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Tuledad Fuels Reduction and Habitat Restoration Project

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1.0 BACKGROUND INFORMATION

1.1 Introduction

The BLM Surprise Field Office (SFO) is proposing 4,616 acres of hazardous fuels reduction and habitat restoration treatments in the Tuledad Allotment which encompasses 138,618 acres of public lands in the south western portion of the Surprise Field Office. There are 9 proposed individual treatments varying in size from 28 acres to 1,036 acres. These projects would reduce hazardous fuels, treat western juniper in sage steppe plant communities which are decadent or declining in vigor as a result of competition and would develop fuel breaks to protect priority habitat areas.

Juniper woodlands throughout the Great Basin and other geographic regions are expanding into habitats historically dominated by perennial grasses, sagebrush and other native shrubs (Tausch, 1999; Brockway, et. al, 2002; West, et. al, 1998). In some areas, long-term fire suppression efforts, excessive grazing, and drought-related conditions have led to the conversion of sagebrush/grass communities to areas dominated by homogenous stands of sagebrush, with declining, remnant populations of native perennial forbs and grasses. In some areas the establishment of juniper on sagebrush/grass sites has resulted in the loss of the grass and forb component and led to decadence and low vigor of important shrub species, such as antelope bitterbrush. When valuable grass, forb and shrub species decline, excessive surface runoff and soil erosion, reduced soil moisture and decreased groundwater recharge may occur (Bedell, 1993; Thurow, 2005). Reduced soil moisture and the competition of woody species for light, nutrients and moisture has resulted in reduced forage for wildlife, livestock and wild horses. Additionally, on many woodland ecological sites, the natural diversity of successional stages has been changed toward a preponderance of mature even-aged stands, which do not support a natural diversity of grasses, forbs, and shrubs. Proper functioning ecological sites have a diversity of grasses, forbs, shrubs, and trees and are essential to watershed integrity by stabilizing soils, promoting water infiltration and providing sufficient soil cover. A decline in the ecological condition of these plant communities adversely affects rangeland health, wildlife habitat, soil stability and other watershed values over the long-term.

Fire Regime Condition Class (FRCC) is a standardized tool that was developed for determining the degree of departure from reference condition vegetation, fuels and

disturbance regimes (Hann et al, 2003). A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human intervention, but including the influence of aboriginal burning (Hann et al., 2003). Assessing FRCC can help guide management objectives and set priorities for treatments. Coarse scale definitions for natural (historical) fire regimes have been developed, mapped and interpreted for fire and fuels management. Five natural (historical) fire regimes have been classified based on average number of years between fires combined with the severity of the fire on the dominant overstory vegetation. They are:

- I- 0 to 35 year frequency and low severity fires
- II- 0 to 35 year frequency and high severity fires
- III- 35-100+ year frequency and mixed severity fires
- IV- 35 to 100+ year frequency and high fire severity
- V- 200+ year frequency and high fire severity

A fire regime condition classification is the amount of departure from the natural regime. Coarse scale FRCCs have been developed and defined. They include three condition classes for each fire regime group. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insects and diseased mortality, grazing, and drought). The three classes are based on low (0-33% departure; FRCC1), moderate (34-66% departure; FRCC2), and high (67-100% departure; FRCC3) departure from central tendency of the natural (historical) regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside the range of variability. The FRCC rating is accompanied by a series of indicators of the potential risks that may result from the changes to the associated ecological components when disturbance is applied. Reference descriptions for a typical FRCC1 community have been developed for most major vegetation types. Reference conditions are compared to actual conditions for purposes of determining current FRCC classes.

The Healthy Forest Restoration Act, (HFRA), directs public land management agencies to prioritize hazardous fuels reduction treatments near wildland urban interface areas that are within FRCC3 or within Fire Regime Groups I, II, and III and within FRCC2. Vegetation data has been collected and analyzed, and an FRCC analysis has been completed for the proposed project area. Treatment areas would be prioritized to address first, those areas where condition class has not declined below a rating of 3.

Treatments could be completed using several methods including hand clearing, mechanical thinning and cutting, prescribed burning, or a combination of these treatments. Work would be completed by either Federal or contract personnel. The byproducts of these treatments would be made available for firewood collection or biomass harvest, piled and burned on site or scattered and left to decompose naturally.

1.2 Proposed Action Location

The Tuledad Fuels Reduction and Habitat Restoration projects lie south and southwest of Eagleville, CA, in both Lassen, and Modoc Counties in California and also Washoe County, Nevada.

1.3 Individual Project Name, Purpose and Legal Descriptions

Barber Creek hand treatment and pile burning– (28 acres) West of Modoc County Road 1 and south of Modoc County, CA Road 42, the project area can be found on the Snake Lake 7 ½ topographic maps with the following legal description, Township 39 North, Range 16 East, Sections 13 and 24.

Bud Brown sage grouse habitat restoration hand treatment and prescribed fire – (692 acres) Located in Washoe County, NV northwest of Duck Lake in the Coppersmith Hills. The project area can be found on the Duck Lake 7 ½ topographic map with the following legal description, Township 37 North, Range 18 East, Sections 4, 5, 8, 9 and 17.

Cottonwood Fuel Break hand treatment, mechanical treatment, pile burning and biomass removal - (1,036 acres) This project is a continuation of the existing Cottonwood Fuel Break completed in 2001 and maintained for the last 7 years. Located north and east of the current project area the project can be found on the Buckhorn Lake and Little Hat Mountain 7 ½ topographic maps with the following legal description, Township 36 North, Range 17 East, Sections 6, 7, 8, 17 and 18.

Dodge bitterbrush restoration hand treatment, mechanical treatment, pile burning and biomass removal – (544 acres) Located south west of Tuledad Canyon. The proposed project area can be found on Little Hat Mountain 7 ½ topographic map with the following legal description, Township 37 North, Range 16 East, Section 36, and Township 36 North, Range 16 East, Sections 1 and 12.

Express Canyon sage steppe restoration hand treatment– (561 acres) Located south of Tuledad Canyon in Washoe County, NV. The proposed project boundary can be found on the Burnt Lake 7 ½ topographic map with the following legal description, Township 36 North, Range 18 East, Sections 20, 21, 28, 29 and 32.

Little Hat sage steppe restoration hand treatment, mechanical treatment, pile burning and biomass removal – (300 acres) West of the Bare Creek Road. The proposed project area can be found on Little Hat Mountain 7 ½ topographic map with the following legal description, Township 37 North, Range 17 East, Sections 7, 8, 17, 18, 19, and 20.

Mahogany sage steppe restoration hand treatment, mechanical treatment, pile burning and biomass removal – (1,024 acres) East of the Bare Creek Road. The proposed project area can be found on Little Hat Mountain 7 ½ topographic map with the following legal description, Township 37 North, Range 17 East, Sections 8, 9, 16, and 17. Section 16 is privately owned and would require cooperation with private land owners.

Starvation Aspen Restoration, hand treatment and fencing - (145 acres) Located approximately 1 mile north of Dodge Reservoir. Project area is located on the Boot Lake and Dodge Reservoir 7 ½ topographic maps with the following legal description, Township 36 North, Range 16 East, Sections 10 and 11.

Upper Bare Creek sage steppe restoration hand treatment, mechanical treatment, pile burning and biomass removal – (286 acres) This area is west of the Bare Creek Road. The proposed project area can be found on Little Hat Mountain 7 ½ topographic map with the following legal description, Townships 37 and 38 North, Range 17 East, Sections 5, 6, 29 and 32.

1.4 Purpose and need for proposal

The purpose of this restoration effort is to reduce hazardous fuels and restore the sage steppe ecosystem processes and vegetation conditions that resemble historic mosaic plant communities, so that historic fire return intervals in the sage steppe ecosystems can be sustained. The proposed restoration projects would restore habitat for sagebrush obligate species, improve hydrologic conditions and enhance the forage base for wildlife and domestic animals.

The project areas are currently characterized as Fire Regime Condition Classes 2 and 3, where fire return intervals have moderate to high departure from the natural regime of vegetative characteristics, fuels accumulations, fire frequency and severity. Condition Class 2 comprises approximately 70% of the project acres and the remaining 30% of the project area is in Condition Class 3. Within the project area, vegetation composition, structure, and diversity have been altered from their historic range from the persistent suppression of wildland fire which has allowed for increased numbers of Western juniper. The risk of losing key components of the sage-steppe ecosystem within the area is moderate to high. The project area has not experienced a large (over 3,000 acres) wildland fire in the last 100 years based on local fire history records. Normally this area would experience low to moderate intensity wildland fire events every 0-35 years. Past fire suppression actions, land management actions have resulted in Western juniper encroachment which has increased the risk of catastrophic wildfire in the identified project areas.

Current Western juniper population density is accelerating to levels increasing the risk of natural disturbances, (disease, insects, and wildland fires) to maintain the historic juniper woodlands-communities. In addition to increased wildfire risk, increasing the distribution and density of juniper within shrubland and grassland ecosystems can dramatically impact biodiversity, hydrologic cycles, fauna, and nutrient cycling (Bates et al. 1999).

The lack of adaptive management would potentially result in the continued decline of historic sagebrush communities, structural diversity, understory species, herbaceous production, habitat for sagebrush obligates, and landscape heterogeneity. As a greater proportion of the landscape shifts towards a closed canopy cover of juniper the risk of larger, intensive wildfires and conversion to annual exotics would increase, as would the cost of treatment, and the potential for desirable outcomes would decrease. Infilling by

younger trees also increases the risk for the loss of presettlement trees due to increased fire severity and size resulting from the increase in the abundance and landscape level continuity of fuels.

1.4a Goals of the Tuledad Fuels Reduction and Habitat Restoration Project

There are large areas of juniper with little or no understory vegetation in the project area. Replacement of native vegetation by invasive juniper has detrimentally affected habitat quality in previously suitable areas. Juniper establishment has also caused decreases in shrub, perennial grass cover and forb composition that in turn has reduced habitat diversity and condition in some areas. For these reasons the goals of the project outlined in Table 1, include maintaining and improving existing sagebrush habitat and restoring sagebrush plant communities.

Table 1. Overview of the sage grouse habitat restoration project goals, objectives, and indicators of desired future conditions.

(From the conservation strategy for sage-grouse (*centrocercus urophasianus*) and sagebrush ecosystems within the Buffalo - Skedaddle Population Management Unit)

Goals	Objectives for Quality Foraging and Nesting Habitat:	Indicators of Desired Future conditions*
<p>Restore areas with potential to produce sagebrush communities that have not crossed the threshold to becoming juniper woodlands but are in various stages of becoming dominated by juniper (mature sagebrush and seedlings present).</p>	<p>Nesting Habitat: Remove primarily seedling and sapling trees leaving some mature juniper for use by native species that require the tree structure, except within 6 km (3.73 miles) of leks. Brood-rearing Habitat: Encourage wood and biomass cutting with reseeding of native perennial species. Winter Habitat: Treat using a mixture of mechanical and prescribed fire treatments followed with reseeding of native perennial species.</p>	<p>Perennial Grass > = 10% Basal Cover Forbs > = 5% Basal Cover Shrubs 15% to 25% Crown Cover</p>

***These figures are based on precipitation zones of 10-12". Several proposed treatment areas fall into an 8-10" precipitation zone. These indicators may be adjusted for consistency with an ecological site description in the 8-10" precipitation zone.**

The proposal is being considered in order to make progress toward achieving the following landscape wide resource management goals:

- Increase public safety and protect property by managing vegetation to minimize the risk of catastrophic wildfires, while restoring natural ecosystems and preserving scenic values.
- Eliminate encroachment and significantly reduce invasive juniper in order to restore shrub-steppe, aspen, riparian, and mountain mahogany plant associations. However, maintain ecosystem integrity in natural juniper woodlands.
- Achieve healthy and productive wetland and riparian habitats through measures that would restore and protect riparian vegetation, and achieve habitat diversity and hydrologic stability.
- Produce healthy aspen stands (upland and riparian) through measures that would promote regeneration and growth, and create size and age class diversity. Restore and maintain ecosystem integrity and productivity in natural mountain mahogany woodlands.

Short Term (immediately post treatment)

- Reduce the canopy cover of juniper by at least 75 percent on sagebrush ecological sites on an estimated 60 to 70 percent (approximately 2,400 – 2,800 acres) of the 4,616 acre project area parameter.

Long Term (5 to 10 years post treatment)

- Increase the percent composition by weight (lbs/acre) of perennial grasses and forbs to a minimum of 40 percent of the ecological site potential on sagebrush ecological sites within 5 to 10 years following completion of the proposed treatments.
- Increase the percent composition by weight (lbs/acre) of sagebrush species to a minimum of 30 percent of the ecological site potential on sagebrush ecological sites within 5 to 10 years following completion of the proposed treatments.

Plant community composition would be monitored both pre and post treatment. Long-term monitoring would occur at 3-5 year intervals, thereafter. The following would be monitored using a modified Miller plot protocol for measuring the sage steppe ecosystem; juniper canopy cover and density, shrub canopy cover, shrub height, herbaceous frequency and point cover.

1.5 Relationship to Planning

Land Use Plan (LUP) Conformance

The Tuleadad Fuels Reduction and Habitat Restoration Project Environmental Assessment (EA) references and is tiered to the Record of Decision for the Surprise Resource Management Plan/Final Environmental Impact Statement (RMP/ROD/FEIS), April 2008

and the Record of Decision for the Sage Steppe Ecosystem Restoration Strategy Final Environmental Impact Statement (FEIS), December 2008.

Relevant Laws, Regulations, EISs, and Other Documents

The projects proposed in this EA would facilitate the restoration of ecological site conditions in order to improve a wide array of watershed values as outlined in the following plans and acts:

Sage Steppe Ecosystem Restoration Strategy Record of Decision (ROD) and Final Environmental Impact Statement, Modoc, Lassen, Shasta and Siskiyou counties, California and Washoe County, Nevada. Record of Decision signed December 2008. The Sage Steppe Ecosystem Restoration Strategy focuses on the restoration of sage steppe ecosystems that have come to be dominated by juniper, as the density of Western juniper has increased over the landscape. The management strategy would broadly identify appropriate restoration methodologies by ecological conditions; provide guidelines for design and implementation of effective restoration treatments for restoration areas to be analyzed site specifically over a 50-year horizon.

The Healthy Forest Restoration Act (HFRA) was signed into law on December 3, 2003 by United States President, George W. Bush. It is designed to improve the capacity of the Departments of Interior and Agriculture to implement the National Fire Plan, and conduct hazardous fuels reduction projects to protect communities, watersheds, and other at-risk lands from catastrophic wildfire. The projects analyzed in this EA meet the criteria of an Authorized Hazardous Fuels Reduction Project.

A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy was a policy developed in 2001 that placed emphasis on reducing risk to communities and the environment by managing wildland fire, hazardous fuels, and ecosystem restoration and rehabilitation on forest and rangelands. Three of the four goals of this policy are to: 1) Improve prevention and suppression, 2) Reduce hazardous fuels, and 3) Restore fire adapted ecosystems. The projects proposed in this EA would facilitate the goals listed above.

National Fire Plan of August 2000, establishes goals for federal land agencies to combat the buildup of forest and rangeland fuels, “In response to the risks posed by heavy fuels loads -- the result of decades of fire suppression activities, sustained drought, and increasing insect, disease, and invasive plant infestations the National Fire Plan established an intensive, long-term hazardous fuels reduction program. Hazardous fuels reduction treatments are designed to reduce the risks of catastrophic wildland fire to people, communities, and natural resources while restoring forest and rangeland ecosystems to closely match their historical structure, function, diversity, and dynamics”.

Buffalo Skedaddle Sage Grouse Conservation Plan, 2006. The Northeast California Sage-Grouse Working Group is an organization comprised of local government and non-government agencies and private entities who developed a Conservation Strategy for Sage-Grouse and Sagebrush Ecosystems within the Buffalo-Skedaddle Population Management

Unit. This document is a product related to sage-grouse conservation and sagebrush restoration, and states that among its top priorities are retention of leks in public ownership and acquisition of leks occurring on private lands. Pursuing this project demonstrates to partners and the public that BLM is continuing to move forward with actions to conserve sage-grouse, sage-grouse habitat and the health of watersheds within the Sierra Nevada region.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The proposed action is to utilize a combination of mechanical, prescribed fire and hand treatments to reduce hazardous fuels, increase the ability of fire managers to control unplanned wildfire and restore fire adapted ecosystems on 4,616 acres of sagebrush-steppe ecosystem within the Tuledad Fuels Reduction and Habitat Restoration Project Area. The proposed action consists of nine separate units on both private and public lands within the Tuledad Allotment as listed in Table 2. Management objectives would be achieved using a combination of treatments including mechanical, prescribed fire and/or hand treatments. Treatment units and project design elements are the result of recommendations made by an IDT and approval by the authorized officer.

Fencing within the project boundaries to accommodate prescribed fire would also be considered. Along with the BLM specification for wildlife fences, the proposed action would include small steel jack fences around aspen, springs, riparian areas and other sensitive areas as budgets would permit. Treatment units would be rested from livestock grazing for a minimum of two grazing seasons. This would be accomplished by adjustments in the pasture/use area grazing schedule, and herding. Several of the treatment units are within existing fenced enclosures.

