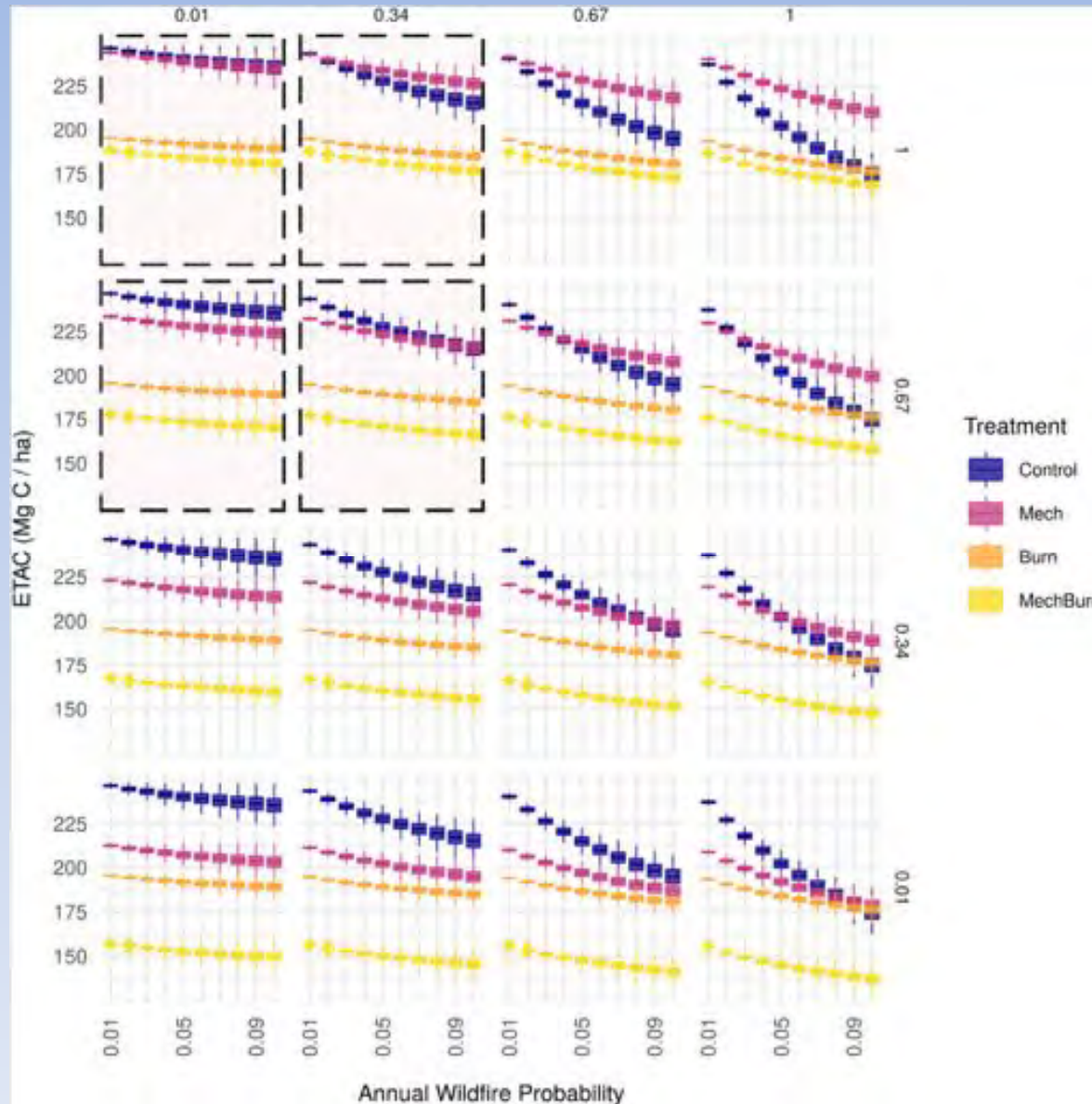
- Overall fuel consumption across the three burns averaged 45% of pre-burn levels
- Consumption rates were highest for the first burn at 65%
- Decreasing by 15-20% with each successive burn
- Fuel consumption was highly variable by fuel type, stand, and tree species composition.
- This variability may be advantageous for managers seeking to foster structural diversity and resilience in forest stands

Fuels Treatments Impacts on Carbon

Foster et al. 2020



Total Aboveground Carbon by Treatment and Annual Wildfire Probability (dashed lines today)



Restoration and Fuels Treatments

- All forest treatments successful in reducing fire hazards and fire effects in frequent fire forests
 - Reduction of *Surface and Ladder Fuels Critical* (Agee and Skinner 2005)
 - Treatments can increase the vigor/resistance/resilience of remaining trees to improve adaptation to climate change (Collins et al. 2015)
 - All fuel treatments: Most ecosystem components exhibit very subtle effects or no measurable effects at all (soils, small mammals and birds, vegetation, bark beetles) (Stephens et al. 2012)
 - Longevity of treatments 15 - 20 years (Stephens et al. 2012)
 - Treatments never end – lightning fire maintenance in some areas
 - Forest carbon more stable with fire treatments but mechanical and controls also important
 - fire probabilities increasing, control fire severity likely underestimated
 - Scale of treatments continues to be relatively low in CA - Problem

Summary

California mixed conifer forests have changed

- Tree density increased 2.75 times since 1900, canopy cover 1.5x higher, large tree deficit (Safford and Stevens 2017)
- Forest change has decreases resiliency
- Climate change makes worse – not biggest issue

Need increased restoration treatments and wildfire for ecological benefit

Answer to Nathaniel Kenney from 1956 (imagination soar – fire back and mechanical restoration treatments, more work with Tribes for innovation)

California has increased resources for fuels management

Need to invest in *fire extension program* state-wide, *Western US Prescribed Fire Training Center*, increase *pace and scale of treatments* (Feinstein Bill released)

Next 1-2 decades absolutely critical

We are running out of time – Still hopeful

Acknowledgements

Danny Foster, Brandon Collins, Danny Fry, Jason Moghaddas, John Battles, Bob Heald, Rob York, Ariel Thompson