No new permanent roads would be constructed to complete this project work. Temporary roads would be used where appropriate and would be decommissioned following use. These roads would involve minimal ground disturbance and would be reclaimed following use (one to three years). Temporary roads not to exceed 1.5 miles per year and landings would be constructed within the project area. See Appendix 8, Tuledad Standard Operating Procedures, for specific temporary road and landing requirements. Areas identified within the project boundaries as having important cultural, botanical, hydrological, recreation, and wildlife resources that require protection would be excluded from treatment. These areas of concern would have specific operating procedures to maintain the integrity of the resource, see Appendix 8: Tuledad Standard Operating Procedures.

Treatments would take place on public and privately owned lands within Tuledad Allotment between 2009 and 2019. The proposed action would be implemented on the privately owned lands in the project area only under written agreement between landowners and the BLM. Juniper removed from the units could be used as biomass as either firewood for local wood cutters or chipped and utilized in co-generation facilities. Historic woodlands within the project areas would be preserved and mature/old growth stands of Western juniper would be identified and protected.

Table 2. Proposed Action Treatments

Treatment Area Name	Acres	Treatments to be implemented
Barber Creek	28	Hand Treatment, Pile Burning
Bud Brown	692	Hand Treatment, Prescribed Fire
Cottonwood	1,036	Hand Treatment, Pile Burning, Mechanical, Biomass
Dodge Bitterbrush	544	Hand Treatment, Pile Burning, Mechanical, Biomass
Express Canyon	561	Hand Treatment
Little Hat	300	Hand Treatment, Pile Burning, Mechanical, Biomass
Mahogany	1,024	Hand Treatment, Prescribed Fire, Mechanical, Biomass
Starvation	145	Hand Treatment
Upper Bare Creek	286	Hand Treatment, Pile Burning, Mechanical, Biomass

Restoration methods are described in the Sage Steppe Ecosystem Restoration Strategy FEIS and are outlined below.

Mechanical restoration involves the use of heavy machinery to physically remove Western juniper. There are several different kinds of mechanical restoration approaches and all can achieve similar results on the landscape. Mechanical restoration techniques that have previously been employed in the area, and are expected to be used in implementing the alternatives, include the following:

- Tracked feller-buncher machines. These machines would snip off the juniper trees and put them into a chipper that is pulled behind the feller-buncher. After the chip bin is full, the chips are augured into a tractor-trailer for transportation off site.
- Rubber-tired feller-buncher machines. These machines would cut the juniper trees and transport them to a landing area or pile them for skidding to the landing. Rubber tired skidders can then be used to transport the juniper to the landing areas, as needed. Cut junipers may also be transported by in rubber tired trailers to landings. At the landings, the juniper trees are processed into chips and hauled away or limbed and just the boles hauled away, depending on the intended use for the material.
- Trees may be cut by the above methods but left on ground instead of transported off-site.
- The above methods can be combined and tailored specifically for site conditions, availability of machinery, economic conditions, and other factors.

The mechanical methods of restoration could generate slash in quantities that would require treatment. In all mechanical treatments, biomass would be considered along with woodcutting. In these cases, the remaining material would be piled and burned to minimize impacts to sagebrush. Mechanical methods have the benefit of minimal impacts to sagebrush because they would not kill them as prescribed fire would.

Prescribed fire would be used where enough fuel exists to carry a fire, where a fire can be managed successfully, and where conditions are favorable for achieving restoration

objectives of removing juniper from the site. Following a fire, it is expected that most of the juniper would be dead but snags would remain standing for several decades. Fire use would also kill sagebrush because, like juniper, it is not fire tolerant. Burned areas also have a greater potential for invasion by non-native plant species than areas restored using mechanical or hand treatment methods. Burned areas would require monitoring and control to prevent the establishment and spread of noxious weeds and invasive annual grasses.

Proposed treatment areas with broadcast prescribed fire would follow the Rangeland Health Standards & Guidelines for Northeastern California and Northwestern Nevada FEIS, for post treatment livestock grazing rest.

Fencing within the project boundaries to accommodate prescribed fire would also be considered. Along with the BLM specifications for wildlife fences, the proposed action would include small steel jack fences around aspen, springs, riparian areas and other sensitive areas as budgets would permit.

After burning is complete, and when safely practicable, any hand or dozer constructed lines would be rehabilitated. Line rehabilitation actions would vary depending on their location. Line rehabilitation would be conducted to stabilize the soil and create physical barriers to discourage off-highway vehicle use, and to conceal the line to reduce visible impacts. Water bars would be built on control lines where slopes are steeper than fifteen percent or in areas where there is evidence of major water flow. Maximum rehabilitation effort would be undertaken to improve visual characteristics in areas directly visible from the roads and trails. In areas less visible from roads and trails, line rehabilitation would concentrate on soil stabilization.

During the year in which prescribed burning treatments are to be conducted, livestock would not be allowed to graze within the proposed treatment units. Livestock grazing would be excluded from the treated units for a minimum of two growing seasons following treatment implementation. An interdisciplinary team (IDT) would conduct a review of the project objectives and monitoring data to determine when livestock grazing would be allowed to resume in the project area. If after the two growing seasons of rest, environmental factors prevent attainment of the objectives, the interdisciplinary team would review the project monitoring data and determine an appropriate grazing regime with permittees. Any terms and conditions specific to livestock grazing within the project area would also be discussed and included in any grazing authorization.

Hand Treatment is the most labor intensive method of restoration and would generally be accomplished by crews with chainsaws cutting down juniper. This treatment method would be the most widely used in the proposed project boundaries. The trees would then be piled for burning or yarded to areas where trucks or skidders can reach them. This method would be used in the most environmentally sensitive areas or in areas where it is not feasible to use fire or mechanical means. The benefit of hand restoration is that sensitive areas, such as those that include riparian/wetland areas, aspen trees, etc. or areas inaccessible with mechanical equipment can be treated with beneficial results. The

disposal of the juniper trees and associated slash is a challenge for hand restoration because, once cut down, they cannot be moved easily by hand. In all hand treatments areas woodcutting would be considered. This material would generally be piled and burned within 100 feet of the primary access road; otherwise the material would be left on site.

2.2 No Action Alternative

The No Action Alternative is the current management situation. Under this alternative, there would be no treatments applied within the project area. The fuel conditions would continue to accumulate beyond levels representative of the natural (historic) fire regime. Habitat values would continue to decline as perennial, herbaceous and shrub understory would further be reduced in the long term.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

One alternative considered was prescribed burning all units (4,614 acres) to thin or remove western juniper which has established on sagebrush sites. This alternative was eliminated from detailed analysis because of the difficulty in keeping fire within the targeted vegetation types and the inability to prevent the burning of the existing shrub and grass understory. The goal is to maintain the existing shrub and grass component and remove enough trees in order to allow the shrub and grass component to reach ecological site potential. Cheatgrass invasion could occur with prescribed burning in this area also and was another factor considered with eliminating this alternative.

3.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND CUMULATIVE IMPACTS

The direct, indirect and cumulative effects contained in the following chapter include considerations brought forward in both internal and external scoping. Past and present actions considered in the cumulative effects analysis include, vegetation treatments, range improvements and livestock grazing. Reasonably foreseeable future actions identified by the interdisciplinary team include wind energy development, vegetation treatments on neighboring public and private lands and post treatment grazing management.

There is one granted wind energy right of way with one meteorological tower for testing purposes. There are 4 pending right of way applications for wind energy testing with a yet to be determined number of meteorological towers.

3.1 General Description

The proposed project area occurs in northern Lassen County California, Modoc County California and Washoe County Nevada. All project areas are within the Tuledad Allotment. The area is located in Townships 36, 37, 38 & 39 North and Ranges 16, 17 and 18 East. The project area is located along the lower and mid slopes in the southern part of the Warner Mountain Range. Elevations range from approximately 5,000 to 6,500 feet and slopes range from an estimated 2 to 15 percent. Annual precipitation levels average from approximately 8 to 14 inches. The primary vegetation within the project area consists of juniper and sagebrush/perennial grass communities.

The affected environment is described below followed by the environmental consequences for each resource.

The interdisciplinary review has concluded that the following critical elements are not affected by the proposed action or action alternative.

- Areas of Critical Environmental Concern
- Environmental Justice
- Paleontological Resources
- Prime and Unique Farmlands
- Threatened or Endangered Species
- Unusual Plant Assemblages
- Waste, Hazardous and Solid
- Wild and Scenic Rivers
- Wilderness

3.2 Air Quality

Affected Environment

The Tuledad Fuels Reduction and Habitat Restoration Project Area is located in the southern portion of Modoc County, northeastern corner of Lassen County, California and the northwestern corner of Washoe County, Nevada. Modoc County is part of the Northeast Plateau Air Basin (NPAB), which includes Siskiyou, Modoc, and Lassen Counties. The Modoc County Air Pollution Control District (MCAPCD) has jurisdiction over air quality issues throughout Modoc County and administers air quality regulations developed at the federal, state, and local levels. The Washoe County District Health Department, Air Quality Management Division, Washoe County, has jurisdiction over air quality issues throughout Washoe County and administers air quality regulations developed at the federal, state, and local levels.

Weather in northern California is dominated by the position of the Eastern Pacific high pressure cell that is normally located off the coast of North America. Due to the positioning of this cell, an almost unbroken chain of winter storms occurs in the study area, and a bulk of the precipitation in the study area occurs during this winter storm period. Weather systems in the region usually result in strong winds and unstable air masses, providing for good dispersion conditions. During fair weather periods, stable air conditions prevail throughout the region.

Air quality for the project area is generally good due to the remoteness and the limited amount of development/activity taking place within the project area. Air pollution in the project area can come from a variety of sources including OHV, windblown dust, and smoke from prescribed burns and wildfires. Pollution from these sources would result in localized increases in fugitive dust that would be temporary and would not exceed air quality standards. The area has not been classified as a federal non-attainment/maintenance area by the EPA therefore Federal actions is not subject to conformity determinations under 40 CFR 93.

Direct and Indirect Impacts of Proposed Action

The proposed action would produce smoke from prescribed fires and to a lesser degree dust from mechanical treatments and fuel wood cutting. Impacts to air quality from prescribed fire and pile burning could range from reduced visibility, to pneumonic irritation, and smoke odor affecting people in proximity to the project area when such treatments are underway. These impacts are expected to be short-lived, with the greatest impact occurring during the actual ignition or active burning phase, lasting from one to a few days depending on the size or number of actual burn units or number of piles to be ignited. Residual smoke produced from the burnout of large fuels, or slower burning fuel concentrations could occur, lasting for one to three days following the ignition phase. Impacts to air quality from mechanical treatments and wood cutting would be airborne dust generated during the operation of mechanical equipment and transport vehicles that would reduce visibility in the immediate project area, ceasing quickly when such operations stop.

The areas of greatest impact from prescribed fire would be those areas downwind and down drainage from the project area. A review of dominant wind vectors and topographic features indicates that these areas are typically east, northeast and southeast, respectively of the project area. The amount of impact would be dependent on atmospheric conditions at the time of ignition. Prescribed fires are planned and implemented when atmospheric stability and wind conditions promote smoke dispersion into the atmosphere and/or transport out of the area.

The areas of greatest impact from mechanical treatments would be the immediate project area and unimproved, dirt/gravel roads, used in association with the projects.

Cumulative Impacts of Proposed Action

Other prescribed fire and mechanical fuel reduction projects are planned for the Sage Steppe Ecosystem Restoration Strategy area. While the cumulative effect of the projects may be impact air quality, the impacts would be short-lived, focusing on the time during project implementation to a few days post treatment.

Direct and Indirect Impacts of No Action

Under the no action alternative no fuel treatments/habitat restoration treatments would occur within the project area. The potential for wildfires to occur would be greater where fuel treatments do not occur. The impact to air quality would be greater from a wildfire occurring in the area as wildfires typically have a longer ignition phase, or burn longer, consume more biomass and produce more smoke and particulate matter than prescribed fires or slash pile burning. The Tuledad Project Area would continue to amass woody debris in the absence of treatment increasing the risk of catastrophic wild fires.

3.3 Cultural Resources

Affected Environment

The Tuledad Fuels Reduction and Habitat Restoration project is located on the eastern slopes of the southern Warner Mountain Range. Ethnographically, this area was part of the territory of the Northern Paiute. Historically, this area has been used for sheep and cattle

grazing by Euro-Americans. Cultural resource inventories in the vicinity of the project area indicate that the area was used by prehistoric people for resource procurement activities. In addition, seasonal, temporary campsites were established for the purposes of procuring tool stone material, game, and plant resources. Historic resources are associated with livestock grazing activities and early homesteading.

The Tuledad project area is within the territorial boundaries of the *Kidütökadö* band of the Northern Paiute. Many members of the *Kidütökadö* continue to reside at the Fort Bidwell Reservation. The BLM Surprise Field Office addressed the Tuledad Fuels Reduction and Habitat Restoration Project at consultation meetings with the Fort Bidwell Tribal Council on January 10, 2009 and on April 18, 2009. Consultation with the Tribe is ongoing for this project. However, at this time the tribe has not identified any Traditional Cultural Properties or issues of cultural concern in the Tuledad project area.

Two of the Tuledad Fuel Reduction treatment units, Bud Brown and Express Canyon, are located within the boundaries of an established Cultural Resource Management Area (CRMA). The Duck Flat CRMA was created in 2007 as a result of the high density of cultural resource sites in the area. The CRMA is a designation created by the surprise Field Office that is intended to provide heightened awareness to sensitive resources by increasing Law Enforcement Patrols and provide research opportunities to scientific institutions.

Class III cultural resource inventories have been conducted in each treatment unit. The archaeological inventories have resulted in the recordation of 48 previously unidentified archaeological sites, and the relocation of six previously recorded sites for a total of 54 archaeological sites. Forty-two of the 54 sites are prehistoric Native American sites, four sites are associated with historic Euro-American use, and eight sites are a combination of prehistoric/historic. The types of sites represented within the project area are tool stone quarries and reduction areas, prehistoric camp sites, which include rock features, historic homesteads and refuse scatters, and arborglyphs. Although none of the cultural resource sites have been formally evaluated for their eligibility to the National Register of Historic Places (NRHP), thirteen of the 54 sites appear to have elements which qualify them as eligible to the NRHP under criterion d (the site contains information that would contribute to our understanding of human history or prehistory). Because a formal determination of National Register eligibility has not been made for any of the sites, the Bureau of Land Management assumes that all sites are eligible.

Direct and Indirect Impacts of Proposed Action

Under the Proposed Action the types of cultural resource sites found within the project area have the potential to be impacted, both beneficially and non-beneficially, by all treatment methods. The majority of the treatment methods, such as mechanical harvesting and prescribed burning, have been analyzed through the Surprise Field Office Proposed Resource Management Plan and Final Environmental Impact Statement (SFO PRMP EIS) and the Sage Steppe Ecosystem Restoration Strategy, Final Environmental Impact Statement (SSERS FEIS). The SSERS FEIS (Sec. 4.8.3.1, p. 335) concluded that it was highly likely that cultural resource sites would be protected for all of the alternatives in the EIS, with the implementation of specific guidelines for protection, which would be in

compliance with the National Historic Preservation Act (NHPA). In addition, Programmatic Agreements with the California and Nevada State Historic Preservation Officer (CA SHPO and NV SHPO, respectively) and Native Americans groups within the Analysis Area were reviewed for their potential for modification and use for the SSERS FEIS. As a result of this review, the BLM California State Office, the Northeastern California Field Offices, and both the CA SHPO and NV SHPO identified a need to develop guidance which would establish a system of evaluation and approval allowing for restoration of the sage steppe ecosystem while preserving cultural values. Consequentially, Supplemental Procedures for Sage Steppe Ecosystem Restoration, a Cultural Resources Amendment to the State Protocol Agreement among California BLM and The CA SHPO and The NV SHPO was developed. The management of cultural resources for the Tuleadad project would be guided by the Supplemental Procedures (SP). The Analysis of the Proposed Action follows.

As discussed in the SSERS FEIS (Sec. 4.8.3.3.2, p. 336-337) cultural resources are particularly vulnerable to damage or destruction if heavy equipment disturbs the surface soil layers within which cultural resources are found. The most direct effect of mechanical treatments would be crushing and breaking of surface artifacts, however similar effects could also occur to subsurface deposits as a result of surface compaction. Dispersion and mixing of cultural soils, in addition to the destruction of features, could occur as a result of skidding operations and maneuvering of equipment. Areas directly trafficked by machinery would likely sustain the most damage.

Mechanical harvesting is being proposed in five treatment areas, Cottonwood, Dodge Bitterbrush, Little Hat, Mahogany, and Upper Bare Creek. A number of cultural resource sites are located within these units, five of which appear to be eligible for the NRHP. An exception to this is the Upper Bare Creek treatment unit. This unit was inventoried in 2007 at a Class III, intensive level. No cultural resources were identified in this unit. As per the Supplemental Procedures, site specific prescriptions including, but not limited to, avoidance and requiring certain ground conditions, would be developed for treatment units containing cultural resources in which mechanical harvesting would be allowed. The harvesting in these units would be actively monitored by the cultural resource staff to identify the success of the prescriptions. Application of the mitigation measures would protect cultural resources from impacts associated with mechanical harvesting.

The creation of temporary roads to facilitate the removal of juniper could also damage the integrity of cultural resource sites by displacing and breaking surface artifacts, and destroying sub-surface archaeological information. Temporary roads would avoid cultural resource sites, as set forth in the Tuleadad Standard Operating Procedures (TSOP) contained within this document.

Prescribed fire presents a number of risks to cultural resources found within the project area. These risks include direct damage to cultural resources from the fire, fires that get out of control and increase in intensity, and damage from starting, managing, and suppressing fires. Artifacts associated with the historic sites, such as wooden structures, and glass and metal artifacts may be damaged or completely destroyed by fire (SSERS FEIS, Sec. 4.8.3.3.1, p. 336). In addition, extreme heat can damage stone tools and lithic

debris on or near the site's surface. Rock art can be damaged both indirectly and directly from fire. Certain rock types are subject to spalling from heat; smoke and soot can deteriorate rock art. Fires also expose sites to increased visibility and illegal collection of artifacts (SFO PRMP FEIS, Sec. 4.2.4, pp. 4-9). The prehistoric sites located in areas of heavy fuel would be at most risk. Sites located in areas of fine flashy fuels would be at less risk of exposure to intensive heat over a long duration of time. The piling and burning of slash material from juniper harvesting has the potential to damage fragile artifacts and features due to heavy fuel loading if the piles are placed within sensitive resource areas.

Under the proper prescriptions, prescribed fire could benefit cultural resource sites by reducing fuel densities within cultural resources sites that are located in areas dominated by homogenous stands of sagebrush and/or dense juniper. Returning these sagebrush and/or juniper dominated areas to their historic native perennial forbs and grass composition could reduce the potential for catastrophic wildfire.

Prescribed fire is being proposed in two treatment areas, Bud Brown and Mahogany. These units both contain cultural resources sites, two of which appear to be eligible for the NRHP. Use of prescribed fire in these units has the potential to affect cultural resources in a positive or negative manner as described above. As per the TSOP close coordination with the SFO resource staff would be needed when establishing Resource Objectives for the Burn Plan. Prescriptions would be designed to mitigate potential impacts to cultural resources.

The use of hand treatment to reduce juniper is least disturbing to cultural resource sites. However, in cultural resource sites containing features, felled juniper could displace or damage site features, compromising spatial integrity. Leaving cut juniper on-site, changes the fuel arrangement from vertical to horizontal, potentially providing more surface fuels during a wildfire or a human caused fire. Higher temperatures with longer durations are associated with downed juniper through the first five years while the needles still remain on the downed trees. After the needles have fallen, the heat intensity and duration are considerably reduced. Cultural resource sites in which cut and run techniques have been used are at higher risk from heat damage from one to five years after the junipers have been dropped.

Removal of juniper from historic features or cultural sites containing rock art can protect them from fire damage in the event of fire. Lop and scatter methods used in areas where there is little or no understory vegetation could benefit cultural resource sites by protecting soil from further trampling and erosion from cattle. In addition, the soil protection could provide a suitable environment for the re-establishment of perennial forbs and grasses reducing erosion problems within cultural resource sites.

Hand treatments are being proposed in all project units. These types of treatments are usually the preferred method of treatment in sensitive cultural resource areas. However, hand treatments could also affect cultural resource sites as described above. Cultural resources subject to impacts from hand treatments would be flagged for avoidance.

Types of indirect impacts that could occur to cultural resources from the Proposed Actions

are as follows: Juniper trees are often used by cattle for shade. Overall reduction or complete removal of juniper in cultural sites reduces or eliminates the ability of cattle to use the area for shade; thereby reducing or eliminating cattle impacts within the cultural sites.

The SFO PRMP FEIS (Sec. 4.2.4, p.4-11) provides specific guidance for woodcutting in juniper treatment areas. Woodcutting that would target locations with invasive western juniper to aid in fuel reduction would be subject to Section 106 restrictions. Woodcutting would avoid cultural resource sites or mitigate impacts as required. For this project cultural resource sites would be excluded from public wood cutting; the procedures are provided in the (TSOP).

A residual impact may occur from flagging sites for mitigation and signing cultural resource sites to exclude from wood cutting. These two measures may draw attention to cultural resource sites and make them vulnerable to looting or illegal surface collection. These areas would receive priority monitoring as presented in the TSOP.

Mitigation Measures

The Supplemental Procedures direct the BLM Cultural Resources Staff to specify the application of Standard Resource Protection Measures (SRPMs) for individual sites which would be impacted by vegetation treatment measures. The protocol amendment further identifies specific SRPMs that became effective upon the execution of the Supplemental Procedures.

Standard Resource Protection Measures

- Flag-and-avoid with buffering, edge feathering/gradual reduction of standing juniper and felled juniper as livestock barriers - This SRPM would be used to flag for avoidance any cultural resource sites or components of a site which could be affected by any of the proposed treatment methods. Edge feathering and gradual reduction of standing juniper would create a more natural appearance in the landscape detracting attention from cultural resource sites. Felled juniper as livestock barriers in areas of heavy cattle use where vegetation understory is sparse or non-existent may assist in vegetation recovery and reduce erosion problems and cattle impacts to cultural resource sites.
- Lop and Scatter with constraints on heavy fuel loads left on archaeological sites – This SRPM is intended to ensure that fuel loading would not occur in cultural resource sites that may be damaged through wildland fire.
- Mechanical treatment on archaeological sites with prescriptions and active monitoring by Cultural Resource Staff or other professional archaeologist – This SRPM is intended to allow mechanical treatments within cultural resource sites under certain prescriptions. These prescriptions may include, but not be limited to the following: Harvesting on frozen ground; requiring snow packs of specified depth for harvesting; not allowing tracked vehicles to turn within cultural sites, etc. The prescriptions would be developed by the Cultural Resource Staff for the purpose of protecting cultural resources that could be affected by mechanical treatments. Monitoring of the treatments would provide useful information on

whether the SRPM and prescriptions are working or whether they need to be refined.

- Areas left untreated where high densities of archaeological sites have been identified – This SRPM is intended to protect areas such as, but not limited to, archaeological districts which have the potential to be impacted by any treatment method.
- Hand treatment on archaeological sites in areas of heavy juniper fuel load where the hand treatment would not impact archaeological data associated with the site – This SRPM is designed to benefit cultural resources by reducing heavy juniper fuel loads in cultural resource sites. Areas such as these are often subjected to cattle impacts and erosion from lack of understory vegetation.

Cumulative Impacts of Proposed Action

The scale of analysis of cumulative effects is limited to the Tuledad grazing allotment. Cumulative effects under current management from actions or activities by agencies or entities other than BLM could affect cultural resources. Not all of the Tuledad Allotment has been inventoried for cultural resources. It is difficult to determine whether more significant cultural resources exist and whether similar resources exist on lands next to BLM-administered land. Ground-disturbing activities and activities and actions that alter settings on adjacent government or private lands might affect the significance of potentially eligible cultural resources. Cumulative loss of significant resources might affect the eligibility of resources for listing on the

Grazing by livestock and wild horses has probably affected a larger number of sites than is documented. Looting sometimes occurs but inadvertent actions from recreation, rock hounding, wood cutting, and other off-road activities affect cultural resources as well. Juniper removal projects on adjacent private property and conversion of sagebrush habitats to agricultural use on adjacent private lands also affect cultural resources resulting in similar cumulative effects.

Type II Wind Energy Applications are being processed for lands within the Tuledad Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and cultural sites may be avoided. Recreational use is expected to increase and these activities sometimes coincide with sensitive cultural resources causing displacement and mixed deposits of prehistoric/historic and modern debris.

The Proposed Action could contribute to cumulative impacts to cultural resources. However, implementation of the proposed mitigation measures would reduce or eliminate these effects. Therefore, the proposed action and mitigation measures, when combined with impacts from other sources, would not contribute to any measurable effects to cultural resources.

Direct and Indirect Impacts of No Action

Under the No Action Alternative vegetation treatments would not occur in the treatment areas. This would result in both positive and negative impacts to cultural resources. Treatment methods which could damage cultural resources as described under the Proposed Action would not occur, which would benefit the resource. However, removal of heavy

fuel from cultural resource sites through juniper harvesting and prescribed burning would also not occur under this alternative, which could affect cultural resources in the event of a natural or human caused fire. BLM fire history information indicates that there have been seven naturally caused wildfires within the project area in the past 50 years. Therefore, it is expected that the area would be subjected to wildfire in the future. High intensity fires have the ability to damage and/or destroy both historic and prehistoric archaeological sites. The use of heavy equipment for fire suppression activities have the potential to impact cultural sites by displacing surface artifacts and destroying site integrity. Hand lines can also impact cultural resources sites by disturbing surface artifacts and damaging archaeological features.

Also under this alternative, indirect impacts to cultural resource could continue to occur in areas where cattle continue to use juniper for shade, within cultural sites. Prescribed burning which removes vegetation from cultural sites and make them more vulnerable to relic collectors would not occur under this alternative. In addition, flag and avoid procedures which can attract attention to cultural resources would not occur under this alternative, which would benefit the resource.

Cumulative Impacts of No Action

Cumulative effects under current management from actions or activities by agencies or entities other than BLM could affect cultural resources. Not all of the Tulead Allotment has been inventoried for cultural resources. It is difficult to determine whether more significant cultural resources exist and whether similar resources exist on lands next to BLM-administered land. Ground-disturbing activities and activities and actions that alter settings on adjacent government or private lands might affect the significance of potentially eligible cultural resources. Cumulative loss of significant resources might affect the eligibility of resources for listing on the

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Type II Wind Energy Applications are being processed for lands within the Tulead Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and cultural sites may be avoided. Recreational use is expected to increase and these activities sometimes coincide with sensitive cultural resources causing displacement and mixed deposits of prehistoric/historic and modern debris.

The No Action alternative could result in impacts to cultural resources due to the threat of increased fuels and catastrophic wildfire. However, cumulative effects to cultural resources are not expected to be significant under this alternative.

3.4 Fire and Hazardous Fuels

Affected Environment

The project lies within the Surprise Field Office Fire Management area currently designated as “Full Suppression”, meaning all fires would be actively suppressed until controlled. This repeated action over the last century has allowed vegetation to grow unchecked to levels where conventional means of firefighting may not be adequate to suppress future wildfires. This could result in larger more damaging fires that cost more money and resources to fight and more money and resources to rehabilitate. During high to extreme burning conditions catastrophic wildfire may result. The potential exists for wildfire to encroach on private landholdings within the project area.

Fire Suppression activities continue within the project boundary using Appropriate Management Response (AMR) which includes full suppression strategies. This action is supported and explained in The FEIS, RMP (2007), Chapter 2, Section 2.4, Page 2-16 through 2-23.

Direct and Indirect Impacts of Proposed Action

The Proposed Action would increase the opportunities for direct attack methods during wildland fire suppression at a cost commensurate with resource value. Direct attack methods would help keep fires smaller and reduce fire intensity. Smaller less intense fires would be easier to control resulting in shorter duration incidents. The reduction in fuel loading would increase Firefighter safety during suppression actions. Lower intensity fires would allow fire suppression resources increased ability to protect private lands and would allow for increased time to evacuate and provide for public safety.

The Proposed Action would decrease the fuel loads and reduce fireline intensities in the proposed treatment blocks. This could increase the ability for fire suppression resources to suppress wildfire in and around private property that exist within the project area.

Cumulative Impacts of Proposed Action

Future wildfires in the treatment area would be less intense with low severity increasing firefighter and public safety. The Proposed Action would decrease the fuel loads in the area, reducing fireline intensities and increase the ability to suppress wildfire in and around private property that exist within the project area.

Direct and Indirect Impacts of No Action

Under the No Action alternative fuel loading would continue to increase into the future. Given the current fuel loading wildfire has the potential to start on BLM land and encroach onto private landholdings within the project area. Given historic wind and burning patterns around the project area the potential exists for wildfire to spread to the East impacting the town of Eagleville and private lands dispersed throughout the project area.

Under this alternative, during an active wildfire, conventional direct attack methods would not be sufficient to suppress wildfires due to increased fireline intensities and juniper density would make access to a fire difficult. Under extreme burning conditions there is an

increase risk of injury to firefighters and public. Local ranches and improvements are also at risk during wildland fires occurring within the project area.

Cumulative Impacts of No Action

Fire suppression has and would continue into the future under the Full Suppression strategy. Fires in the area would have the potential for rapid and large growth increasing the risk and danger to firefighters and neighboring residence.

Fire suppression has and would continue in the project area. Reduction of some biomass through grazing and fuel wood cutting has and would continue. It is expected that wildfires occurring in the future would become more difficult to suppress and would pose more of a threat to private property due to an increase in biomass (fuel).

3.5 Floodplains

The Federal Emergency Management Agency (FEMA) has not designated any critical floodplains on the Tulead Fuels Reduction and Habitat Restoration Project Area. There are no known flooding problems that have occurred on the project area and no significant impact to floodplains are expected from any of the restoration treatment listed in the proposed action.

Affected Environment

The Tulead Fuels Reduction and Habitat Restoration Project Area is located within three 4th Level Hydrologic Unit Code (HUC) Sub-basins.

Madeline Plains Sub-basin 4th Level HUC #18080002.

The Starvation Project has an ephemeral drainage that flows approximately .75 mile across BLM lands to the southwest into Red Rock Creek another ephemeral drainage.

Massacre Lake Sub-basin 4th Level HUC #16040204.

The Cottonwood Project, Dodge Bitterbrush Project, Express Project, Little Hat Project and Mahogany Project are all found within the Massacre Lake Sub-basin.

The Cottonwood Project has two unnamed ephemeral drainages, one that flows to the north across BLM lands for approximately .2 mile along the Dodge Reservoir Road down into Tulead Canyon. The second unnamed ephemeral drainage flows to the northwest across BLM land for approximately 1.3 miles where it enters private land and flows an additional .7 miles where it eventually drains into Tulead Canyon.

The Dodge Bitterbrush Project has two unnamed ephemeral drainages that flow to the northeast across BLM lands for approximately 1.4 miles and flows into Tulead Canyon.

On the Express Project, Express Canyon is an intermittent drainage that flows to the north across BLM lands for approximately 1.2 miles eventually flowing into Tulead Canyon. Two additional unnamed ephemeral drainages located southeast of Express Canyon flows to the northwest across BLM lands for approximately 1.5 miles before it enters Express Canyon.

On the Little Hat Project, an unnamed perennial drainage north of Pryor Spring flows to the southeast across private lands for approximately .5 mile into Post Canyon.

The Pryor Spring drainage is a perennial system that flows to the southeast across BLM lands for approximately .3 mile into Post Canyon.

The Mahogany Project includes two unnamed drainages. Road Pit Reservoir drainage an ephemeral/spring fed intermittent drainage that flows to the south across BLM lands for approximately 1.6 miles into Post Canyon. The second unnamed ephemeral drainage flows to the south across private lands for approximately .7 of a mile where it also flows into Post Canyon drainage.

Surprise Valley Subbasin 4th Level HUC #18080001.

The Barber Creek Project and the Bud Brown Project are found within the Surprise Valley Sub-basin.

The Barber Creek Project has two perennial creeks, North Barber Creek that flows to the east across BLM lands for approximately .5 mile and South Barber Creek that flows to the east across BLM lands for approximately .3 mile.

The Bud Brown Project has four unnamed drainages. An unnamed intermittent spring fed drainage that flows to the north across BLM lands for approximately 1.2 miles. A second unnamed perennial spring fed drainage north of Bud Brown Cabin Spring that flows to the east across BLM lands for approximately .7 mile. Bud Brown Spring a perennial system that flows to a wet meadow to the southeast for approximately .4 mile where it enters the unnamed spring fed drainage that flows to the north. A third unnamed ephemeral drainage that flows to the northeast for approximately 1.3 miles where it enters the unnamed spring fed drainage that flows to the north and where Bud Brown Cabin Spring drainage all intersect.

Direct and Indirect Impacts of Proposed Action

Reintroducing and mimicking natural processes that have been excluded from riparian zones would result in a positive vegetation response. Prescribed burns would be initiated when conditions are conducive to lower intensity burns, which would reduce the potential of losing desired riparian vegetation. In the burned areas, most of the herbaceous and root sprouting shrubs would retain their live rooting systems intact and hold the riparian/floodplain soil in place. Prescribed fire treatments usually result in mosaic burn patterns that include patches of unburned living vegetation following treatment. These unburned areas would provide cover and roots that stabilize sediments and serve as sediment traps to build floodplains

Reducing competition from juniper in riparian zones should facilitate recovery of woody and herbaceous riparian communities to a more historic regime. This would improve watershed stability and function by reducing bare soil and sediment inputs, stabilizing banks, increasing infiltration, and maintaining or restoring proper storage and release of

groundwater important for late season flows and temperatures.

Project units with perennial or intermittent creeks and springs would be limited to hand treatments within the 50 foot buffer zone identified in the SOP's in Appendix 7. Crews would use chainsaws to fall the juniper trees, the juniper would then be piled for burning at a later date. No impacts to floodplains are anticipated if the SOPs are implemented and monitored at the treatment phase.

Cumulative Impacts of Proposed Action

Concurrent actions within the project area include livestock, wildhorses and wild ungulate grazing. Livestock grazing and wildhorses are managed to provide for static or upward trend in riparian functionality which eliminates any negative effects that could be cumulative with fuels reduction treatments. Areas of the project would be rested a minimum of two growing seasons following treatments. The duration of the rest cycle would be determined by IDT monitoring. Due to the scale of the project area and the timing of the treatments, cumulative effect from wild ungulates would be minimal.

Direct and Indirect Impacts of No Action

Under this alternative, junipers would expand and become increasingly established near riparian areas and floodplains. Continued expansion would decrease riparian vegetation diversity, and the productivity and function of riparian areas and floodplains. The loss of desired riparian species to juniper encroachment could lead to deterioration of stream channel integrity, bank stability, and floodplain function. High seasonal water events could lead to further degradation of channel and floodplain integrity.