Funding from US Joint Fire Sciences Program and Cal Fire competitive grants

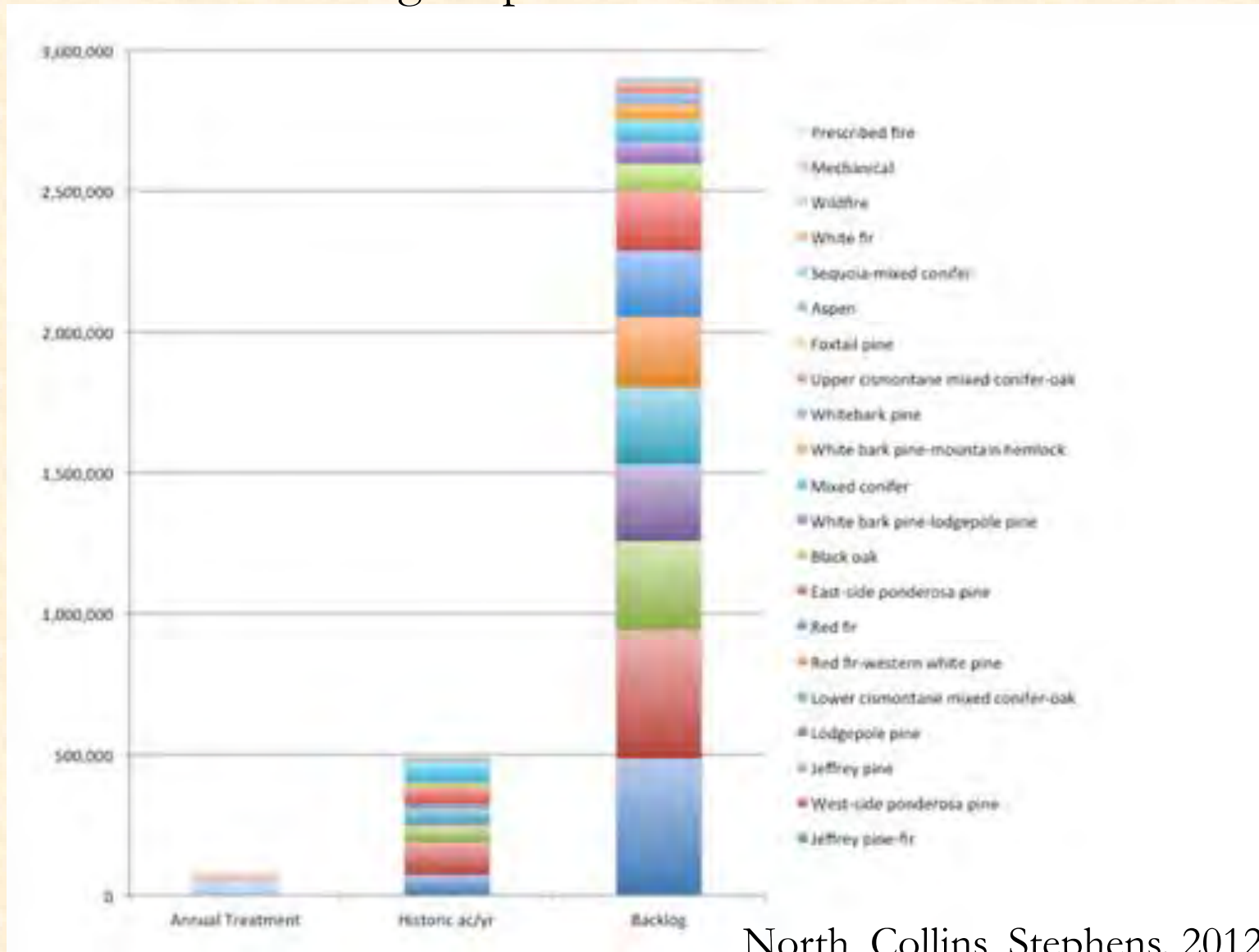
Papers available at:

www.cnr.berkeley.edu/stephens-lab/

Email: sstephens@berkeley.edu

Permanent Backlog:

2.9 million acres (60% of USFS acreage) will always remain fuel loaded
2/3's of this acreage is pine-dominated and mixed-conifer forest types



North, Collins, Stephens. 2012, J. Forestry

From: Mark & Patricia Schwartz [REDACTED]
Sent: Friday, January 8, 2021 3:04 PM
To: Zach Wood
Cc: january riddle
Subject: Comments on the Alpine Co. WRMP

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Zach and HNY!

I hope you and yours are all happy and healthy. Below you'll find our comments (italics) on the plan. We reviewed it together and formulated these comments together also. Do let us know if you have any questions.

Section 4.2.1 Description and Location

We're on board with methodology, including dealing with smoke from the burn piles, and might be able to offer parking (and even coffee and such!) for the crews or equipment. Let us know. [7-1]

Section 5.1.1 Ingress/Egress

While we appreciate the constraints outlined in the evac. route we encourage the team to keep moving towards other egress routes, e.g. continued discussions with private landowners and agencies that might be able to offer other evacuation routes or community evacuation areas. Although Hot Springs Road is going to be wider, the number of people, combined with the emergency vehicles likely moving back and forth, will still be problematic in our opinion. [7-2]

We think that the community evacuation areas shown in figure 5.1 on page 5-2 (with a purple designation) and figure 5.2 on page 5-3 should be specifically called out in writing as they are hard to discern on the map, which some may use as a reference. [7-3]

When and if this all translates to a new Fire Safe Council brochure, we think this type of written detail should also be included. [7-4]

We're very encouraged by the work done so far, and with the professionalism of the consultants and the county's team, and look forward to more progress. We'd like to remind everyone, including those in our community, that we need to keep the momentum going and not lose sight of the work that still has to be done. 2022 is pretty far away and we hope for an earlier start date. Let us know what we can do to help, and please continue to keep us informed.

Thank you,

Mark Schwartz

Pat Schwartz

January Riddle

From: Tom Fraser [REDACTED]
 Sent: Friday, January 08, 2021 3:12 PM
 To: 'zwood@alpinecountyca.gov' <zwood@alpinecountyca.gov>
 Subject: Alpine County WRMP Draft IS/MND comments

Hi Zach,

Thanks for the opportunity to comment on the Wildfire Risk Mitigation Plan Mitigated Negative Declaration. Your staff and the associated consultants appear to have completed a very thorough set of documents. I appreciate to the opportunity to provide a few comments. I have added underlines to emphasize the comment and question portions of my message.

My wife and I live in Bear Valley as our primary residence and our home falls within the 130-acre zone of the Bear Valley project. I spent most of my career as an environmental consultant reviewing and preparing documents such as this, and my prior education background focused on plant ecology. In Bear Valley we have been very good land stewards including felling dead trees on our property and adjacent common areas in a timely manner and keeping the ground surface in all these areas free of all dead vegetative matter. I have restored the vegetated areas of our lot and adjacent areas disturbed by construction of our home and driveway using the local seedbank. I spend time annually in the summer pulling non-native weeds that entered this pristine area during home construction and it is in pretty nice condition now.

The restoration of our local forest's health to reduce the threat of wildfire is critically important, but it is important that it be done correctly and with a lot of appreciation for the diversity and health of our local mix of ecosystems. I think these documents present a lot of good approaches and mitigation measures. There will be more community communication and information needed as you move forward. One of the key things that I don't understand is how we will understand the exact treatments proposed on an acre by acre basis. To get landowner MOAs signed, many people will want a better understanding of the specific approaches that will be taken on their land and adjacent areas. It would be great to include a brief explanation of how that part of the process will work either in a response to this comment or in another appropriate forum.

8-1

I am concerned about the loss of a diverse scrub understory habitat in the treatment area. Neither the WRMP or the MND give a good sense of what percentage of understory shrubs will be removed and how those decisions will be reached. The lack of special status species in Bear Valley gives little legal incentive to maintain a diverse, healthy plant community following the completion of this project. Will there be some input/recommendations from project biologists on the design and spacing of the understory treatments? Are there plans to only trim/cut shrubs or will complete removal of rootstock take place in certain locations? In general, people need to understand what the final aesthetic of this project will look like and how fragmented the remaining understory will be. We do not want to live in a land of barbered trees with just mulch underneath considering the biological wonderland we have now. Perhaps it could be made more clear what tree and shrub species will be the focus of the Hand Thinning treatment in Bear Valley.