Junipers invade riparian areas by shading out or outcompeting desired riparian species. Juniper expansion into riparian areas and stream corridors would not likely lead to immediate degradation of creeks and floodplains; rather it would likely be a slow process that would compound over time.

Riparian vegetation such as sedges, rushes, grasses, and woody species such as willows and aspens are important for maintaining stream channel and floodplain integrity. The root systems of these plant species stabilize and protect streambanks from eroding during high flow events. Streambanks covered with herbaceous vegetation and stands of woody species catch sediment during high flow events and help maintain and restore floodplain development and function. Deep-rooted riparian vegetation also dissipates the energy associated with high water flow, thus reducing the erosive potential.

Juniper stands tend to have less complex vegetative communities, less understory cover, and more bare soil. Bare inter-canopy areas exhibit high rates of erosion (Reid et al. 1999). When riparian areas are dominated by juniper, high flow events have greater potential for erosion, leading to bank instability and subsequent channel and floodplain degradation.

Selection of the no action alternative would maintain or slowly degrade current condition and increase the downward trend of riparian areas that are in the functioning-at-risk category and associated floodplains, until an event such as high severity wildfire occurs.

High severity wildfire can result in pulses of increased sediment delivery to creeks. As junipers became increasingly dominant in riparian zones, streambanks and floodplains would become less stable from loss of deep-rooted riparian vegetation.

Cumulative Impacts of No Action

Disturbance of riparian areas and floodplains from livestock and wildhorses grazing would continue to occur throughout the project area. Grazing by livestock and wildhorses reduces grass biomass annually with direct impacts to floodplains from ungulate use. The risk of riparian and floodplain damage following a large-scale wildfire would increase as heavy fuel loading accumulates over time. Riparian vegetation that traps sediments and protects floodplains would be impacted by the encroachment junipers. If left untreated, juniper woodland canopies would increase over time and risk of a catastrophic wildfire would increase. At a watershed scale, these effects would be cumulative especially in the areas covered by the Sage Steppe Ecosystem Restoration Strategy FEIS.

3.6 Fuel Wood Utilization

Affected Environment

The project lies within an active fuelwood cutting area managed by Surprise Field Office. The majority of the fuel wood that is harvested is Western Juniper within existing project boundaries. Fuelwood cutting would continue within the proposed action boundaries.

Direct and Indirect Impacts of Proposed Action

Under the Proposed Action, impacts are expected to be minimal to the harvest of commercial products within the project area. By reducing the overall fuel loading within the area, there is a reduced chance of a large, uncontrolled wildfire occurring and destroying large tracts of land within and adjacent to the project area which could remove large acreages of trees and other vegetation. Areas immediately adjacent to and within the general project area would remain available for the harvest of commercial products. Under the Proposed Action tree availability would be reduced within the immediate project area.

Cumulative Impacts of Proposed Action

A reduction in the overall fuel loading within the proposed project area would reduce the possibility of a large, uncontrolled wildfire occurring and destroying large tracts of land within and adjacent to the project area which could remove large acreages of trees and other vegetation. Implementation of the Proposed Action, combined with any past, present or future treatments is not expected to result in any cumulative impacts to the harvest of commercial products.

Direct, Indirect and Cumulative Impacts of No Action

Under the No Action Alternative, the potential for a large, uncontrolled wildfire would increase which could result in large acreages of trees and other vegetation being removed within the project area, areas immediately adjacent to the project area and other areas within the South Warner Mountain Range.

3.7 Global Climate Change

Affected Environment

Climate change may result from: natural processes, such as changes in the sun's intensity; natural processes within the climate system (e.g. changes in ocean circulation); human activities that change the atmosphere's composition (e.g. burning fossil fuels) and the land surface (e.g. urbanization) (IPCC, 2007). Rising greenhouse gas (GHG) levels are likely contributing to global climate change. In the project area, climate change is typically expected to result in warmer, drier conditions and potentially more extreme weather events. Natural processes such as volcanic eruptions contribute to the increasing levels of GHGs in the atmosphere. Human activities related to the proposed action, livestock grazing, also contribute GHGs in the form of methane.

Direct, Indirect and Cumulative Impacts

The assessment of GHG emissions and climate change remains in its formative phase. The lack of scientific tools designed to predict climate change on regional or local scales limits the ability to quantify potential future impacts of climate change on resources in the project area. In addition, while the proposed action may involve some future contribution of GHGs, these contributions would not have a noticeable or measurable effect, independently or cumulatively, on a phenomenon occurring at the global scale believed to be due to more than a century of human activities.

3.8 Livestock Grazing

Affected Environment

The project area lies within the Tuledad grazing allotment. This 138, 648 acre allotment is divided into two large pastures – the North Pasture, which generally is north of Tuledad Canyon, and the South Pasture. Each pasture has several use areas for livestock management purposes. There are seven grazing permittees who are authorized to utilize up to 9,591 Animal Unit Months (AUMs) during a six-month season of use (April 1 to September 30). Approximately 3/4 of the AUMs are permitted to cattle, and remainder is permitted to sheep grazing. Sheep use the allotment primarily for lambing, spring grazing and for fall trailing use. Cattle are rotated through nine use areas within the two pastures. The period of grazing for each use areas varies annually, and is dependent on the resource objectives.

Direct and Indirect Impacts of Proposed Action

Mechanical and hand cutting treatments would affect the permittee grazing operations by changing pasture and use area management schedules that are necessary to meet livestock grazing closures requirements on treatment areas. Grazing closures would be accomplished by increased riding and herding by the permittee. Cattle would not be turned out near a treatment area; and sheep are under control of a herder. This provision requires greater compliance and coordination from the BLM and permittees.

Prescribed burns general would have greater impacts to permittee grazing operations than other treatment methods. Prescribed fire would require a minimum of two growing seasons of rest from grazing. Changes to the pasture and use area schedules and management

would not be adequate to meet livestock grazing closures requirements on treatment areas. In addition, cattle (and wild horses) are normally attracted to the new vegetation in burned areas. Therefore, riding and herding by the permittees would need to occur several times a week.

Cumulative Impacts of Proposed Action

Past actions within the proposed project area have impacted livestock grazing by reducing livestock numbers. Livestock grazing in the region has evolved and changed considerably since it began in the 1870's and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil and water relationships. Some speculate that that vegetation changes were permanent and irreversible; turning plant communities from grasses and other herbaceous species to shrubs and trees. Protective vegetative cover was reduced, and more runoff brought erosion, rills and gullies. In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations and policy changes have resulted in adjustments in livestock numbers, season of use and other management actions.

The proper management of livestock grazing is one of many important factors in ensuring the protection of Public Land resources. Present actions combined with reasonably foreseeable future treatments could mitigate impacts to vegetation, soils and water relationships by improving the health, vigor and recruitment of perennial grasses, forbs and shrubs; increasing ground cover to improve soil stability, reduce erosion potential and improving water quality; and increasing the quantity and quality of forage for livestock use which would promote herd health and economic stability. In the short term, impacts to permittee grazing operations is based on management changes to the pasture and use area schedules to meet livestock grazing closures requirements on treatment areas. Grazing closures would be accomplished by increased riding and herding by the permittee. Cattle would not be turned out near a treatment area; and sheep are under control of a herder. This provision requires due diligence on the part of BLM and the permittees.

The immediate impacts of increased forage availability as result of the proposed action could be substantial on the treatment area. But on an allotment basis the forage increase would be inconsequential, given the relatively small acreages of the treatments (less than 3% of the allotment's acreage). In the long term, there should be improvements in the forage base for the allotment over the no action alternative.

Direct and Indirect Impacts of No Action

The No Action Alternative is expected to eventually affect overall livestock performance and the economic stability of the permittees due to a reduction in the quantity and quality of grasses and other herbaceous forage which are important to sheep and other grazing animals. With a reduction in the production and vigor of herbaceous plant communities, the forage base would probably not adequately support the existing herd sizes and would adversely affect livestock performance (e.g. decreased cattle weights, decreased calving crops, decreased weaning weights, etc.).

Cumulative Impacts of No Action

Impacts to permittee grazing schedules would remain the same as the current situation. Livestock use would not occur due to the difficulty in grazing and herding in the dense tree canopy. In the long term forage availability would continue to decrease for livestock, wildlife and wild horses as Western juniper replaces herbaceous vegetation. The Tuledad allotment supports a traditional and historical lifestyle for the permittees that live within the Surprise Valley area. -Federal grazing permits are an essential part of their overall ranch operation, and consequently the local economy. Most permittees in the Surprise Valley could not maintain a successful livestock operation without the availability of forage from federal grazing permits.

Mitigation Measures

To meet recovery objectives within prescribed fire areas, fencing would be required to ensure rest from wild horses.

3.9 Native American Religious Concerns

Affected Environment

The Tuledad project area is within the territorial boundaries of the *Kidütökadö* band of the Northern Paiute. Many members of the *Kidütökadö* continue to reside at the Fort Bidwell Reservation. The BLM Surprise Field Office addressed the Tuledad Fuels Reduction and Habitat Restoration Project at consultation meetings with the Fort Bidwell Tribal Council on January 10, 2009 and on April 18, 2009. Consultation with the Tribe is ongoing for this project. However, at this time the tribe has not identified any religious concerns in the Tuledad project area.

Direct and Indirect Impacts of Proposed Action

There would be no direct or indirect impacts from the Proposed Action as no Native American Religious Concerns have been identified.

Cumulative Impacts of Proposed Action

No cumulative impacts from the Proposed Action are expected to occur as no Native American Religious Concerns have been identified.

Direct and Indirect Impacts of No Action

There would be no direct or indirect impacts from the No Action as no Native American Religious Concerns have been identified.

Cumulative Impacts of No Action

No cumulative impacts from the No Action are expected to occur as no Native American Religious Concerns have been identified.

3.10 Noxious Weed Species

Affected Environment

The BLM defines a weed as a non native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. A weeds presence deteriorates the health of the site, it makes efficient use of natural resources difficult, and it may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all. “Noxious” weeds refer to those plant species which have been legally designated as unwanted or undesirable. This includes national, state and county or local designations.

While portions of the Tuledad Allotment were inventoried for noxious weeds in 2008, no specific weed surveys were completed for this project. Instead the Surprise Field Office also relied on the weed inventory data near project areas. There are no known noxious weeds within the project areas, the following species are found along some roads in the area:

<i>Cirsium vulgare</i>	Bull Thistle
<i>Lepidium draba</i>	Hoary cress
<i>Onopordum acanthium</i>	Scotch Thistle

There is also cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*) and Russian thistle (*Salsola kali*) scattered along roads in the area, and is found particularly in lower elevations of the allotment. Impacts would be the potential introduction of weed seed from off target areas and would be minimized by standard operating procedures as described in Appendix 2: (Tuledad Standard Operating Procedures).

Direct and Indirect Impacts of Proposed Action

Under the Proposed Action, noxious and non-native invasive weeds could become established within the project area. In areas where perennial grasses and forbs are absence, cheatgrass could be expected to increase prior to desirable, perennial grasses, forbs and shrubs become established. Also, many thistle species are progressive during wet spring seasons and could become established before desirable vegetation becomes established.

New species could be introduced to the area as a result of vehicles, heavy equipment and activities associated with the use of the vehicles and equipment. However, conformance with the Surprise Field Office Noxious Weed Prevention Schedule would reduce this risk. If sufficient, desirable, perennial understory vegetation exists, then these desirable species should become established and out-compete any potential noxious weeds or invasive species.

Cumulative Impacts of Proposed Action

The possibility of future wildfire in the area is expected, as is additional fuels management activities and possibly wildland fire use for resource benefit. Following past wildfires, unforeseen situations have been discovered. Pre-existing, yet undetected stands of noxious weeds have been discovered and eradication or control actions have been initiated. This effect could be expected in the Tuledad area following proposed or future unplanned disturbances due to nearby detected infestations outside the proposed project area. With planned disturbances such as mechanical treatments or other treatment methods,

opportunities for detecting additional noxious weed infestations prior to disturbance could occur. Implementing the proposed action, would improve the ability of the vegetation community to compete with and prevent noxious weed and invasive species establishment through the development of a more vigorous, diverse and productive community. Completing additional treatments in patches over time, would reduce the potential of invasions from noxious weeds or invasive species over a large area. The overall cumulative impacts from all past, present and future actions are expected to be minimal.

Direct, Indirect and Cumulative Impacts of No Action

Under the No Action Alternative, noxious weeds may eventually increase into the targeted treatment area, particularly along traveled roads. Declining understory species in sagebrush and woodland sites would increase the risk of noxious weeds and invasive species establishment following a natural disturbance (e.g., wildfire) due to the lack of competition from desirable, perennial grasses and forbs. Increasing the density of woodlands would also increase the size and effect of a potential wildfire, which indirectly would provide large areas for noxious weeds and undesirable species to establish following a wildfire event.

3.11 Recreation

Affected Environment

The project area has a number of recreation opportunities including hunting, fishing, camping, hiking, horseback riding, scenic touring and mountain biking. Portions of the project area are visible from the Bare Creek Road, Tuledad Valley Road, and County Road 42.

Direct and Indirect Impacts of Proposed Action

The project would inflict short-term adverse affects and bring long-term benefits to recreation. Activities associated with the proposed action would result in temporary disturbance to the landscape during treatment, which may reduce the amount of hunting use in the treated areas the year following treatment. However, when the area becomes repopulated with stands of grasses, forbs and shrubs, more typical of the sagebrush steppe ecosystem, the treated area would support more upland birds and deer; providing for more recreational hunting opportunities and improved wildlife viewing opportunities. Visual quality, especially along Bare Creek Road would be degraded in the short term as well. However, in the long term the Proposed Action would improve visual quality of the area.

Cumulative Impacts of Proposed Action

Recreation opportunities are affected by range management projects, prescribed fires, wildland and human caused fires, and juniper harvests. These types of projects can limit recreational opportunities temporarily. The long-term outcome of fires, juniper harvests, and some range management projects can be of benefit to recreation opportunities by improving wildlife habitat and visual resources. Under the Proposed Action, cumulative impacts to recreation would not be significant.

Direct and Indirect Impacts of No Action

Under the No Action alternative the amount of wildlife habitat supporting upland game birds and deer would continue to be reduced by the increasing density of Western juniper. Therefore, quality recreational hunting opportunities would decline.

Cumulative Impacts of No Action

Recreation opportunities are affected by range management projects, prescribed fires, wildland and human caused fires, and juniper harvests. These types of projects can limit recreational opportunities temporarily. Increasing Western juniper can also impact the quality of recreational hunting opportunities. Under the No Action alternative cumulative impacts to recreational hunting would be moderate if Western juniper continues to increase. However, the cumulative impacts of this alternative would not be significant

3.12 Riparian

Affected Environment

Riparian habitat within the planning area consists of perennial streams having herbaceous and woody cover components, intermittent channels with herbaceous cover (generally with juniper over stories), and springs. Perennial stream courses include Barber Creek and Bare Creek. Only the Barber Creek project unit has perennial water flow through it, about 0.68 miles spanning two channels. Bare Creek which also flows perennially is within about 175 feet of one project boundary. Intermittent perennial pools can be found in isolated areas of the planning area depending on yearly precipitation. Both Express Canyon and the unnamed channels in the Bud Brown unit have larger riparian meadows with some areas of perennial water.

Within the planning area there are approximately 52 springs (including those on lands not managed by BLM), many which have been developed for livestock. Approximately 4-6 occur within project unit boundaries with about 3 being perennial. Most springs throughout the planning area show heavy past and current livestock and horse use. Several exclosures have been built to protect larger riparian resources including Barber Creek (22 acres), Bud Brown (506 acres), Lower Ant Spring (14 acres), and Nova Spring (8 acres). Several developed smaller springs have small exclosures built around a spring or headbox and water piped off site to a trough.

Direct and Indirect Impacts of Proposed Action

According to the SOP's for these projects "entry into wet spring areas would be limited to hand treatments with chainsaws and broadcast/pile burning". Therefore impacts from harvesting equipment are not expected to negatively affect spring riparian systems. Neither Bare or Barber Creek riparian habitat would be negatively impacted by these projects. Juniper would be the only species removed within the Barber Creek project (by hand) which has abundant wouldow and aspen along the creek and the Upper Bare Creek project boundary is too far from Bare Creek to impact the creek, either from mechanized equipment or removal of trees. While some trees would be removed adjacent to riparian habitat at Bud Brown depending on specific use found by sage-grouse, no mechanized equipment would be used.

Crossings over ephemeral stream channels would be identified by the COTR and be limited to dry, rocky and stable areas. Crossing channels with mechanized equipment would be at locations that are stable and naturally armored with rock.

Methods used should pose no risk to herbaceous riparian communities therefore there should be no negative impacts to riparian habitat from these actions. Wet riparian areas that do have juniper removed may show increased amounts of soil moisture and therefore may produce more riparian vegetation. Riparian habitat within unfenced projects may exhibit increased horse and livestock impacts if these projects allow more surface water to remain present or increase herbaceous vegetation around them thereby concentrating horses and livestock in the general vicinity. Since most project activities would occur outside of riparian areas, these habitats are not expected to see noticeable improvements from project activities except at Bud Brown and along Barber Creek

Cumulative Impacts of Proposed Action

Projects have not been generally situated around riparian habitats however some project work has occurred along Bare Creek (more than 15 years ago), Barber Creek and the Bud Brown unit. It is unknown how many acres of riparian habitat have been treated on private lands. Most project work would have little positive or negative impacts due to their location outside of riparian areas.