I 8-2

I 8-3

I 8-4

I 8-5

Also, the removal of substantial shrub areas would remove large amounts of nesting habitat for common birds such as quail and other ground-nesting species. This shrub value receives limited attention in the documents, but is a key biological value of our area.

I 8-6

As indicated in the Biological Resources Assessment Report and in the WRMP, extensive ground disturbance has the potential to lead to widespread areas of non-native plant colonization. Currently the presence of non-native weeds in Bear Valley is extremely low and it would be great to keep it that way. Mitigation Measure Biology-7 is a good approach to reducing this impact. However, having worked on projects I ke this it is extremely important that this measure is strictly enforced on a daily basis or it will lose all its meaning. It would be great if project equipment could remain in Bear Valley throughout the treatment portion of the project to more easily prevent weed seed travel to our area and reduce the extent of daily equipment vehicle inspections and washing.

I 8-7

Neither the BRA report nor WRMP address the possibility of ecosystem type conversion from substantial shrub and understory removal. If native shrub areas turn into native or non-native grassland, the chance for flashy, fast-spreading fires could actually increase. The chance of this conversion occurring should be discussed as well as steps that will be taken to reduce/prevent it such as leaving shrub rootstock in place in locations where shrub trimming will occur. We don't want to trade one fire risk for another.

I 8-8

I would assume that limbing of trees up to 10 feet from the ground is a key treatment step that will reduce ladder fuels. It is important for residents to understand that this will be undertaken. I may have missed the discussion of this action in the reports, but it would be good to clearly describe this so that the rest of Bear Valley can follow the full treatment model in areas of the community not covered by this current program.

I 8-9

Finally, separate from CEQA but directed at the project implementation phase, will there be a community liaison or two that will oversee the project in Bear Valley? Will volunteer support be needed for this step where community members can get involved if they can invest time to help?

I 8-10

Thank you again for the opportunity to comment,

Tom Fraser

Bear Valley

APPENDIX F

Mitigation Monitoring and Reporting Program

Mitigation Monitoring and Reporting Requirements

Alpine County prepared an Initial Study (IS) to identify and evaluate potential environmental impacts associated with the proposed Wildfire Risk Mitigation Plan (WRMP). Mitigation measures are defined in the IS to reduce potentially significant impacts of project construction and operation. All measures designated as mitigation measures reduce potential impacts to the associated resource to less than significant levels.

Adoption of the WRMP and implementation of the vegetation treatment projects will require execution and monitoring of all the mitigation measures identified in the IS. The California Environmental Quality Act (CEQA) Section 15097(a) requires that:

“... In order to ensure that the mitigation measures and project revisions identified in the EIR or negative declaration are implemented, the public agency shall adopt a program for monitoring or reporting on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects. A public agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.”

CEQA Section 15097(c) defines monitoring and reporting responsibilities of the lead agency.

“(c) The public agency may choose whether its program will monitor mitigation, report on mitigation, or both. "Reporting" generally consists of a written compliance review that is presented to the decision making body or authorized staff person. A report may be required at various stages during project implementation or upon completion of the mitigation measure. "Monitoring" is generally an ongoing or periodic process of project oversight. There is often no clear distinction between monitoring and reporting and the program best suited to ensuring compliance in any given instance will usually involve elements of both. The choice of program may be guided by the following:

- (1) Reporting is suited to projects which have readily measurable or quantitative mitigation measures or which already involve regular review. For example, a report may be required upon issuance of final occupancy to a project whose mitigation measures were confirmed by building inspection.
- (2) Monitoring is suited to projects with complex mitigation measures, such as wetlands restoration or archeological protection, which may exceed the expertise of the local agency to oversee, are expected to be implemented over a period of time, or require careful implementation to assure compliance.

MITIGATION MONITORING AND REPORTING PROGRAM

(3) Reporting and monitoring are suited to all but the most simple projects. Monitoring ensures that project compliance is checked on a regular basis during and, if necessary after, implementation. Reporting ensures that the approving agency is informed of compliance with mitigation requirements.”

This Mitigation Monitoring and Reporting Program (MMRP) is meant to facilitate implementation and monitoring of the mitigation measures to ensure that measures are executed. This process protects against the risk of non-compliance.

The purpose of the MMRP is to:

- Summarize the mitigation required for vegetation treatment projects
- Comply with requirements of CEQA and the CEQA Guidelines
- Clearly define parties responsible for implementing and monitoring the mitigation measures
- Provide a plan for how to organize the measures into a format that can be readily implemented by the County and monitored

MMRP Components

The MMRP provides a summary of all mitigation measures that will be implemented for the project. Mitigation measures could be applicable during one or more implementation phase or location. Each mitigation measure is accompanied with identification of:

- Timing – measures may be required to be implemented prior to construction, during construction, post construction, or a combination of construction phases
- Application Locations – locations where the mitigation measures will be implemented.
- Monitoring/Reporting Action – the monitoring and/or reporting actions to be undertaken to ensure the measure is implemented.
- Responsible and Involved Parties – the party or parties that will undertake the measure and will monitor the measure to ensure it is implemented in accordance with this MMRP

The responsible and involved parties will utilize the MMRP to identify actions that must take place to implement each mitigation measures, the time of those actions and the parties responsible for implementing and monitoring the actions.

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Monitoring and Reporting Program

Mitigation Measures	Applicable Locations	Timing	Monitoring/Reporting Action	Responsible and Involved Parties
<p>MM Air Quality-1: Fugitive Dust Control Measures</p> <p>The following fugitive dust control measures as outlined in the Great Basin Unified Air Pollution Control District’s Rule 401 will be implemented during vegetation management activities.</p> <p>The County shall take reasonable precautions to prevent visible particulate matter from being airborne, under normal wind conditions, beyond the property from which the emission originates. Reasonable precautions include, but are not limited to:</p> <ul style="list-style-type: none"> • Use, where possible, of water or chemicals for control of dust in vegetation management operations or the clearing of land; • Application of water, or suitable chemicals on unpaved roads, material stockpiles, and other surfaces that can give rise to airborne dusts; • Installation and use of hoods, fans, and fabric filters, to enclose and vent the handling of dusty materials. Adequate contaminant methods shall be employed during such handling operations; • Use of water, chemicals, chuting, venting, or other precautions to prevent particulate matter from becoming airborne in handling dusty materials to open stockpiles and mobile equipment; and <p>Maintenance of roadways in a clean condition.</p>	Areas where vegetation is cleared.	During Construction	Contractors ensure project-related dust is minimized	<ul style="list-style-type: none"> • Contractor • County
<p>MM Biology-1: Pre-Construction Plant Survey</p> <p><i>Priority Project Treatment Areas (PTAs): Markleevillage, Manzanita, Bear Valley</i></p> <p>A qualified botanist shall conduct a pre-construction survey for special-status plants prior to any vegetation-treatment activities occurring in dry montane meadow vegetation communities and within ecotones along roadsides and at areas of transition between upland vegetation communities in all priority PTAs. The plant survey</p>	All project areas as noted in measure text	Prior to Construction	1) Qualified botanist/biologist conducts pre-construction plant survey and flags special-status species, 2) County or contractor install fence to avoid the plant(s).	<ul style="list-style-type: none"> • County • Contractor • Biologist