Direct and Indirect Impacts of No Action

Since most activities would occur outside of riparian habitats the No Action Alternative is expected to be similar to the Proposed Action. Some degradation of habitat would be expected to occur along Bud Brown due to juniper encroachment. Effects are expected to be less at Barber Creek which has less juniper, more perennial water, and a much broader diversity of riparian habitats than Bud Brown.

3.13 Soils

Invasive exotic plants generally decrease structural diversity of native vascular plant communities often fill previously biologically crusted interspaces. This has resulted in less cover and lower species richness of soil crusts (Rosentreter 1994; Kaltenecker 1997) where annuals dominate.

The size and identification of soil crusts is very difficult for landscape scale assessment. While the BLM recognizes the importance of biological soil crust, we have focused our efforts on the stabilization of native perennial plant communities on a larger scale. As the native plant communities improve and stabilize there is opportunity for reestablishment and or maintenance of existing biological soil crust organisms.

Affected Environment

The soil classification for the Tuleadad Fuels Reduction and Habitat Restoration Project Area are contained in the Surprise Valley/Home Camp Soil Survey, CA #685/NV#617. The soil survey was updated in 2006 by the Natural Resources Conservation Service

(NRCS) Reno State Office to meet current standards. The Surprise Field Office has a copy for review or is available on the NRCS web site (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/> accessed [month/day/year].

The majority of the soils in the project area are found in the eight soil mapping units listed below. The major landforms in the project area are mountains, mountain shoulders / summits and plateau. Parent material is mainly volcanic ash and colluviums derived from volcanic rock. In general the soils vary in depth from shallow to deep and are well drained. The soils vary in texture from a very ashy sandy loam soil up on the Cottonwood Mountain, to an extremely cobbly ashy loam soil on the Copper Smith Hills. The majority of the project units consist of a very cobbly loam that is found on several mapping units within the project area.

Soils in the Project Area are becoming increasingly vulnerable to surface erosion as understory vegetation beneath the canopies of western juniper stands is replaced by bare ground (Bates et al. 1998; Miller et al. 1994). Unvegetated soil surfaces are especially at risk of erosion during high intensity convective storms and during periods when soil is frozen.

Based on the Surprise Valley/Home Camp Soil Survey, the major soil mapping units in the project area include the following:

Soil Mapping Unit #338--Cavin-Nutzan-Snag association

Cavin very gravelly ashy sandy loam, 8 to 30 percent slopes - 40 % M.U.
 Ecological site number: R023XY061NV - Mountain Shoulders 14-18" P.Z.
 Typical vegetation: Bluebunch wheatgrass, other perennial forbs, Cusick's bluegrass, mountain big sagebrush, Idaho fescue, needlegrass.
 Natural drainage class: Well drained.

Nutzan very gravelly ashy sandy loam, 8 to 30 percent slopes - 30% M.U.
 Ecological site number: R023XY066NV - Ashy Loam 14-16" P.Z.
 Typical vegetation: Other perennial forbs, other perennial grasses, Idaho fescue, mountain big sagebrush, antelope bitterbrush, needlegrass, other shrubs.
 Natural drainage class: Well drained.

Snag very stony ashy sandy loam, 2 to 8 percent slopes – 20% M.U.
 Ecological site number: R023XY019NV - Loamy 16+" P.Z.
 Typical vegetation: Snowberry, other shrubs, mountain big sagebrush, other perennial forbs, other perennial grasses, bluegrass, basin wildrye, Idaho fescue, mountain brome, needlegrass.
 Natural drainage class: Well drained.

Soil Mapping Unit #368 - Devada-Dosie-Softscrabble association

Devada cobbly loam, 2 to 15 percent slopes – 50% M.U.
 Ecological site number: R023XY031NV - Claypan 10-14" P.Z.

Typical vegetation: Other perennial forbs, bluebunch wheatgrass, low sagebrush, Thurber's needlegrass, bluegrass.

Natural drainage class: Well drained.

Dosie very gravelly loam, 15 to 50 percent slopes – 20% M.U.

Ecological site number: R023XY016NV - South Slope 12-16" P.Z.

Typical vegetation: Bluebunch wheatgrass, mountain big sagebrush, needlegrass, basin wildrye.

Natural drainage class: Well drained.

Softscrabble very cobbly loam, 8 to 30 percent slopes – 15% M.U.

Ecological site number: R023XY041NV - Loamy 12-14" P.Z.

Typical vegetation: Needlegrass, basin wildrye, bluebunch wheatgrass, other perennial forbs, mountain big sagebrush, antelope bitterbrush.

Natural drainage class: Well drained.

Soil Mapping Unit #418 - Harskel-Menbo association

Harskel extremely cobbly ashy loam, 8 to 30 percent slopes – 60% M.U.

Ecological site number: R023XY015NV - Stony Loam 12-14" P.Z.

Typical vegetation: Mountain big sagebrush, other perennial forbs, antelope bitterbrush, bluebunch wheatgrass, needlegrass.

Natural drainage class: Well drained.

Menbo very cobbly loam, 4 to 15 percent slopes – 30% M.U.

Ecological site number: R023XY007NV - Loamy 14-16" P.Z.

Typical vegetation: Other perennial forbs, basin wildrye, Idaho fescue, antelope bitterbrush, needlegrass, mountain big sagebrush, bluebunch wheatgrass.

Natural drainage class: Well drained.

Soil Mapping Unit #420 - Hart Camp-Menbo association

Hart Camp stony loam, 4 to 15 percent slopes – 60% M.U.

Ecological site number: R023XY015NV - Stony Loam 12-14" P.Z.

Typical vegetation: Antelope bitterbrush, other perennial forbs, mountain big sagebrush, bluebunch wheatgrass, needlegrass.

Natural drainage class: Well drained.

Menbo cobbly loam, 15 to 50 percent slopes – 30% M.U.

Ecological site number: R023XY007NV - Loamy 14-16" P.Z.

Typical vegetation: Needlegrass, Idaho fescue, basin wildrye, bluebunch wheatgrass, antelope bitterbrush, other perennial forbs, mountain big sagebrush.

Natural drainage class: Well drained.

Soil Mapping Unit #476 - Ninemile-Karlo-Crocac association

Ninemile very cobbly loam, 4 to 15 percent slopes – 50% M.U.

Ecological site number: R023XY017NV - Claypan 14-16" P.Z.

Typical vegetation: Thurber's needlegrass, Idaho fescue, low sagebrush, bluegrass, other shrubs, other perennial grasses, bluebunch wheatgrass, other perennial forbs

Natural drainage class: Well drained.

Karlo cobbly clay, 2 to 8 percent slopes – 20% M.U.

Ecological site number: R023XY001NV - Churning Clay 10-14" P.Z.

Typical vegetation: Sandberg bluegrass, bottlebrush squirreltail, other perennial forbs, other shrubs, low sagebrush, Washoe rubber rabbitbrush.

Natural drainage class: Well drained.

Crocac extremely stony loam, 2 to 15 percent slopes – 15% M.U.

Ecological site number: F023XY095NV – JUOC WSG: OR2003

Typical vegetation: Forest canopy--western juniper Forest understory--Idaho fescue, other perennial grasses, other shrubs, Canby bluegrass, Cusick's bluegrass, Thurber's needlegrass, western needlegrass, bluebunch wheatgrass, other perennial forbs, low sagebrush, western juniper.

Site index: Western juniper--12 at an age base of 50 years.

Natural drainage class: Well drained.

Soil Mapping Unit #477 Ninemile-Madeline-Crocac association

Ninemile very cobbly loam, 4 to 15 percent slopes – 50% M.U.

Ecological site number: R023XY017NV - Claypan 14-16" P.Z.

Typical vegetation: Thurber's needlegrass, Idaho fescue, low sagebrush, bluegrass, other shrubs, other perennial grasses, bluebunch wheatgrass, other perennial forbs

Natural drainage class: Well drained.

Madeline very cobbly loam, 4 to 15 percent slopes – 25% M.U.

Ecological site number: R023XY015NV - Stony Loam 12-14" P.Z.

Typical vegetation: Needlegrass, bluebunch wheatgrass, other perennial forbs, antelope bitterbrush, mountain big sagebrush.

Natural drainage class: Well drained.

Crocac extremely stony loam, 2 to 15 percent slopes – 15% M.U.

Ecological site number: F023XY095NV – JUOC WSG: OR2003

Typical vegetation: Forest canopy--western juniper Forest understory--Idaho fescue, other perennial grasses, other shrubs, Canby bluegrass, Cusick's bluegrass, Thurber's needlegrass, western needlegrass, bluebunch wheatgrass, other perennial forbs, low sagebrush, western juniper.

Site index: Western juniper--12 at an age base of 50 years.

Natural drainage class: Well drained.

Soil Mapping Unit #480 - Ninemile-Softscrabble-Crocac association

Ninemile very cobbly loam, 4 to 15 percent slopes – 50% M.U.

Ecological site number: R023XY017NV - Claypan 14-16" P.Z.

Typical vegetation: Thurber's needlegrass, Idaho fescue, low sagebrush, bluegrass, other shrubs, other perennial grasses, bluebunch wheatgrass, other perennial forbs

Natural drainage class: Well drained.

Softscrabble very cobbly loam, 8 to 30 percent slopes – 20% M.U.

Ecological site number: R023XY041NV - Loamy 12-14" P.Z.

Typical vegetation: Basin wildrye, other perennial forbs, bluebunch wheatgrass, antelope bitterbrush, mountain big sagebrush, needlegrass.

Natural drainage class: Well drained.

Crocan extremely stony loam, 2 to 15 percent slopes – 15% M.U.

Ecological site number: F023XY095NV – JUOC WSG: OR2003

Typical vegetation: Forest canopy--western juniper Forest understory--Idaho fescue, other perennial grasses, other shrubs, Canby bluegrass, Cusick's bluegrass, Thurber's needlegrass, western needlegrass, bluebunch wheatgrass, other perennial forbs, low sagebrush, western juniper.

Site index: Western juniper--12 at an age base of 50 years.

Natural drainage class: Well drained.

Soil Mapping Unit #533 - Redhome-Cowbell association

Redhome cobbly loam, 4 to 15 percent slopes – 60% M.U.

Ecological site number: R023XY007NV - Loamy 14-16" P.Z.

Typical vegetation: Needlegrass, antelope bitterbrush, mountain big sagebrush, other perennial forbs, bluebunch wheatgrass, basin wildrye, Idaho fescue.

Natural drainage class: Well drained.

Cowbell extremely cobbly ashy mucky sandy loam, 4 to 30 percent slopes – 30% M.U.

Ecological site number: R023XY026NV - Mahogany Savanna

Typical vegetation: Curlleaf mountain mahogany, Cusick's bluegrass, bluebunch wheatgrass, Idaho fescue, needlegrass, mountain big sagebrush.

Natural drainage class: Well drained.

Direct and Indirect Impacts of Proposed Action

Ground-based mechanized thinning treatments can result in localized compaction or displacement of soil along skidding routes and at the site of large piles. Despite the soil disturbance caused by the mechanized equipment, it is expected that there would not be any loss of soil productivity in the long-term after the disturbed sites have been rehabilitated.

Soil productivity impacted by prescribed fire would consist of broadcast burning and pile burning within the project boundary over ten years. Burning would eliminate the above ground biomass and affect the organic layer of the soil profile. It is expected that there would be a temporary loss of soil productivity in these areas immediately following the burns. These burns would be managed for low intensity allowing the majority of perennial grasses to survive the fire. It is expected that there would be sufficient re-growth within the burn areas to stabilize the soil and replenish the organic material within a few years of the burns. The scope, timing and effects of prescribed burning are further discussed in detail in Appendix 7: (Tuledad Standard Operating Procedures).

The proposed action would construct the minimal amount of temporary roads and landings needed to complete the project, taking that amount of land out of soil productivity for the life of the project. Landings and temporary constructed roads would be rehabilitated

bringing the soil in those areas back into productivity at the completion of the projects.

It is expected that long term soil productivity would increase in response to the removal of juniper and the improvement in the sage steppe grass plant community.

Cumulative Impacts of Proposed Action

There would be a short term loss of soil productivity within the project area due to project activities. After the project is completed, it is expected that there would be an increase in soil productivity due to a reduction in juniper allowing for an increase in litter supplied by rejuvenated native sagebrush perennial grass plant communities.

Direct and Indirect Impacts of No Action

Under the no action alternative, there would be no additional compaction or displacement that would impact soil resource from the mechanical removal of juniper. The risk of soil damage and accelerated erosion following a large-scale wildfire would increase as fuel accumulates over time. Bare ground beneath juniper woodland canopies would increase over time and risk of surface erosion would increase.

Future soil productivity within the project area would decline with the increase of western juniper densities and the associated loss of the native shrub/perennial grass production and litter. Soil surface layers (top soil) may degrade as nutrients, shrub and perennial grass cover is depleted. Light erosion from runoff may increase due to the long term reduction in shrub and grass cover.

Cumulative Impacts of No Action

Disturbance of soil through vehicular traffic due to recreational activities has and would continue to occur throughout the project area. Livestock and wildhorse grazing reduces grass biomass annually with direct impacts to soil through trailing. The risk of soil damage and accelerated erosion following a large-scale wildfire would increase as fuel accumulates over time. Bare ground beneath juniper woodland canopies would increase over time and risk of surface erosion would increase. At a watershed scale, these effects would be cumulative especially in the areas covered by the Sage Steppe Ecosystem Restoration Strategy FEIS.

3.14 Biological Soil Crusts

Affected Environment

The soil surface community includes cyanobacteria, green algae, lichens, mosses, microfungi and other bacteria. Soils with these organisms are often referred to as cryptogamic soils and form what is known as biological crusts. The cyanobacteria and microfungi filaments aid in holding loose soil particles together forming a biological crust which stabilizes and protects soil surfaces. The biological crusts aid moisture retention, fix nitrogen, and may discourage the growth of annual weeds. Most of the biological crust organisms make their growth during cool moist conditions. Bryophytes (mosses and liverworts) are the most prevalent in the project area. Identifying cyanobacteria, green algae on a landscape scale is very difficult without special equipment (specialized field

techniques and a microscope) due to the small size of these organisms.

Localized mountain, subalpine, and xeric big sagebrush types often lack significant biological crust cover due to dense vascular vegetation and accumulating plant litter. In the Tuledad allotment most of the treatment units have fine textures soils, relatively cooler climates at the higher elevations and summer rains which are conducive to crust development. The Express Canyon treatment unit has the less stable coarse-textured soils, that often support only highly mobile, large filamentous cyanobacteria (such as *Microcoleus* spp.).

There are several reasons for decreases in soil crust which include extensive livestock grazing, wild horses, wildfires, and more recently off-road vehicles. In addition, the reason for limited soil crust is inversely related to vascular plant cover (Belnap, Lange, 2001). The distribution, shape, and height of vascular plants can either increase or decrease soil crust or influence crust species composition. Vascular vegetation reduces the overall soil surface available for colonization.

Direct and Indirect Impacts of Proposed Action

Mechanical treatment methods can apply compressional and shear forces to the soil. The crust response to these disturbances is highly variable. Moisture and burial are two important factors relating to the degree of impact. With coarse textured sandy soils, moist crusts are better able to withstand disturbances than dry soils. Many of the biological crust species are not mobile and may not survive being buried by mechanical equipment. Although mechanical treatments and burning would reduce the cover of biological crusts, they would likely partially recover within days following a precipitation event, (Technical Reference 1730-2, 2001). Hand cutting is not expected to have any ground disturbance impacts, and therefore no impacts to soil crust. There would be positive impacts to soil crust from the protection and of decaying of dead juniper canopies while lying on the ground from hand cutting.

Cumulative Impacts of Proposed Action

Biological soil crusts recover from disturbance over time. The time factor is dependent upon the degree of displacement and soil moisture. If moist conditions exist, partial recovery of the mobile species can occur in days (Technical Reference 1730-2, 2001). More complete recovery of a site would be similar to recovery of the herbaceous vegetation and could occur in a few years. The proposed action would benefit soil crusts by reducing the possibility of unnaturally large wild fires, and the subsequent invasion of annual grasses.

Direct and Indirect Impacts of No Action

Under the No Action alternative, as Western juniper increases in density and would continue to out-compete vegetation associated with the sage-steppe ecosystem. The overall vegetative type would become homogeneous. The direct effects would likely be a loss of shade in-tolerant soil crusts, affecting the overall diversity of biological crusts. If severe intensity fire were to occur, it is expected that the area would become dominated by invasive annual grass due to the reduction in perennial grasses caused by juniper

encroachment therefore decreasing biological soil crusts.

Cumulative Impacts of No Action

There would be no disturbance of soil crusts from mechanical, or pile burning. Under this alternative there would be no additional actions conducted within the project area and therefore there would be no cumulative impacts beyond the direct & indirect effects of no action described above.

3.15 Vegetation, including T&E Plant Species

Affected Environment

For the purposes of this EA vegetation in the allotment is generally described as three communities based on elevation. The lowest elevations (below 5500') in the allotment occur on the eastern and northern portions of the area around Surprise Valley, Duck Lake, Duck Flat, and in Tuledad Canyon. These areas are primarily deep loamy soils that support basin and Wyoming big sagebrush/Thurber's needlegrass dominated communities on the slopes, and alkali tolerant greasewood and saltgrass dominated communities on the lake flats. Some of these areas are private, irrigated, used for hay production.

The mid elevations (5500' to 6800') occupy the largest portion of the project area. Soils in these areas are loams and clay loams that support a complex mosaic of mountain big sagebrush/Idaho fescue/bluebunch wheatgrass/Thurber's needlegrass, low sagebrush/Sandberg's bluegrass, and Western juniper dominated communities. Included on these elevations are areas of heavy clay soils that support rabbitbrush communities, ephemeral lakebeds with silver sagebrush and herbaceous dominated communities, rims with mountain mahogany, and a few small quaking aspen groves.

The highest elevations of the project area (6800'-8000') include the upper reaches of Cottonwood Mountain and the steep slopes on the east side of the Warner Mountains. The soils on these elevations support productive mountain big sagebrush and low sagebrush communities with large components of mountain brush, including bitterbrush, serviceberry, chokecherry, bittercherry, oceanspray, snowbrush, and mountain mahogany. Western juniper is increasing throughout this elevation zone. Some stands of white fir and ponderosa pine occur on north slopes and larger aspen groves are also found at these elevations.

The majority of the drainages and springs in the project area support herbaceous plant communities, including grasses, forbs, sedges, and rushes. Many of these systems also contain some woody riparian vegetation, including wouldow, rose, aspen, and chokecherry.

There are no known populations of federally listed Endangered, Threatened, Proposed, or Candidate plant species in the allotment. There is one federally listed sensitive species, Schoolcraft's cryptantha (*Cryptantha schoolcraftii*) that occurs within the allotment. The Schoolcraft's cryptantha occurs on very dry, nearly barren soils in Tuledad Canyon and on the east side of Duck Lake. This plant is not within or adjacent to any project unit.

Direct and Indirect Impacts of Proposed Action

The Proposed Action would reduce the composition of western Juniper and would support re-establishment of native perennial grasses, shrubs forbs, and maintain or improve overall sage-steppe ecological conditions. The assemblages of plant communities on landscape basis would increase. These conditions would have direct positive impact on wildlife diversity and increased forage for a variety of animal species. The proposed action would also decrease the risk of large catastrophic wildfires within the project area, and therefore reducing the potential of invasive cheatgrass and other annuals dominance within the project area. Long term fuel loads within the project area would move from 6-12 tons per acre to 4-6 tons per acre consistent with the normal range of variability in the Sage Steppe Ecosystem.

Cumulative Impacts of Proposed Action

The proposed action would restore the area from its current Condition Class of 2 and 3, and bring it toward Condition Class 1, where fire regimes are near or at the historical range. The risk of losing key ecosystems components including species composition and structure would decrease within the project area.

Direct and Indirect Impacts of No Action

Under the No Action alternative, Western juniper would continue increasing in density and would continue to out-compete vegetation associated with the sage-steppe ecosystem. The overall vegetative type would become homogeneous. The direct effects would be the loss of vegetation diversity affecting historical plant and animal populations. The numbers and diversity of desired plant and animal species that currently occupy the project area would be reduced in as juniper population increases. The long term threat of catastrophic wildfire would result in the loss of key components of the ecosystem. If severe intensity fire were to occur, it is expected that the area would become dominated by invasive annual grass due to the reduction in perennial grasses caused by juniper encroachment.

Cumulative Impacts of No Action

Under this alternative it is likely that future wildfires within the project area would be more costly to suppress as well as rehabilitate. There exist a moderate to high probability of losing key ecosystem components of the sage-steppe ecosystem due to wildfires and competition from juniper encroachment.

3.16 Visual Resource Management

Affected Environment

The Surprise Field Office has evaluated and designated suitable Visual Resource Management (VRM) classes (Class I through Class IV) for the entire management area. The designations were created through the Resource Management Planning efforts in 2007. Visual resource impacts are assessed based on the effect the action may have on the form line color and texture of the landscape. These effects are reconciled with the type, frequency, amount and purpose of use in the project area.

All of the Tuledad Project units are located within Visual Resource Management (VRM)

Class II, with the exception of the Bud Brown unit which is located within lands designated as VRM Class II and Class III. Viewsheds within the project areas are diverse and varied with the Warner Mountains to the west and wide open landscapes to the east dominating the scene and serving as the focal point for the visual backdrop for the area. Vegetation and rolling topography contribute to the visual aesthetic throughout the project area with vegetation mixtures of brush, trees, meadows, and rock outcrops occurring in random patterns.

Four project units (Barber, Dodge, Little Hat and Mahogany) are located along improved gravel roads. The Barber area is on the Sworinger Reservoir road, and the other three units are on the Tuledad road. The remaining units are accessed by two-track roads and are not immediately or substantially visible from the main travel routes. Use of the roads within the project area is infrequent and intermittent. The main and side roads are used mainly by local cattle ranchers, hunters and fishermen who are accustomed to viewing the proposed treatments in other areas. Infrequent out of area sightseers also find their way into the proposed treatment areas. Management strategies for VRM Class II and Class III are as follows:

Class II – The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III – The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Although none of the project areas are proposed within a VRM Class I area, the Barber unit (28 acres) abuts the Southeast boundaries of the South Warner Wilderness Study Area (WSA).

Direct and Indirect Impacts of Proposed Action

A Visual Resource Contract Rating was performed for the project area. Current and past vegetation treatments adjacent to the proposed project units served as a comparison for evaluating the effects of the proposed treatments. The results of the rating indicate that those units adjacent to the main road are more visually apparent. The degree of contrast in the foreground would be moderate in these units if treatments come right to the edge of the road. Whereas, the degree of contrast to the units located along two-track roads and out of immediate sight of the main road would be less apparent.

Under the Proposed Action, harvesting of juniper would affect the landscape but would not dominate the scene.

In areas with high densities of juniper, the visual variety would increase across the landscape, resulting in neutral or positive long-term effects (SSERS, Sec. 4.9.4, p. 346). New openings in the juniper would be created with hand and mechanical treatments and over the short term, while needles are yellow or brown, the felled trees would be noticeable to the casual observer. These treatments do not remove 100% of trees and so post treatment effects to visual resources would be reduced. Experience with this impact in other treatment areas suggests the visual contrast of the dead down trees would be mitigated within 3 to 6 years. After this, the dead trees would blend in to the scene and be substantially unnoticeable. Prescribed burning would initially produce a more stark contrast between treated and untreated areas, however vegetation response within a few years of treatment would soften the contrast. Furthermore, given that fire is a component of the landscape, the impact of this treatment to the visual resource component would be expected to go largely unnoticed within a few years. The effects of burning within shrub areas would produce similar effects as those described for prescribed burning in woodland sites. Treatment boundaries could create or enhance linear contrasts between woodlands and shrublands if they are straight, do not follow topography and are not feathered in to the untreated sites. Temporary roads and cross country travel activities could include scalping or crushing of vegetation and smoothing of the ground surface. This activity would also introduce linear contrasts which could either be short term or long term in nature depending on the timing and effectiveness of rehabilitation treatments. If rehabilitation treatments are successful and the routes do not develop into unauthorized roads, this effect would be expected to be moderated over the short term and nearly eliminated over the long term.

Mitigation Measures

The following mitigation measures would reduce visual impacts to the VRM Class II and Class III project areas:

- Rehabilitation of roads, prescribed fire control lines, and staging areas within one year of treatment would reduce the likelihood of the tracks being used by the public. Placement of rocks and brush or trees within the tracks and trails would discourage public use and blend the disturbance into the background. Reseeding of scalped and smoothed areas would speed up the rate of vegetation cover in these sites and reduce the chance of invasive or noxious species gaining a foothold in these denuded sites.
- Specific monitoring of road rehabilitation areas would insure that erosion is not occurring and that re-vegetation is effective.
- To reduce the contrast of the three treatments along the main road, a buffer of trees could be left as a screen.
- To reduce the contrast of the boundaries of all treatment units, treatments activities involving juniper removal could feather in the major tree removal with the adjacent untreated edges by leaving a selection of larger and smaller trees.
- To reduce the contrast associated with the creation of new openings, scattered specimens of trees of varying size could be left at a rate of 5 to 10 trees per acre, and small untreated pockets could be left.
- To reduce the short term impact of yellowing and browning needles of felled trees in areas proposed for manual thinning/cut and run treatment, branches of the larger

felled trees which project above the profile of the shrubs could be cut

Cumulative Impacts of the Proposed Action

Visual Resources are most observable along improved roads that are easily accessed. Ground disturbing activities and landscape scale projects affect visual quality by creating changes to the landscapes form, color, line, line and texture. Previous range improvement projects, road construction/maintenance, vegetation treatments, gravel pits, and juniper harvesting have caused these types of impacts to visual resources.

Type II Wind Energy Applications are being processed for lands within the Tuledad Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and visual resources would be minimally affected by the installation of Met Towers. Juniper harvesting projects on private lands are also expected to continue which can also affect visual resources.

Mitigation measures for the Proposed Action would reduce the impacts to visual resources. Therefore, it is expected that there would be no significant long-term cumulative impacts to visual resources from the proposed action.

Direct and Indirect Impacts of No Action

Under the No Action Alternative there would be no direct or indirect impacts to visual resources from harvesting of juniper. However, woodland juniper may continue to increase which could potentially lead to catastrophic wildfires. Vegetation recovery from wildfires can be of long duration, which can impact visual resources long-term. BLM fire history information indicates that there have been seven naturally caused wildfires within the project area in the past 50 years. Therefore, it is expected that the area would be subjected to wildfire in the future. The use of heavy equipment for fire suppression activities have the potential to impact visual resources by creating contrasts in color, line, texture, and form.

Cumulative Impacts of the No Action Alternative

Visual Resources are most observable along improved roads that are easily accessed. Ground disturbing activities and landscape scale projects affect visual quality by creating changes to the landscapes form, color, line, line and texture. Previous range improvement projects, road construction/maintenance, vegetation treatment, wildfire, gravel pits, and juniper harvesting have caused these types of impacts to visual resources.

Type II Wind Energy Applications are being processed for lands within the Tuledad Fuels project area and the surrounding area. The area of disturbance for Type II Wind Energy applications is small and visual resources would be minimally affected by the installation of Met Towers. Juniper harvesting projects on private lands are also expected to continue which can also affect visual resources.

The No Action Alternative would not contribute significantly to cumulative effects to visual resources, as no ground disturbing activities are proposed under this alternative.

3.17 Water Quality

Affected Environment

Vehicular traffic within the project area is minor with little to no traffic occurring in the higher elevations during the late fall to spring months due to problems with access. Most traffic within the planning area occurs along four main roads including: “Tuledad Canyon”, “Coppersmith Hills”, “Buckhorn” and “Fir Grade” roads. Off road travel occurs sporadically especially during the hunting season in the Fall. Most roads within project units see little use normally except for the occasional camper or wood cutter. Most current impacts to water quality come from grazing along creeks or springs. Some amount of sediment is expected into riparian habitats near major roads.

Direct and Indirect Impacts of Proposed Action

Since heavy equipment operations would not occur near water, the Proposed Action is not expected to affect water quality significantly. The proposed action could cause very short term negative affects to water quality at the Barber Creek project but this is highly unlikely given the SOP’s outlined in section 4.0. No heavy equipment or vehicles would be allowed in wet areas so there should be no damage to riparian sites which could increase sediment loads or increase the chance of oil or fuel spills into water ways. There is some possibility that the expected increased herbaceous vegetation from the Proposed Action could concentrate livestock or horses in some riparian areas which would negatively impact water quality. Effects may be longer if burn piles are placed near water.

Cumulative Impacts of Proposed Action

Little information exists related to similar actions on private lands. Private landowners do not have the same restrictions placed on them as federal or state agencies. Juniper reduction projects on private lands would be expected to increase sediment loads into creeks and springs from similar activities albeit only in the short term.

Direct and Indirect and Cumulative Impacts of No Action

In the short term, there would be no effect on existing water quality from the alternative. Long-term impacts could result in reduced water quality, as watershed stability would decrease causing erosion potential to increase. Future wildfires would be larger and hotter, resulting in larger more continuous areas without vegetation cover, thus increasing erosion potential. Runoff would last longer as rehabilitation would take longer due to decreased vegetation diversity.

No direct or indirect effects are expected from the No Action Alternative.

3.18 Wildlife; Migratory Birds; Special Status Species (Federally Listed, Proposed or Candidate Threatened and Endangered Species); State Protected Species; BLM Sensitive Species

Affected Environment

The area in the vicinity of all alternatives is inhabited by a variety of terrestrial and aquatic species including BLM sensitive species and several important game species. Major

habitat types include juniper, sagebrush and bitterbrush with inclusions of mountain mahogany. Field office wide surveys have been conducted for sage-grouse, pygmy rabbit, golden eagle, other bird species and aquatic species. Additional visits were made to all project sites in 2008 to observe habitat conditions/availability and to look for signs of other species that might be present. There are no known federally listed species in the area. The only known BLM sensitive species found within the project boundaries is the Greater sage-grouse (*Centrocercus urophasianus*) which use portions of the allotment all year long. This is based on observations of sage-grouse use from Spring through Fall within the project area and an analysis of soils to look at potential vegetation for sage-grouse during initial planning phases for the Nevada and California sage-grouse conservation efforts. It is estimated that about 60% of the project area is in good shape for sage-grouse with another 11% considered to have juniper encroachment. The greater sage-grouse has an important breeding area known as a lek near the boundary of the Bud Brown juniper removal unit. This unit is in place to remove competing juniper from around the breeding/summer brood rearing habitat for this bird. Two more active leks occur within the project area, one within 2.8 miles of a project unit and the second more than 8 miles from a project unit. Two other undetermined status leks occur within the project area as well, both more than 3 miles from a project unit. These last two leks have had intermittent birds seen on them over several years and may in fact be satellite leks. Other BLM sensitive birds found locally and that likely use the project are golden eagle (*Aquila chrysaetos*), which forage throughout the project area. While probably rare (Cicero 1996 and 2000) juniper titmouse (*Baeolophus ridgwayi*) have been found within the field office boundaries. Juniper titmouse use large, mature juniper for nesting.

Sage-steppe obligate species which likely occur based on habitat include brewer's sparrow (*Spizella breweri*), sage-sparrow (*Amphispiza belli*), and sage-thrasher (*Oreoscoptes montanus*). Pygmy rabbit are not thought to occur within the project area with the closest active or inactive pygmy rabbit burrow occurring almost 15 miles away from the project area. Important game species seen within the project area include mule deer (*Odocoileus hemionus hemionus*) and pronghorn antelope (*Antilocapra americana* spp.), chukar (*Alectoris chukar*) may occur as well on some of the lower slopes. Mule deer are found throughout the general area from spring to fall and pronghorn antelope on the flatter north and eastern boundaries of the project area. Based on one known sighting several decades ago outside the project area, elk could also occur albeit very rarely. Prior to the severe Fall 2007 die-off within the Hays Canyon herd of California bighorn sheep (*Ovis Canadensis californiana*), there was some evidence that bighorn sporadically made their way onto the eastern slopes of the project area however this species is not managed for within the project area (BLM 2007). Several BLM sensitive bats are known to exist in the field office area and based on habitat needs several of these may use portions of the project area. These include the long-eared myotis (*Myotis evotis*), small-footed myotis (*Myotis ciliolabrum*) and Yuma myotis (*Myotis yumanensis*). Long eared myotis are known to use *Juniperus* sp. heavily in the southwest. Speckled dace (*Rhinichthys osculus* spp.) can be found in Bare Creek and probably adjacent to the Upper Bare Creek unit. Non-native brown trout (*Salmo trutta*) and planted rainbow trout (*Oncorhynchus mykiss* spp) occur in Bare Creek but several miles downstream of the project.

Direct and Indirect Impacts of Proposed Action

Project activities associated with the proposed action would result in both temporary and long term impacts to wildlife habitat and individuals. Impacts would be both beneficial (habitat changes) and negative (primarily related to disturbance). Reduction of fuels may remove some habitat for smaller species; however this is expected to result in short term localized effects, and is intended to benefit habitat in a broader sense by providing protection from catastrophic wildfire. Burning activities would be low in intensity, and should benefit wildlife habitat by allowing most perennial species to survive and proliferate. Reducing juniper density would result in fewer nesting, perching, and foraging locations for some bird species, in addition to resting and thermal cover sites for larger species including deer and pronghorn. Thermal and hiding cover however is not limiting throughout the planning area. Benefits should occur for sagebrush obligate birds due to the expected increase in sagebrush and grass cover from reducing overstory juniper. Less overstory juniper should increase forb availability as well which would particularly benefit mule deer and pronghorn antelope. Actions involving vegetation disturbance (i.e. construction of temporary roads and landings, tree skidding) would be accomplished with as minimal disturbance as possible, and roads and landings would be rehabilitated, either naturally or by seeding or other measures.