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measures	Applicable Locations	Timing	Monitoring/Reporting Action	Responsible and Involved Parties
<p>is required to occur during the plant blooming season within the year prior to treatment activities within the PTA. The qualified botanist will flag all special-status plant species for avoidance, and ESA fencing will be installed to protect the plant prior to commencement of vegetation-treatment activities.</p> <p><i>Non-Priority PTAs</i></p> <p>A qualified botanist shall conduct a pre-construction survey for special-status plants prior to any vegetation-treatment activities occurring in the PTAs. The plant survey is required to occur during the plant blooming season within the year prior to treatment activities within the PTA. The qualified botanist will flag all special-status plant species for avoidance, and ESA fencing will be installed to protect the plant prior to commencement of vegetation treatment activities.</p>		<p>During Construction</p> <hr/> <p>Following Construction</p>	<p>Ensure that fenced plant populations are not disturbed during vegetation management activities.</p> <hr/> <p>Remove fencing</p>	
<p>MM Biology-2: Worker Environmental Awareness Training</p> <p>Prior to implementation of vegetation-management activities within any PTA, the County or its contractor shall develop, and all workers participate in, a PTA-specific environmental awareness training provided by the qualified biologist. The training will identify the work limits of the specific PTA that will be treated. In addition, the training will include the following:</p> <p>1) Alert the crew to all fenced and/or flagged environmentally sensitive areas and avoidance zones and instruct the crew to keep out of the area.</p> <p>2) Inform the crew of the potential for special-status species to be encountered on site, where they are most likely to be found, which life forms are most likely to be encountered, and how the specific vegetation management activities implemented in the PTA could affect the species during vegetation-management activities.</p>	<p>All project areas</p>	<p>Prior to Construction</p> <hr/> <p>During Construction</p>	<p>1) Prepare project-specific Worker Environmental Awareness Training and 2) crew receive to training from qualified biologist</p> <hr/> <p>Training to be provided to any new crew members who begin working on the project after the initial training.</p>	<ul style="list-style-type: none"> • County • Contractor • Biologist

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<p>3) Discuss the applicable mitigation measures from this IS/MND and any other applicable measures from other documents, such as permits, that have been incorporated into the project.</p> <p>4) Inform crew of what to do if a sensitive species is encountered during vegetation-management activities. Specifically, crew shall be informed of the following actions:</p> <ul style="list-style-type: none"> • If a special-status species enters the treatment area, all work shall stop within 100 feet of the species. Work may resume after the species have vacated the treatment area. <p>If vegetation treatment is planned to occur within big sagebrush scrub and dry montane meadow vegetation communities between April and October, crew shall stay alert for signs of ground-dwelling bumble bees and avoid treatment where ground-dwelling bees occur.</p>				
<p>MM Biology-3: Waters and Wetland Protection Zones</p> <p>Prior to implementation of vegetation-management activities within any PTA, the County or its contractor shall identify waterbodies and wetland protection zones and implement controls to minimize erosion and runoff in all drainage plans, in accordance with California Forest Practice Rules (Title 14, California Code of Regulations, Chapters 4, 4.5, and 10) (CAL FIRE 2017). Prior to project activity, the County will assign a qualified biologist to identify the locations of riparian habitat and waterbodies as well as corresponding 50-foot (minimum) setbacks (Waters and Wetland Protection Zones) for avoidance. Identification of riparian habitat/waterbodies/wetlands for avoidance will be in addition to and distinguished from any required vegetation-management activities boundary flagging. Waters and Wetland Protection Zones will be identified as appropriate on project maps. Appropriate runoff controls, such as berms, straw wattles, silt fencing, filtration systems, and sediment traps, will be implemented to control</p>	All project areas	<p>Prior to Construction</p> <hr/> <p>During Construction</p>	<p>1) Conduct riparian zone survey, 2) clearly mark exclusion zone for all identified waterbodies, drainages, or wetlands prior to project implementation, and 3) install appropriate runoff controls.</p> <hr/> <p>Ensure WRMP activities are conducted outside of exclusion zones and runoff controls are</p>	<ul style="list-style-type: none"> • County • Contractor • Biologist

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<p>siltation and the potential discharge of pollutants. Waters and Wetland Protection Zones and appropriate runoff controls, such as berms, straw wattles, silt fencing, filtration systems, and sediment traps, will be implemented to protect riparian habitat and control siltation and the potential discharge of pollutants.</p>		Following Construction	<p>functional and undamaged.</p> <p>1) Remove flags and markers and 2) remove runoff controls once soils on site are stabilized.</p>	
		Prior to Construction	<p>1) Conduct pre-construction survey and 2) establish active nest buffers</p>	<ul style="list-style-type: none"> • County • Contractor • Biologist
<p>MM Biology-4: Nesting Bird Surveys</p> <p>If vegetation-management activities occur between March 1 and August 31 on the east slope of Alpine County, and between April 1 and August 31 on the west slope of Alpine County, a qualified biologist shall conduct pre-activity surveys for active nests of special-status and MBTA-protected birds before the start of any project activities. Surveys for nesting raptors will be conducted in accordance with established CDFW raptor survey protocols. If active nests are found, the County will establish avoidance buffers around nests that are sufficient so that breeding is not likely to be disrupted or adversely affected by project activities. An avoidance buffer will constitute an area where project-related activities (i.e., mechanized vegetation removal, pile burning, etc.) will not occur. Ground vegetation may be removed using non-mechanized hand tools if deemed by the biologist that no disturbance to nesting birds would occur. No treatment may be applied to the tree in which the nest occurs. Typical avoidance buffers during the nesting season will be 100 feet for nesting passerine birds and 500 feet for nesting raptors unless a qualified biologist determines that smaller buffers will be sufficient to avoid impacts on nesting raptors and/or other birds. Factors to be considered for determining buffer size will include the following: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. A qualified biologist will monitor any active nests during vegetation-</p>	All project areas	During Construction	<ul style="list-style-type: none"> • Maintain active nest buffers until the nest is no longer active. 	

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management activities, to ensure that the species is not being harmed or harassed by the noise or activity resulting from project-related activities. Buffers will be maintained until a qualified biologist has determined that young have fledged and are no longer reliant on the nest or parental care for survival.				
<p>MM Biology-5: Avoid Disturbance or Harm to Terrestrial Wildlife</p> <p>A qualified biologist shall conduct a pre-construction survey within the PTAs for all potentially occurring terrestrial special-status wildlife species. Nesting bird surveys will occur in accordance with MM Biology-4.</p> <p>Mammals. A qualified biologist shall conduct a pre-construction survey for special-status mammals identified in Table 2-5 of this IS/MND and active special-status mammal forms or dens within the PTA. For surveys in inaccessible areas, the surveying biologist shall use binoculars to scan any suitable denning substrate for potential individuals or forms/dens. The pre-construction survey shall be conducted no more than 14 days before the initiation of vegetation-treatment activities. If an active special-status mammal form/den is identified within the PTA, a 10-foot no-disturbance buffer shall be established around the form/den to avoid disturbance of the nesting/denning mammal until a qualified biologist determines that the young have dispersed. The extent of these buffers shall be determined by the biologist in coordination with CDFW, the County, and the public landowner (USFS, BLM, or State Parks, as applicable) and shall depend on the species identified, level of noise or vegetation-management activity disturbance, line-of-sight between the form/den and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. In addition to the establishment of buffers, other avoidance measures (determined during agency coordination) may be implemented. If any non-denning species are observed in the PTA, the species will be allowed to move out</p>	All project areas	<p>Prior to Construction</p> <hr/> <p>During Construction</p>	<p>1) Qualified biologist conducts pre-construction surveys and establishes buffers for active natal forms/dens and 2) species are relocated as necessary.</p> <hr/> <p>Ensure that buffers around natal forms/dens are not disturbed during vegetation-management activities and 2) avoid species traveling through site.</p>	<ul style="list-style-type: none"> • County • Contractor • Biologist

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<p>of harm’s way on its own. If needed, a qualified biologist will move the species to the nearest area of suitable habitat outside of the treatment area. If applicable, depending on the location and status of the species, agency approval will be obtained before any species is moved. If no active nests/dens are found during the preconstruction surveys, then no additional mitigation is required.</p> <p>Southern long-toed salamander. A qualified biologist shall conduct a pre-construction survey for southern long-toed salamander if vegetation treatment occurs between April 1 and June 1. The biologist shall survey all suitable potential larval ponds for salamander larvae and adjacent uplands for migrating salamander. All ponds shall be fenced and avoided in accordance with MM Biology-3. Fencing type and installation shall not restrict migration of long-toed salamander into uplands. Any migrating adults observed during pre-construction surveys shall be relocated to an area of suitable habitat out of harm’s way.</p> <p>Following preconstruction surveys and initiation of vegetation management activities, it is possible that wildlife species could subsequently enter or return to the treatment area. The following measures shall be implemented to avoid disturbance or harm to these species:</p> <ul style="list-style-type: none"> • If any special-status species or other wildlife species are observed in the treatment area during vegetation-management activities, activities shall cease until the species is allowed to move out of harm’s way on its own accord. <p>If the species cannot be allowed to move out of harm’s way on its own accord, a qualified biologist shall move the species to the nearest area of suitable habitat outside of the treatment area. If applicable, depending on the location and status of the species, agency approval will be obtained before any species is moved.</p>				

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<p>MM Biology-6: Prescribed Burn Planning</p> <p>Prior to conducting prescribed burns within any PTA, the following planning activities must occur and the appropriate impact avoidance measures described below must be incorporated into the project-specific prescribed burn planning effort (refer to MM Hazards-3).</p> <p>Special-status plant species: To ensure that prescribed burn activities do not negatively impact special-status plant species, a qualified biologist shall review vegetation communities that occur within the footprint of the prescribed burn area and determine if any special-status plant species have potential to occur within the prescribed burn area. If special-status plant species have the potential to occur within the prescribed burn area, the biologist shall determine if the potentially occurring special-status plant(s) would be negatively affected by application of fire to the landscape. If the potentially occurring special-status plant(s) would be negatively affected by prescribed burn, the County shall either treat the entire PTA using mechanical and hand tool methods, while also implementing MM Biology-1, or complete the following steps to reduce the footprint of the prescribed burn area to avoid special-status plant species:</p> <ol style="list-style-type: none"> 1. Conduct a pre-construction plant survey during the appropriate blooming season for each special-status plant that may occur within the PTA. 2. Determine if a prescribed burn can be completed while ensuring avoidance of all special-status plant species. 3. Modify the prescribed burn boundary within the project-specific Burn Plan (required in MM Hazards-3) to avoid the special-status plant(s). <p>A pre-construction plant survey in accordance with MM Biology-1 shall be conducted in all areas where firelines and temporary</p>	<p>Project locations where prescribed burning would occur</p>	<p>Prior to Construction</p>	<p>Prepare project-specific prescribed burn planning efforts to include consideration of potentially occurring special-status plant and wildlife species, sensitive vegetation communities, and appropriate avoidance measures indicated in this measure.</p>	<ul style="list-style-type: none"> • County • Biologist
		<p>During Construction</p>	<p>1) Implement prescribed burn in accordance with the project-specific prescribed burn planning efforts and 2) maintain appropriate buffers.</p>	
		<p>Following Construction</p>	<p>1) Search the affected post-treatment area immediately following each prescribed fire.</p>	

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<p>access or staging will take place. Fireline, access, and staging activities shall avoid special-status plant species.</p> <p>Special-Status Wildlife: To ensure that prescribed burn activities do not negatively impact special-status wildlife species, a qualified biologist shall conduct a pre-construction survey for all potentially occurring wildlife within the footprint of the prescribed burn area. The pre-construction survey would occur no more than 14 days before the prescribed burn. If special-status wildlife is identified within the prescribed burn area, then the following buffers and additional impact avoidance measures shall be implemented, as applicable:</p> <p>Prescribed burns shall maintain the following buffers from various sensitive species and wildlife habitats:</p> <ul style="list-style-type: none"> • Active bird nests shall be given species-appropriate buffers matching those outlined in MM Biology-4: <ul style="list-style-type: none"> – 100 feet for passerines – 500 feet for raptors such as accipiters, hawks, and eagles – A 10-foot buffer from forms, nests, or dens of Western white-tailed jackrabbit, American badger, Sierra marten, and Sierra Nevada mountain beaver – A 50-foot buffer from wolverine, West Coast DPS fisher, and Sierra Nevada red fox dens – A 20-foot buffer from occupied bat-roosting trees – A 20-foot buffer from ground-dwelling bee colonies – The listed buffer areas may be managed using other vegetation-management techniques following each burn (e.g., mechanical or hand tool treatment) but are to remain completely undisturbed during prescribed fire events. Every reasonable attempt shall be made to maintain 0.25 to 0.5 acre (0.1 to 0.2 hectare) of unburned habitat for every 10 acres (4 hectares) of burned habitat (e.g., 4 to 8 acres of retreat habitat are needed for a 160-acre burn, and 9 to 18 acres are needed 				

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<p>for a 350-acre burn). Retreat areas shall be conserved randomly throughout the treatment area. These retreat areas may be naturally occurring areas such as rock formations, ponds, and other wetland/riparian areas, areas with a high density of burrows, and other areas not prone to burn, or these areas may be created and maintained using hand tools or water to create fire-breaks or wet-lines.</p> <ul style="list-style-type: none"> • No more than 24 hours prior to conducting prescribed fires, visual surveys shall be conducted by walking transects throughout the proposed burn area in an attempt to locate individual special-status wildlife. With permission from CDFW and/or USFWS, a permitted biologist or biological monitor shall capture, transfer, and release in a safe area any special-status reptiles or amphibians deemed to be in danger of being harmed by the prescribed fire activities. If individuals are located during the pre-treatment surveys but escape capture, an area approximately 50 feet (15 meters) in diameter around the individual shall be protected from the burn. If necessary, individuals may be held in captivity in a pillowcase for less than 24 hours and may later be released near the point of capture after the burn has been completed. The numbers of special-status reptiles and amphibians encountered and transferred to safe areas or held in captivity during treatment shall be reported to USFWS and CDFW. • All vehicles involved with the site-specific burn shall be retained in a prearranged, marked parking area in a clearing as close to the main road as possible. At least one monitor shall ensure wildlife is clear from the parking area while vehicles are arriving and leaving. All vehicles must stay on designated roads, and if it is necessary for a vehicle to travel off the designated main road, a monitor shall precede the vehicle to clear wildlife from the pathway of the vehicle. Only biological monitors specifically authorized by the USFWS and CDFW to handle species listed on the federal or State Endangered Species Acts (normally, these 				