Prescribed burning would cause some direct deaths to smaller animals that cannot move away from these operations. Burning of 1,250 acres would result in the loss of sage-grouse nesting habitat for at least several decades depending on the severity of burning and amount and species of sagebrush in each project unit to be burned. Most negative effects to sage-grouse would be realized around the Bud Brown unit which has a small active lek and known summer use by sage-grouse. Burning in units farther away from Bud Brown would be expected to have less negative impacts to sage-grouse. The amount of habitat burned however would be much less than the upper recommended limits outlined in the Buffalo/Skedaddle sage-grouse conservation strategy which recommends that less than 20% of sage-grouse winter habitat in any 20-30 year interval be burned. It is very likely that only 2-5 % of active leks in the Buffalo-Skedaddle PMU would be affected by project activities. Longer term negative effects would occur to small mammals from increasing the risk of predation and to mule deer by reducing the amount of bitterbrush (Fall forage). Positive effects to forbs and grasses would likely result but these are generally only for a few years at most. A small, cool fire or fires in the Fall would reduce many of these impacts. Effects to pronghorn would likely be very small since most use by this species is away from treatment areas. Depending on the size of each burn unit, golden eagles and other raptors would receive short term positive effects by increasing foraging opportunities. Use of small fires (less than 123 acres) near roads or in units would reduce the chance of catastrophic fire while still providing suitable habitat for sage-grouse and other sage-steppe birds. An equally important consideration with fire use is effects of this tool in bitterbrush or mountain mahogany communities. Both species do not typically survive fire well. Protecting these stands either in pretreatment prescriptions or actively keeping fire away from these communities would lessen negative impacts to browsers such as deer.

Both hand treatment and mechanical treatments would cause some short term disturbances to wildlife but would have less long term negative effects to small mammals by leaving

understory vegetation. Long-term negative effects would be minimal to local tree nesting/roosting species which rely partially on juniper. Mechanical treatment is expected to have reduced direct effects due to its speed of operation compared to hand treatments. Like fire, long term beneficial effects are expected to understory plant species however understory changes would be more gradual with this tool.

While mechanical operations would disturb wildlife over about 2,680 acres, woodcutting operations would affect a much smaller area concentrated no more than a few hundred feet (direct and noise) from travel routes. Short-term disturbance would probably last no more than three years after which all wood is removed from a site. Mechanical operations would take place over a much shorter period of time and would kill some additional small rodents in the vicinity of these operations. Both would remove habitat for tree nesting species and reduce thermal cover for larger animals, none of which is lacking in the project area. An undetermined amount of shrubs would likely be crushed or removed during mechanical operations however some shrubs may respond positively to this situation e.g., bitterbrush. Approximately 1,600 feet of Bare Creek is within the Upper Bare Creek unit. If mechanical operations took place in this stretch it could introduce sediments into the adjacent Bare Creek however the distance of the unit from Bare Creek, the flat topography, and the width of riparian vegetation along Bare Creek make this scenario highly unlikely.

Juniper titmouse and bats, which prefer larger trees for roosting, are not expected to be affected by any treatment method mainly due to the fact that large mature trees are not targeted for removal and older juniper are generally not killed by burning.

Cumulative Impacts of Proposed Action

Wildfires have burned approximately 7,320 acres within the planning unit. Closer to the currently outlined project boundaries (within one mile), wildfire has burned approximately 4,501 acres since 1945 with 4,424 of those acres since 1979. Considering the reported minimum 20 year interval for Wyoming and Mountain big sagebrush return intervals after fire, as expected some of these systems have recovered and others have not. Additional burning around the Cottonwood, Dodge bitterbrush, and to some extent the Bud Brown units would likely have some negative impacts to sage-grouse nesting and summer brood rearing habitats however due to the higher elevation of all project units it is expected that benefits would also occur to understory nesting habitats and via reduced threats to larger fires. Because total acres burned are much less than those recommended in current literature and the Buffalo-Skedaddle Plan, negative effects to sage-grouse are expected to be minimal.

Depending on the level of rehabilitation, temporary roads could see increased future use by hunters, fire wood collectors and to some degree campers. Some amount of future permanent use could be expected which would directly negatively affect wildlife use using the area. If all roads are brought back to pre-project conditions then additional future impacts would be greatly reduced.

An unknown amount of juniper reduction has occurred on private lands within the project area and would continue to occur in the foreseeable future. Currently these operations are

small enough so as not to be obvious. According to one private landowner however between 5,000 - and 8,000 acres are planned for treatment on private lands in the future.

The Surprise Field Office has already treated juniper via hand cutting in several units within the planning area. The total authorized acreage is 2,623 acres however since 2003, only 1,129 acres have been treated by hand and 17 acres treated with prescribed fire (about 44% total). It is anticipated that the rest could be completed within another 5-7 years depending on funding and staffing. Within these and all hand-cutting units the field office anticipates having to revisit hand treatment units within five years in order to retreat for regrowth. Crested wheatgrass seeding have changed the vegetation on another approximately 2,800 acres in the lower elevations around Duck Lake.

Cumulatively with the present project units outlined in this EA, prescribed, natural, and man caused fires, and juniper and brush treatments have or would affect about 25,359 acres within the planning area. These acres make up approximately 15 % of the entire planning unit including private lands. Additional acres would be expected from other natural or man caused fires in the future as well. Livestock grazing by cattle and sheep would continue throughout the planning area and would cause direct (competition for food and water) and indirect (loss of cover) effects to wildlife.

Direct and Indirect Impacts of No Action

Under the No Action alternative, distribution, viability, and diversity of wildlife species and wildlife habitats would reflect the increased density of Western juniper. Overall range health and ecological potential in the area would continue to decline, and native vegetation would continue to be out-competed. Juniper encroachment would continue to negatively impact suitable habitat for sagebrush obligate (i.e. sage-grouse) and sagebrush-associated species. Woodland and/or juniper-associated species would likely experience benefits from the increased number of trees available for shelter and cover however according to Miller et al. (2008) “The more tree dominated piñon and juniper woodlands become, the less likely they are to burn under moderate conditions, resulting in infrequent high intensity fires”. Over time more extreme fire behavior could result from the No Action alternative.

Cumulative Impacts of No Action

Disturbance of wildlife habitat and individuals from vehicular traffic due to fuel wood cutting and recreational activities has and would continue to occur throughout the project area but would be less than the Proposed Action. Livestock grazing is also expected to continue. Under this alternative there would be no additional actions conducted within the project area and therefore there would be no cumulative impacts beyond the various effects described above.

Mitigation Measures

The following mitigation measures are to reduce impacts to sage-grouse, other sage-steppe species, as well as other wildlife.

Pretreat fuels around bitterbrush and mountain mahogany to prevent loss during prescribed burning. This would prevent large patches of important deer Fall forages from being

burned.

Keep burn units less than 123 acres. This recommendation is found in both the Buffalo-Skedaddle sage-grouse conservation plan and a recommendation in the Partners in Flight publication, *Birds in a sagebrush sea*. This mitigation would reduce habitat fragmentation of important bird habitats.

Leave all snags greater than 25 cm (10 inches) standing and create additional snags. This recommendation/mitigation would benefit many species including bats such as long-eared myotis.

All burns in aspen and mountain mahogany that exceed two acres would be excluded from livestock grazing for at least three years all other sites should be rested for two years after prescribed fire. This mandatory mitigation measure is from the 2007 Surprise Field Office Resource Management Plan.

Post fire seeding of native species. This mitigation measure is from the 2007 Surprise Field Office Resource Management Plan.

Any active raptor nest found should be reported to the wildlife biologist and project activities ceased in the area (generally ¼ mile buffer) until surveys indicate that project activities would not disturb breeding activities.

3.19 Wild horse and burro

Affected Environment

The Tuledad Allotment contains the Tuledad Herd Area, which is divided into Buckhorn and Coppersmith Wild Horse Herd Management Areas (HMA). The Buckhorn HMA is located approximately south of the Tuledad canyon and Coppersmith HMA is approximately the same area as the North Pasture. The Appropriate Management Levels (AML) is a maximum of 85 wild horses in the Buckhorn HMA and 75 wild horses in the Coppersmith HMA. Wild horses are large ungulates with few natural predators; consequently populations have greatly increased since the last gathers. Currently wild horse populations are over AML for both HMAs, although gathers are proposed in FY 2010. The current population of wild horses in the Buckhorn HMA is estimated at 400+, and was last gathered in 2003. The Coppersmith HMA was last gathered in 2005, and the current population is estimated at 115 horses.

Direct and Indirect Impacts of Proposed Action

The direct and indirect, long-term impacts are related to the wild horse population sizes and growth rates. As wild horse numbers increase, utilization of forage and water increases. There is greater likelihood horses would be present in the treatment units on year-round basis. Since new fencing is not proposed, (excluding the prescribed treatment unit in Mahogany), wild horses would continue to have free access to the treatment units. Note, the Bud Brown treatment unit is within an enclosure, and the Barber Creek treatment is also within an enclosure, but is outside of an HMA. Wild horse impacts on the rate of

recovery of a treatment would be greatest where wild horses tend to congregate; such as around water sources and trails. However, as population increases the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When the population is at AML, wild horses are not expected to affect vegetation, and soils recovery in the treatment units.

Cumulative Impacts of Proposed Action

Wild horses and cattle compete directly for available forage and water, therefore the cumulative impacts of the proposed action would be similar to livestock. Ensuring the protection of treatment units requires that wild horse populations are maintained AML. This would mitigate impacts to vegetation, soils and water relationships by improving the health, vigor and recruitment of perennial grasses, forbs and shrubs. While increasing ground cover to improve soil stability, reduce erosion potential and improving water quality; and increasing the quantity and quality of forage for wild horse use which would promote herd health and permittee economic stability.

In the long term additional forage and habitat structure should benefit wild horse populations. Currently, wild horses use junipers to some extent for shade during summer and thermal cover during the winter. The impact of the proposed action is expected to be minimal, since the treatment acreage is small in comparison with the total area occupied with juniper woodland. The proposed action should result in a subsequent increase of perennial, herbaceous plants which are important for the maintenance of wild horses, rangeland health and multiple other watershed values.

Direct and Indirect Impacts of No Action

Wild horses are also not expected to be harmed during the implementation phase of the treatments, as wild horses would readily avoid these activities. The increased activity within the project area could lead to increased shyness by wild horses. But this would be temporary, and horses are expected to resume normal distribution patterns when the treatments are completed.

Under the No Action Alternative, no changes in management would occur. Habitat for wild horses would continue to change as juniper woodlands increase; more decadent shrubs and less perennial, herbaceous plants for forage. There would be increased user conflict between livestock, wildlife and wild horses due to competition for desirable forage. The AML would likely be reduced in the long-term. Rangeland health would continue to decline which would affect multiple watershed values over the long-term.

Cumulative Impacts of No Action

Horses tend to prefer open landscapes for predator detection and escape. Continued juniper expansion would adversely affect existing wild horse habitat and consequently the population. Cumulative impacts on wild horses within the project area include past vegetation treatments and water developments. Human activities are expected to continue to some degree in the future and would continue to impact wild horses and wildlife in a similar fashion. However, as the forage based decreases, competition for resources and habitat would increase, providing long-term cumulative conflicts to wild horses. BLM

policy and guidance on wild horses and the implementation of appropriate management levels (AML) changes would help to reduce overall impacts.

4.0 PROPOSED MITIGATION MEASURES

Cultural

The Supplemental Procedures direct the BLM Cultural Resources Staff to specify the application of Standard Resource Protection Measures (SRPMs) for individual sites which would be impacted by vegetation treatment measures. The protocol amendment further identifies specific SRPMs that became effective upon the execution of the Supplemental Procedures.

Standard Resource Protection Measures

- Flag-and-avoid with buffering, edge feathering/gradual reduction of standing juniper and felled juniper as livestock barriers - This SRPM would be used to flag for avoidance any cultural resource sites or components of a site which could be affected any of the proposed treatment methods. Edge feathering and gradual reduction of standing juniper would create a more natural appearance in the landscape detracting attention to cultural resource sites. Felled juniper as livestock barriers in areas of heavy cattle use where vegetation understory is sparse or non-existent may assist in vegetation recovery, reducing erosion problems and cattle impacts to cultural resource sites.
- Lop and Scatter with constraints on heavy fuel loads left on archaeological sites – This SRPM is intended to ensure that fuel loading would not occur in cultural resource sites that may be damaged through wildland fire.
- Mechanical treatment on archaeological sites with prescriptions and active monitoring by Cultural Resource Staff or other professional archaeologist – This SRPM is intended to allow mechanical treatments within cultural resource sites under certain prescriptions. These prescriptions may include, but not be limited to the following: Harvesting on frozen ground; requiring snow packs of specified depth for harvesting; not allowing tracked vehicles to turn within cultural sites, etc. The prescriptions would be developed by the Cultural Resource Staff for the purpose of protecting cultural resources that could be affected by mechanical treatments. Monitoring of the treatments would provide useful information on whether the SRPM and prescriptions are working or whether they need to be refined.
- Areas left untreated where high densities of archaeological sites have been identified – This SRPM is intended to protect areas such as, but not limited to, archaeological districts which have the potential to be impacted by any treatment method.
- Hand treatment on archaeological sites in areas of heavy juniper fuel load where the hand treatment would not impact archaeological data associated with the site – This SRPM is designed to benefit cultural resources by reducing heavy juniper fuel loads in cultural resource sites. Areas such as these are often subjected to cattle impacts and erosion from lack of understory vegetation.

Livestock Grazing

- To meet recovery objectives within prescribed fire areas, fencing would be required to ensure rest from wild horses.

Visual Resources

The following mitigation measures would reduce visual impacts to the VRM Class II and Class III project areas:

- Rehabilitation of roads, prescribed fire control lines, and staging areas within one year of treatment would reduce the likelihood of the tracks being used by the public. Placement of rocks and brush or trees within the tracks and trails would discourage public use and blend the disturbance into the background. Reseeding of scalped and smoothed areas would speed up the rate of vegetation cover in these sites and reduce the chance of invasive or noxious species gaining a foothold in these denuded sites.
- Specific monitoring of road rehabilitation areas would insure that erosion is not occurring and that re-vegetation is effective.
- To reduce the contrast of the three treatments along the main road, a buffer of trees could be left as a screen.
- To reduce the contrast of the boundaries of all treatment units, treatments activities involving juniper removal could feather in the major tree removal with the adjacent untreated edges by leaving a selection of larger and smaller trees.
- To reduce the contrast associated with the creation of new openings, scattered specimens of trees of varying size could be left at a rate of 5 to 10 trees per acre, and small untreated pockets could be left.
- To reduce the short term impact of yellowing and browning needles of felled trees in areas proposed for manual thinning/cut and run treatment, branches of the larger felled trees which project above the profile of the shrubs could be cut

Wildlife

The following mitigation measures are to reduce impacts to sage-grouse, other sage-steppe species, as well as other wildlife.

- Pretreat fuels around bitterbrush and mountain mahogany to prevent loss during prescribed burning. This would prevent large patches of important deer Fall forages from being burned.
- Keep burn units less than 123 acres. This recommendation is found in both the Buffalo-Skedaddle sage-grouse conservation plan and a recommendation in the Partners in Flight publication, *Birds in a sagebrush sea*. This mitigation would reduce habitat fragmentation of important bird habitats.
- Leave all snags greater than 25 cm (10 inches) standing and create additional snags. This recommendation/mitigation would benefit many species including bats such as long-eared myotis.

- All burns in aspen and mountain mahogany that exceed two acres would be excluded from livestock grazing for at least three years all other sites should be rested for two years after prescribed fire. This mandatory mitigation measure is from the 2007 Surprise Field Office Resource Management Plan.
- Post fire seeding of native species. This mitigation measure is from the 2007 Surprise Field Office Resource Management Plan.
- Any active raptor nest found should be reported to the wildlife biologist and project activities ceased in the area (generally ¼ mile buffer) until surveys indicate that project activities would not disturb breeding activities.

5.0 TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED

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Dawn Lappin , Wild Horse Organized Assistance
Roy Leach, Nevada Department of Wildlife
Northeast California Resource Advisory Committee
Rocky Mountain Coordinator, The Fund For Animals, Inc.
Todd Degarmo, Chair, Ft. Bidwell Tribal Council
Marisha Noneo, Chair, Cedarville Rancheria
Nevada State Clearinghouse, Division of Administration
Sophie Sheppard, Northwest Great Basin Association
Matt Drechsel
Sean Curtis, Modoc Land Use Committee
John Bunyard, Modoc Cattlemen's Association
Jesse Harris, Nevada Cattlemen's Association, North Washoe Unit
Barbara Flores, Colorado WH&B Coalition
Richard Shinn
Oral R. Choate
Dale and Anita Goodwin
Kurt Stodtmeister
Wes Cook
Ray Page
Jeanie Goldman
Estill Ranches, LLC, John Estill
Jon King, Trout Unlimited, Modoc/Surprise Chapter
Ryan and Angela Schliesser
Larry Johnson, Coalition for NV Wildlife, Inc.
Scott Gooch
Terry Steadman, Trout Unlimited, Great Basin Chapter
Fawna Gregory, Mule Deer Foundation
Don Brown, Mule Deer Foundation
Delbert E. Craig, Modoc County Fish, Game and Recreation Commission
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Tim Burke, Alturas Field Manager
Jim Irvin, Warner Mountain Ranger District
Jim Gifford, USDA, NRCS
Debra Kolkman, NV RAC Coordinator
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John H. Razzeto
Todd Swickard
Frank Bayham
Ken McGarva
Alan Cain
John Erquiaga
Martin Balding
Skip Wouldmore
Gale Dupree
Dr. Rosalee Bradley
Tim Garrod
Mike Dunn
Henricus Jansen
Pete Neely
Steve Hicks
Sandy Higa
Don Lancaster
Dan Macsary
Bill Phillips
Donna Stammers
Paul Stedlein, Sheldon-Hart Mountain National Wildlife Refuges
Mark Steffek
Terry Wouldiams
Pat Cantrall
Rex Cleary
Emilie Martin, Modoc Fire Safe Council
Dr. Michael J. Connor, Western Watersheds Projects
Chris Hampson, Nevada Department of Wildlife
Kate Grossman, California Department of Fish and Game

History of the Planning and Scoping Process

December 2005, areas identified to control juniper encroachment within the SFO.
August 2006, the proposed action was internally scoped with SFO Interdisciplinary Team.
September 2006, interdisciplinary team field tour.
October 2007, proposed action was presented to the Modoc Fire Safe Council.
January 2008, public scoping of the proposed action via mailings to interested publics including the SFO Tribal Mailing List.
July 2008, interdisciplinary team field tour and assessment.
March 2009, meeting with permittees to discuss rest from livestock grazing post treatment

External Scoping Results

February 25, 2008, comments received from Klamath Forest Alliance
March 6, 2008 comments received from Modoc Fire Safe Council.