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<p>shall be individuals holding a federal recovery permit for the species) shall be allowed to handle, transport, and relocate individuals of these species.</p> <ul style="list-style-type: none"> Immediately following each prescribed fire, the permittee shall search the affected post-treatment area to identify dead or injured individuals of all vertebrate taxa. Dead individuals of special-status species shall be collected and deposited at an approved repository. Injured individuals shall be handled only by a permittee authorized to capture and handle the species. The County shall ensure medical assistance is provided to injured animals by a certified wildlife veterinarian familiar with amphibian care. <p>Sensitive Communities: To ensure that prescribed burn activities within non-priority PTAs do not result in substantial adverse effects to sensitive upland communities, prescribed burn planning efforts shall identify all sensitive natural communities within the PTAs, including the community rarity ranking, according to the most recent edition of CDFW's Natural Community List. No prescribed burn is to be conducted within a sensitive community identified with a ranking of S1 (critically imperiled) or S2 (imperiled). Work may be completed within sensitive vegetation communities ranked S1 or S2 using mechanical or hand tools only and must include invasive-species controls identified in MM Biology-7 of this IS/MND.</p>				
<p>MM Biology-7: Invasive Species Control</p> <p>To prevent the accidental introduction or spread of invasive species in the project area during vegetation management activities, the following measures would be implemented:</p> <ul style="list-style-type: none"> Only certified noxious weed-free erosion control materials will be used. All straw material will be sterile and certified as weed-free prior to being used at the PTAs. 	All project areas	Prior to Construction	<ul style="list-style-type: none"> Ensure all equipment and materials are free of weeds and dried vegetation or mud. Ensure environmental awareness training (MM Biology-2) includes information 	<ul style="list-style-type: none"> Contractor Biologist

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<ul style="list-style-type: none"> Contractor will wash all construction equipment prior to bringing it onto the job site. Inspection will ensure that equipment arrives on site free of mud and seed-bearing material. If the same contractor will be used for work within multiple PTAs, equipment must be washed between use at each PTA. Seed-free mulch will be applied to areas of disturbed soils and de-vegetated slopes. Use of chipped or mulched native material will be applied whenever possible within sensitive natural communities. The Environmental Awareness Training described under MM Biology-2 will include information on noxious weeds in the PTAs and instruction on how crew can reduce potential introduction of noxious weeds to the site. 			on spread of noxious weeds to the site.	
		During Construction	Use only certified weed-free straw and erosion-control products.	
		Following Construction	Apply mulch as necessary.	
<p>MM Cultural-1: Avoidance of Impacts to Cultural Resources</p> <p>The following measures shall be implemented during vegetation management activities within any PTA where cultural resources have been inventoried or recorded:</p> <ul style="list-style-type: none"> Prior to initiation of fuels management activities, a 100-foot radius surrounding each known cultural resource site shall be flagged by a qualified cultural resource specialist/archaeologist and designated as an environmentally sensitive area (ESA). Treatment activities within the 100-foot ESA shall be limited to hand thinning. The ESA around site ALP-269 should be fully avoided, and no treatment activities will occur within the ESA. Mechanical thinning, access roads, skid trails, and staging shall not be permitted within the ESA. All vehicle access shall avoid the ESA, and only foot traffic shall be allowed within the delineated ESA boundary. Pile burning shall not be conducted within the flagged ESA. 	Project locations where cultural resources are known to occur within the project boundary	Prior to Construction	Flag a 100-foot ESA around all cultural resource sites within the PTA.	<ul style="list-style-type: none"> County Contractor Cultural resource specialist
During Construction		Limit activities within the flagged ESA as appropriate.		
Following Construction		Remove flags		
<p>MM Cultural-2: Previously Unidentified Cultural Resources</p>		Prior to Construction	Train employees and contractors how to	<ul style="list-style-type: none"> County

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<p>Cultural Resources Training All employees and contractors shall receive cultural resource training conducted by a qualified cultural resources specialist (e.g., an archaeologist) prior to working in any PTA. The training shall address appropriate work practices necessary to effectively implement the mitigation measures (MM Cultural-1, -3, and -4), for</p>	<p>All project areas</p>		<p>recognize basic signs of a potential resource and implement the mitigation measures (MM Cultural-1 through MM Cultural-4).</p>	<ul style="list-style-type: none"> • Contractor • Cultural resource specialist

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historical resources, archaeological resources, tribal cultural resources, and human remains. The training shall address the potential for exposing subsurface resources, recognizing basic signs of a potential resource, understanding required procedures if a potential resource is identified, including reporting the resource to a qualified archaeologist or cultural resources specialist, and understanding all procedures required under Health and Safety Code § 7050.5 and PRC §§ 5097.94, 5097.98, and 5097.99 for the discovery of human remains. Workers will be specifically instructed as to the following:

- Leave all potential cultural resources (i.e., historical resource, archaeological resource, tribal cultural resource, or human remains) where they are found.
- Avoid all vehicle access within the boundary of an ESA.

The training shall take place during the WEAT required in MM Biology-1.

Procedures for Resource Discovery

In the event that a previously unidentified cultural resource is discovered during implementation of an activity, all work within 100 feet of the discovery shall be halted. The resource shall be located, identified, and recorded in the updated California Department of Parks and Recreation 523 form detailing current conditions. Data regarding archaeological resources shall be shared with Native American tribes identified by the Native American Heritage Commission (NAHC) to be traditionally and culturally affiliated with the geographic area of the PTA.

A qualified cultural resource specialist/archaeologist shall inspect the discovery and determine whether further investigation is required. If the discovery can be avoided and no further impacts shall occur, the resource shall be documented on California State Department of Parks and Recreation cultural resource record forms and no further effort shall be required. If work must commence in the sensitive area, it must be performed as described in MM Cultural-1. Alternatively, the cultural resource

During Construction

(1) Cease activity if a cultural resource is uncovered, (2) avoid resource if possible, and (3) evaluate and determine whether the resource is eligible, unique, or could be a tribal cultural resource. (4) If the resource could be a tribal cultural resource, notify Native American tribe identified by the NAHC to be traditionally and culturally affiliated with the geographic area of the site. (5) If the resource is not eligible, unique, and/or a tribal cultural resource, work may commence. (6) If the resource is eligible, unique, and/or a tribal cultural resource, work remains halted and a method selected to ensure that adverse change to the resource does not occur. (7) Preserve in place if possible. (7) If not possible to preserve in place, and as deemed appropriate by the qualified cultural

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specialist/archaeologist shall evaluate the resource and determine whether it is:

- Eligible for the CRHR (and a historical resource for purposes of CEQA);
- A unique archaeological resource as defined by CEQA; or
- A potential tribal cultural resource (all archaeological resources could be a tribal cultural resource).

If the cultural resources specialist/archaeologist determines that the resource could be a tribal cultural resource, he or she shall, within 48 hours of the discovery, notify each Native American tribe identified by the NAHC to be traditionally and culturally affiliated with the geographic area of the project site of the discovery. A tribal monitor shall inspect the resource to determine whether it constitutes a tribal cultural resource. If the resource is determined not to be a unique archaeological resource, an historical resource, or a potential tribal cultural resource, work may commence in the area.

If the resource meets the criteria for a historical resource, unique archaeological resource, and/or tribal cultural resource, work shall remain halted and the cultural resources specialist/archaeologist shall consult with the County staff regarding methods to ensure that no substantial adverse change would occur to the significance of the resource pursuant to CEQA Guidelines Section 15064.5(b). The responding tribes shall be given an opportunity to participate in determining the appropriate mitigation methods for tribal cultural resources in consultation with the County.

Avoidance of the area, or avoidance of impacts on the resource, is the preferred method of mitigation for impacts on cultural resources and shall be required unless there are other equally effective methods. Work may commence upon completion of evaluation, collection, recordation, and analysis, as approved by the qualified cultural resource specialist/archaeologist and tribal monitor, for tribal cultural resources.

resource specialist/archaeologist and tribal monitor for tribal cultural resources, recover and record cultural materials. Once recovered and recorded, the activity can commence in this area.

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<p>MM Cultural-3: Pre-Activity Record Search and Surveys</p> <p>Prior to conducting any work in the non-priority PTAs identified in the WRMP that could disturb the ground surface or subsurface, an archival-records search at the Central California Information Center (CCIC) shall be completed.</p> <p>A pre-activity cultural-resources survey shall be conducted by a qualified archaeologist or cultural resources specialist within PTAs that have not been surveyed in the last 20 years. New resources noted during the field survey shall be recorded and mapped on appropriate California Department of Parks and Recreation 523 forms. In the case of a previously recorded resource, an updated California Department of Parks and Recreation 523 form detailing current condition shall be completed, as appropriate. Alternatively, the County may complete a Cultural Resources Sensitivity Study for non-priority PTAs. The Cultural Resources Sensitivity Study must be prepared by a qualified archaeologist. Project activities in locations identified in a cultural sensitivity study as areas of low sensitivity may occur without a cultural resources field survey as long as tribal outreach and worker training for the recognition of cultural resources are implemented. All other applicable components of MM Cultural-3, including the records search, consultation with Native American tribes, and treatment of resources in accordance with MM Cultural-1, shall apply.</p> <p>Any historical or archaeological resources located in the PTA (as identified in either previous surveys, in a discretionary records search, or during pre-activity surveys) shall be treated in accordance with MM Cultural-1.</p> <p>The County shall contact and consult with local Native American tribes identified by the Native American Heritage Commission and request input on Tribal Cultural Resources within the PTAs if any prehistoric resources are identified during pre-activity surveys.</p>	<p>All project locations that have not been previously surveyed for cultural resources</p>	<p>Prior to Construction</p>	<ol style="list-style-type: none"> 1) Conduct archival-records search, 2) conduct pre-activity survey, 3) comply with MM Cultural-1 for any known resources, and 4) consult with Native American tribes, if appropriate. 5) Update California Department of Parks and Recreation 523 form, if appropriate. 	<ul style="list-style-type: none"> • County • Cultural resource specialist

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<p>MM Cultural-4: Discovery of Human Remains</p> <p>If human remains and associated or unassociated funerary objects are exposed during implementation of vegetation-management activities, work within 50 feet of the discovery shall be halted and the find protected from further disturbance. The County Coroner or Medical Examiner shall be notified immediately and, in the event of the determination that the human remains are Native American remains, notification of the Native American Heritage Commission shall be undertaken to obtain a most likely descendant (MLD) (PRC § 5097.98) for treatment recommendations. The County and the MLD shall make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Section 15064.5[d]). The agreement shall take into consideration the appropriate removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects.</p> <p>Any findings shall be submitted in a report to the MLD and filed with the CCIC.</p>	<p>All project locations, as necessary</p>	<p>During Construction</p>	<p>(1) Avoid known location of human remains,</p> <p>(2) cease activity if human remains are uncovered,</p> <p>(3) appoint an MLD,</p> <p>(4) protect human remains until a decision is reached.</p> <p>(5) If avoidance is not possible, the County, a professional archaeologist, and an MLD shall be consulted and human remains and associated or unassociated funerary objects shall be removed from the location and relocated to selected location in accordance with the decision reached. Once remains are moved, then the activity can commence again in this area.</p>	<ul style="list-style-type: none"> • County • Contractor
<p>MM Geology-1: Erosion Control and Slope Stability Measures</p> <p>Erosion control measures shall be implemented to ensure WRMP activities do not result in erosion, loss of topsoil, or slope instability in areas where work could expose bare soils or create loss of root-</p>	<p>All areas of ground disturbance</p>	<p>Prior to Construction</p>	<p>Inspect areas prior to work to assess the potential for erosion and soil instability.</p>	<ul style="list-style-type: none"> • Contractor

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<p>soil matrix strength. The following erosion control measures shall be implemented on sites with loose or unstable soils, steep slopes (greater than 30 percent), or where a large percentage of the groundcover will be removed (leaving groundcover less than 70 percent).</p> <ul style="list-style-type: none"> • Minimize areas to be disturbed to the greatest extent feasible. • Prior to conducting work in any given area that could result in erosion or slope instability (e.g., vegetation removal or prescribed burns that could reduce the groundcover and expose soil), the area shall be inspected for existing signs of erosion or slope instability (e.g. rills, slumped soil). • Install approved, biodegradable erosion-control measures (e.g., application of forest duff or mulches, straw bales, straw wattles or other erosion-control material, seeding, or planting of appropriate native plant species) and non-filament-based geotextiles (e.g., coir, jute) when causing soil disturbance on moderate to steep (10 percent slope and greater) slopes. • Avoid use of heavy equipment on slopes greater than 30 percent unless specialized equipment is used that does not impact slope stability. • Sediment control devices, if installed, shall be certified weed-free, as appropriate. • No substantial ground disturbing work (e.g., use of heavy equipment, pulling large vegetation) shall occur during rain events and 48 hours after a rain event, defined as 0.5 inch of rain within a 48-hour or greater period, using the NOAA website as the official record for rain events. <p>Once work is completed, the areas shall be inspected as needed and as accessible but at least annually until groundcover exceeds 70 percent or it is clear that significant erosion and slope destabilization are not occurring. At that time, erosion control and</p>		During Construction	Implement protection measures as needed to avoid or minimize erosion and slope destabilization.	
		Following Construction	Conduct inspections as needed, depending on the size and nature of the work and the site, to ensure that erosion is not occurring and to remove any erosion-control devices once they are no longer needed.	