March 6, 2008 comments received from State of Nevada Division of State Lands and State Historic Preservation Office.

March 17, 2008 comments received from Western Watersheds Project.

List of preparers

Name	Resource/Activities	Project Role
Leisyka Parrott	Fuels Biological Technician	Project Lead / EA Preparer Interdisciplinary Team
Penni Borghi	Cultural/Paleo, Recreation, Visual Resources	EA Input Interdisciplinary Team
Ken Collum	Land / Realty	Interdisciplinary Team
Steve Surian	Rangeland Mgt. Specialist / Vegetation / Wild Horse & Burro	EA Input Interdisciplinary Team
Michael Dolan	Botanist Veg. T&E/Sensitive	EA Input Interdisciplinary Team
Alan Uchida	Noxious Weeds, Hydrology/Soils	EA Input Interdisciplinary Team
Elias Flores	Wildlife Biologist Riparian/Wetlands	EA Input Interdisciplinary Team
Garth Jeffers	Forester / Fire Management Specialist	EA Input Interdisciplinary Team

6.0 REFERENCES

Barton, D.C., and A.L. Holmes. 2004. Shrubsteppe and Riparian Bird Monitoring In Northeastern California and Northwestern Nevada: Final Report 2002-2004. PRBO report to the Bureau of Land Management, Surprise Field Office, PRBO Contribution #856.

Bedell, T. E., L. E. Eddleman, T. Deboodt, C. Jacks. 1993. Western Juniper: its impacts and management in Oregon rangelands. Oregon State University Extension Service. EC1417. 15 pp.

Brockway, D. G. R. G. Gatewood and R. B. Paris. 2002. Restoring grassland savannas from degraded pinyon-juniper woodlands: effects of mechanical overstory reduction and slash treatment alternatives. *Journal of Environmental Management*. 74:179-197.

Cicero, C. 1996. Sibling species of titmice in the *Parus inornatus* complex (Aves: Paridae). *Univ. Calif. Publ. Zool.* 128:1-217.

Cicero, C. 2000. Oak Titmouse (*Baeolophus inornatus*) and Juniper Titmouse (*Baeolophus*

ridgwayi). In: The Birds of North America, No. 485 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

Hann, Wendel, Beighley, Mark, Teensma, Peter, Sexton, Tim, Hilbruner, Mike, 2004. A Cohesive Strategy for Protecting People and Sustaining Natural Resources: Predicting Outcomes for Program Options. Text plus tables, figures and references. Presented at "Fire Fuel Treatments, and Ecological Restoration Conference: 2002 16-18 April; Fort Collins, CO 36 p.

Kaltenecker, 1997 J.H. Kaltenecker, The Recovery of Microbiotic Crusts Following Post-Fire Rehabilitation on Rangelands of the Western Snake River Plain, Boise State University, Boise, ID (1997) p. 99.

Miller, Richard F.; Tausch, Robin J.; McArthur, E. Durant; Johnson, Dustin D.; Sanderson, Stewart C. 2008. Age structure and expansion of piñon-juniper woodlands: a regional perspective in the Intermountain West. Res. Pap. RMRS-RP-69. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 15 p.

Northeast California Sage-grouse Working Group, Armentrout, D.J., and F. Hall (Compilers). 2006. Conservation Strategy for Sage-Grouse (*Centrocercus urophasianus*) and Sagebrush Ecosystems within the Buffalo-Skedaddle Population Management Unit. Bureau of Land Management, Surprise Field Office, Susanville, CA.

Rosentreter, R. Displacement of rare plants by exotic grasses. 1994. Pages 170-175 In: Monsen, S.D., Kitchen, S.G., comps. Proceedings of the Symposium: Ecology and management of annual rangelands. Gen. Tech. Report INT-GTR313, Ogden, UT.

Tausch, R.J. 1999. Historic Pinyon and Juniper Woodland Development. In: Proceedings: Ecology and Management of Pinyon/Juniper Communities Within the Interior West. Monsen, S.B. and Stevens, R. comps.

Technical Reference 1730-2, 2001, Biological Soil Crust: Ecology and Management.

Thurow, T. L. and J.W. Hester. 2005. How an increase or reduction in juniper cover alters rangeland hydrology. Available: <http://texnat.tamu.edu/symposia/juniper/TOM2.htm>

USGS. 2005. Biology of the Great Basin-Mojave Desert Region. USGS. Available: <http://biology.usgs.gov/stt/SNT/nofram/gb150.htm>

West, N.E. R. J. Tausch, P.I.T. Tueller. 1998. Management-oriented classification of pinyon-juniper woodlands of the Great Basin. U.S. Department of Agriculture, U.S. Forest Service. RMRS GTR-12.

Zouhar, Kristin; Smith, Jane Kapler; Sutherland, Steve; Brooks, Matthew L. 2008. Wildland fire in ecosystems: fire and nonnative invasive plants. Gen. Tech. Rep. RMRS-GTR-42-vol. 6. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 355 p.

7.0 APPENDICES

Appendix 1: Tuledad Fuels Reduction and Habitat Restoration Boundary with Associated Units.

(Map deleted from this on-line document to meet 508 compliance requirements. Please call (530) 279-6101 or obtain copies of this map.)

Appendix 2: Tuledad Unit boundaries with associated Condition Classes.

(Map deleted from this on-line document to meet 508 compliance requirements. Please call (530) 279-6101 or obtain copies of this map.)

Appendix 3: Tuledad watershed boundaries

(Map deleted from this on-line document to meet 508 compliance requirements. Please call (530) 279-6101 or obtain copies of this map.)

Appendix 4: Tuledad known noxious weeds populations

(Map deleted from this on-line document to meet 508 compliance requirements. Please call (530) 279-6101 or obtain copies of this map.)

Appendix 5: Existing roads in Tuledad Allotment

(Map deleted from this on-line document to meet 508 compliance requirements. Please call (530) 279-6101 or obtain copies of this map.)

Appendix 6: Tuledad Allotment Fuels Project History

(Map deleted from this on-line document to meet 508 compliance requirements. Please call (530) 279-6101 or obtain copies of this map.)

Appendix 7: Tuledad Standard Operating Procedures for Treatment Activities

The Tuledad Fuels Reduction and Habitat Restoration would require certain precautions during project implementation. The following Standard Operating Procedures (SOP's) would ensure that identified resources within the project boundary would be protected and or preserved. Project Activities inherent to this project include but are not limited to, use of mechanical harvesting equipment to include rubber tired skidders, track laying equipment, rubber tired rotary saws, whole tree chippers, chainsaws, skidding and dragging juniper, temporary road and landing construction, hand and or dozer line construction, machine and hand pile construction, machine/hand pile and broadcast burning. All project activities would be coordinated with the appropriate resource specialist and or the SFO

Interdisciplinary Team.

Botany

BLM Special Status Plant species within the project area would be identified flagged and would not be disturbed with any treatment activities. Buffer zone sizes around sensitive plant sites would be at the discretion of the botanist. Specific requirements for special status plant management are found in BLM Manual Handbook 6840-1, Special Status Plant Management, 1996.

Cultural Resources

All cultural resources flagged for mitigation purposes would have the flagging removed upon completion of the treatment. The project areas that have been flagged for mitigation or signed to exclude woodcutting would be elevated in priority for monitoring by the Cultural Resource Staff and the Field Office Law Enforcement Officer.

Noxious Weed Species

The project area has received a current noxious weed survey. Activities associated with the proposed action that are prone to noxious weeds, such as temporary roads, landings and skid trails would be monitored post treatment for the introduction of new occurrences' for three years. Newly discovered populations of noxious weed species would be mapped and treated using management techniques outlined in SFO Integrated Weed Management EA. To minimize the potential spread of noxious weed species the equipment associated with the proposed action would be pressure washed prior to engaging in project activities and before transport to new work areas.

Equipment operators and project inspectors would be provided with a noxious weed identification guide for species that are known to occur in northeast California. If a noxious weed site is discovered, project activities should cease and the Noxious Weed Coordinator notified of the occurrence. Project activities should not resume in the area until treatments and prevention procedures are in place.

Wildlife

Currently there are no known federally threatened or endangered (T&E) species known within or adjacent to the project area. If, during the implementation of the proposed action, threatened, endangered, BLM Sensitive species (TES), or other species of interest are found, then areas of important or necessary habitat in the project area would be identified, flagged and protected from project activities in coordination with the SFO wildlife biologist. Project activities may be subject to seasonal restriction dates and buffer zones in order to protect specific wildlife species and their habitats. Old growth juniper would be retained for wildlife benefit, as would any juniper showing evidence of wildlife usage. Project activities would be implemented to be consistent with the local Conservation Strategy for Sage-Grouse (*Centrocercus urophasianus*) and Sagebrush Ecosystems within the Buffalo-Skedaddle Population Management Unit (Northeast California Sage-Grouse Working Group 2006). Actions requiring vegetation/habitat disturbance such as construction of temporary roads and landings, and skidding or other movement of trees and

related materials, should be accomplished in a manner resulting in as minimal disturbance as possible.

Therefore large burns would not be allowed in Bud Brown. One or two small (no more than 10 acres each in size) test fires may be allowed with prior approval by the staff wildlife biologist.

As stated in the Buffalo Skedaddle PMU Conservation Plan and outlined here as Standard Operation Procedures:

- 1) During fire-suppression activities, do not remove or burn any remaining patches of sagebrush within the fire perimeter.
- 2) In areas of large-scale loss ($\geq 40\%$ of original winter habitat), protect all remaining sagebrush habitats.
- 3) Reseed former sage-grouse habitat with the appropriate subspecies of sagebrush and herbaceous species unless the species are recolonizing the area in a density that would allow recovery within 15 years (sagebrush canopy cover of 10-30% and total height of 60 – 71cm (24 – 28 inches)).
- 4) Discourage prescribed burns > 50 ha. (123 acres), and do not burn $> 20\%$ of an area used by sage-grouse during winter within any 20-30 year interval (depending on estimated recovery time for the sagebrush habitat).
- 5) WAFWA Guidelines (Connelly et al. 2000) provide additional direction for protection of breeding habitat (leks and nesting habitat) as follows:
 - 4) Do not use fire in sage-grouse habitats prone to invasion by cheatgrass and other invasive weed species unless adequate measures are included in restoration plans to replace the cheatgrass understory with perennial species using approved reseeding strategies. These strategies could include, but are not limited to, use of pre-emergent herbicides (e.g., Oust, Plateau) to retard cheatgrass germination until perennial herbaceous species become established.
 - 5) When restoring habitats dominated by Wyoming big sagebrush, regardless of the techniques used (e.g., prescribed fire, herbicides), do not treat $>20\%$ of the nesting breeding habitat (including areas burned by wildfire) within a 30-year period 51 7/19/2006 (Bunting et al. 1987). The 30-year period represents the approximate recovery time for a stand of Wyoming big sagebrush.
 - 6) When restoring habitats dominated by mountain big sagebrush, regardless of the techniques used (e.g., fire, herbicides, etc.), treat $\leq 20\%$ of the breeding habitat (including areas burned by wildfire) within a 20-year period (Bunting et al. 1987). The 20-year period represents the approximate recovery time for a stand of mountain big sagebrush. Some mountain big sagebrush stands within the PMU have recovered in 15 years.

Recreation

Areas where undeveloped hunting campsites occur would be excluded from mechanized treatment. Buffer zones would be established around these areas to maintain aesthetic values and would be coordinated with SFO recreation manager. Hand treatment in these areas would include use of chainsaws to thin juniper densities and hand pile construction. The piles would be burned during winter months.

Soil and Hydrology

Entry into wet spring areas would be limited to hand treatments with chainsaws and broadcast/pile burning. Impacts from harvesting equipment are not expected. Any spring fed channel with flowing water or wet areas would have a minimum buffer of 50 feet from the center of the stream channel. During the dry summer months some access to spring areas may be allowed only after on site inspections occur to ensure minimal impacts. Crossings over ephemeral stream channels would be identified by the COTR and be limited to dry, rocky and stable areas. Crossing channels with mechanized equipment would be at locations that are stable and naturally armored with rock. Stream channels would be crossed at right angles and number and width of crossings would be limited to areas that have cobble and naturally occurring rocky areas to protect the channel. A minimal amount of passes over dry stream channels would be allowed and would be monitored by the project COTR.

Areas where treatment activities have exposed soils would be rehabilitated by covering with juniper slash to reduce the amount of soil movement during snow melt or storm runoff. Additional water bars on temporary roads and scattered juniper material would be used to reduce the amount of sediment movement during high rainfall and or snow melt. Rehabilitating areas of soil compaction would be accomplished by ripping the soil with mechanized equipment to reduce runoff and encourage vegetative growth.

Woodcutting

Due to conflicts with cultural resources woodcutting would not be allowed in the following treatment units: Starvation, Express, Bud Brown, and Barber. Wood cutting would be allowed throughout the Upper Bare Creek treatment unit. Woodcutting would also be allowed in specified areas within the Cottonwood, Mahogany, Little Hat, and Dodge treatment units. The areas excluded from woodcutting would be signed to indicate that woodcutting is not allowed. The Surprise Field Office would make maps available to the public indicating areas open and closed to woodcutting within the Tuledad project area.

Private Lands

Approximately 300 acres within the project boundary is privately owned parcels. These private landholdings are excluded from BLM treatment. Some private lands would be crossed with equipment during project activities. The land owner would be notified and permission to enter or cross private holdings would be required before BLM project activities commence.

Landings and Temporary Road Construction

Landings and Temporary Roads would be constructed in areas identified by the project COTR to ensure no conflicts with identified resources. Landing areas would range in size from 1/5 acre to 1/2 acre and once abandoned would be rehabilitated by scattering juniper slash to cover exposed and or disturbed soil. Landing areas would be located in areas less than 15 percent slope to minimize surface transport of water and soil erosion. Seeding native grasses and native shrub species on landing areas may occur if conditions are

favorable. Temporary roads would be constructed within the project area to access areas for mechanical equipment. It is expected that a maximum of 1 mile of temporary roads per year would be needed to access heavy juniper areas. Temporary roads would be decommissioned after use through the use of water bars, rolling dips, and broadcasting juniper slash over the disturbed areas. Temporary roads once decommissioned would be closed using tree stumps and or rocks to prevent further vehicular travel. Access from main roads would not be obvious and be blocked to the public.

Treatment Monitoring

Plant community composition would be monitored both pre and post treatment. Long-term monitoring would occur at 5 year intervals, thereafter. The following would be monitored using a modified miller plot protocol for measuring the sage steppe ecosystem; juniper canopy cover and density, shrub canopy cover, shrub height, herbaceous frequency and point cover.

Prescribed Fire

Two types of prescribed fire would be used during the 10 year treatment schedule, 1) Pile Burning and 2) Broadcast Burning.

1) **Pile Burning** would occur in all units where slash is generated from mechanical activities from primarily chainsaw cutting of Western juniper. Piles constructed would occur in areas where juniper density is relatively low and where mechanized treatment with equipment is not cost effective and or accessible. Small hand piles up to ten feet in radius would be constructed and are expected not to exceed 50 acres per unit. It is estimated that between 450-650 acres would be treated using this prescribed fire method over the ten year project.

The burning of piles is not likely to have an adverse effect on soil and or residual vegetation. Smoke production would be of short duration and smoke impacts to local roads and communities are not expected.

2) **Broadcast burning** would be used where enough fuel exists to carry a fire, where a fire can be managed successfully, and where conditions are good for achieving restoration objectives of removing juniper from the site. This method of treatment would not total more than 1250 acres of the project area over the ten year period. The burn areas would be no larger than 200 acres and not be adjacent to each other. These areas of broadcast burning would require the building of hand line no greater than 10 feet wide and would serve as fuel breaks during ignition. The use of natural barriers such as rocky or barren areas would be utilized to reduce the amount of hand line required. The effects of broadcast burning would rely on various factors, including, Fuel Loadings, Fuel Continuity, Slope, Aspect, Wind Velocities, Relative Humidity, Live Fuel Moisture, Dead Fuel Moisture and Seasonality. These aforementioned variables would be studied with in the Burn Plan document in detail to ensure Prescribed Fire and resource objectives are being met. It is planned to mimic naturally occurring fires in the areas of broadcast burn. Areas burned are expected to experience a mixed severity fire and create a mosaic and or patchy pattern.

Per BLM Standards for Fire and Aviation (2007) and any applicable State and or County regulations, a Prescribed Burn Plan would need to be developed, reviewed and approved by SFO Fire Management Officer, NOR CAL Fire Management Officer and the BLM State Fire Management Officer before any prescribed burns occur. Close coordination with the SFO resource staff would be needed when establishing Resource Objectives for the Burn Plan.