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Mitigation Measures	Applicable Locations	Timing	Monitoring/Reporting Action	Responsible and Involved Parties
slope stability devices may be removed at the discretion of County staff.				
<p>MM Geology-2: Firelines During Prescribed Burns</p> <p>The following measures shall be implemented during prescribed burns to reduce erosion from firelines:</p> <ul style="list-style-type: none"> • Use existing barriers such as roads, trails, or wet lines as firelines. If new firelines must be established for a prescribed burn, firelines shall be restored as described below. • Restore firelines upon completion of the burn if they are not used again (unless they are existing roads, trails, or other permanent elements) within one year of use. Utilize erosion-control measures, such as sediment traps, during restoration to reduce sedimentation impacts. Rehabilitation methods may include use of a hydromulch with locally collected, genetically appropriate native species; pulling duff, litter, and cut material back over lines; and/or distribution of locally chipped fuels on the lines. • Design prescribed burn boundaries to avoid gullies and highly erodible soils to the fullest extent possible. 	Project locations where prescribed burning would occur	Prior to Construction	Determine fireline location.	<ul style="list-style-type: none"> • County • Contractor
		During Construction	Set up provisions as specified in the measure.	
		Following Construction	Restore firelines that will no longer be used upon completion of work.	
<p>MM Hazards-1: Spill Prevention and Response</p> <p>The County shall, at a minimum, implement best management practices that address the following procedures related to the use of hazardous materials during WRMP implementation:</p> <ul style="list-style-type: none"> • All workers shall be trained on the specific procedures for hazardous materials and emergency response and reporting procedures as an element of the required worker environmental training in MM Biology-1 prior to working in any PTA. • Vehicles and equipment will undergo daily inspection for leaks and spill containment procedures. • Secondary containment and spill rags will be used when fueling onsite. 	All project locations	During Construction	(1) Implement appropriate best management practices that limit the potential for leaks and spills and (2) clean up any inadvertent spills appropriately.	<ul style="list-style-type: none"> • County • Contractor

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Mitigation Measures	Applicable Locations	Timing	Monitoring/Reporting Action	Responsible and Involved Parties
<ul style="list-style-type: none"> Fuels and lubricating oils for vehicles and heavy equipment will not be stored or transferred within 100 feet of any waterbodies unless otherwise isolated from waterbodies by secondary containment. Emergency spill supplies and equipment such as oil-absorbent material, tarps, and storage drums shall be available on site to respond in a timely manner if an incident should occur. Proper disposal or management of contaminated soils and materials (i.e., clean up materials) will be insured and reporting procedures implemented in accordance with applicable federal, State and local requirements. “Topping-off” of fuel tanks will be discouraged. 				
<p>MM Hazards-2: Fire Prevention and Suppression Practices The County shall implement the following best management practices to prevent the ignition and spread of an unplanned fire during implementation of WRMP activities:</p> <ul style="list-style-type: none"> Smoking will not be permitted on site, except in barren areas that measure a minimum of 20 feet in diameter and are cleared to mineral soil. Under no circumstances will smoking be permitted during the fire season (approximately July through October) while employees are operating equipment or are walking or working in forested areas. On-site idling of vehicles and vegetation-management equipment shall be minimized. All personal vehicles or vegetation-management equipment shall be parked in appropriate parking areas at all times, not located near dry grass or vegetation, and off of main roads and potential evacuation routes, with adequate space for emergency response vehicles to pass. All work crews shall maintain appropriate fire-suppression equipment (e.g., extinguishers, shovels) in vehicles at each work site to suppress inadvertently ignited fires. 	All project locations	During Construction	1) Smoking shall be limited to permitted areas only, 2) vehicle and equipment idling shall be minimized, 3) fire suppression equipment shall be available on site, and 4) activities that are associated with increase fire risk shall be restricted during high fire-danger conditions.	<ul style="list-style-type: none"> County Contractor

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Mitigation Measures	Applicable Locations	Timing	Monitoring/Reporting Action	Responsible and Involved Parties
<p>Activities that could cause sparks, such as use of mechanical equipment, are required to cease during extreme fire weather, including Red Flag Warning days and localized Public Safety Power Shut-Off events.</p>				
<p>MM Hazards-3: Hazard Reduction for Stockpiling, Pile Burning, and Prescribed Burning</p> <p>The following measures shall be implemented to reduce hazards associated with pile and prescribed burning:</p> <ul style="list-style-type: none"> • Contractor shall ensure it is an “approved burn day” announced daily by the CARB prior to pile burning and allowed by local fire agencies. • A Smoke Management Plan shall be prepared and implemented in accordance with GBUAPCD’s Rule 411 for any wildland vegetation-management burning projects greater than 1 acre in size. • A Burn Plan shall be prepared for each prescribed burn in compliance with GBUAPCD Rules 409 – Range Management Burning, 410 – Forest Management Burning, and 411 – Wildland Vegetation Management Burning. • Piles shall be burned or chipped prior to the fire season and within six months of treatment. • Piles shall not be burned during the fire season. • Pile burning shall only be allowed on days when fire is less likely to spread (e.g., wind speeds are less than 15 mph). • Piles shall not be constructed in areas where burning cannot be safely controlled, such as bottoms of steep, vegetated hills. • Piles shall be set back at least 100 feet from public roads and trails to minimize risk to residents, recreationalists, and other users. • All requirements of the GBUAPCD shall be met, including any permit, notification, and reporting requirements. 	<p>Wherever stockpiles of slash are made, where piles shall be burned, and where prescribed burns are proposed.</p>	<p>Prior to Construction</p> <hr/> <p>During Construction</p> <hr/> <p>Following Construction</p>	<p>Notify public, post signs, and obtain all permits and make all necessary notifications as required by GBUAPCD.</p> <hr/> <p>(1) Ensure that piles are located appropriately, (2) ensure proper weather conditions during pile burning, and (3) ensure signage is installed in locations in close proximity to all prescribed burns.</p> <hr/> <p>Remove signage.</p>	<ul style="list-style-type: none"> • County • Contractor

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measures	Applicable Locations	Timing	Monitoring/Reporting Action	Responsible and Involved Parties
			the treatment and/or avoidance of tribal cultural resources.	
<p>MM TCR-2: Tribal Outreach and Consultation</p> <p>Prior to conducting any work in the non-priority PTAs identified in the WRMP, the County shall contact local Native American tribes identified by the Native American Heritage Commission and/or the County’s AB 52 tribal contacts list and request input on PTA boundaries, specific avoidance areas, and any known Tribal Cultural Resources within the PTAs.</p> <p>For any Native American tribe that is interested in providing input on the development of PTA boundaries and/or specific treatment methods to be implemented, the County shall provide all results of record searches and field surveys conducted within or surrounding PTAs, if applicable. The County shall consult with any interested Native American tribe to ensure any impacts to tribal cultural resources are minimized to the greatest extent feasible, including arranging a site visit and implementing site-specific recommendations as required by MM TCR-1.</p>	All non-priority project locations	Prior to Construction	Contact Native American tribes, if appropriate.	<ul style="list-style-type: none"> • County