ENVIRONMENTAL ASSESSMENT

United States Department of the Interior
Bureau of Land Management
Bishop Field Office
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EA Number: DOI-BLM-CAC-070-2010-50-EA

Lease/Serial/Case File No.:

Proposed Action Title/Type: Upper Aurora Canyon Headcut Stabilization and Riparian/Wet Meadow Habitat Improvement Project

Location of Proposed Action: Upper Aurora Canyon, Mono County, California; Bishop RMP Bodie Hills Management Area; Aurora Canyon Creek in T. 5 N., R. 26 E., SE ¼ Section 21, W ¼ Section 22, North ¼ Section 28, NE ¼ Section 29, MDM (Map 1).

Applicant (if any): BLM Wildlife Habitat Improvement Project

Plan Conformance:

This proposed action is subject to the Bishop Resource Management Plan (RMP), approved March 25, 1993 (USDI BLM 1993). The proposed action was developed and designed to implement RMP guidance and to ensure conformance with the General Polices, Area Manager's Guidelines, Valid Existing Management, Standard Operating Procedures, Decisions and Support Needs prescribed in the Bishop RMP. The proposed action has been reviewed and is in conformance with the plan.

The proposed action would implement the following Bishop RMP Decisions (USDI BLM 1993):

- Protect and enhance unique or important vegetation communities and wildlife habitats (Area-Wide Decisions, p. 17).
- Stabilize and restore selected stream reaches in Aurora Canyon … to improve riparian and aquatic habitat quality (Bodie Hills Management Area Decision, p. 32).
- Meet Desired Plant Community (DPC) goals on 95 acres (50%) of riparian habitat to increase wildlife habitat diversity, provide high quality fish habitat and control erosion (Bodie Hills Management Area Decision, p. 32).
- Meet Desired Plant Community (DPC) goals on 101 acres (50%) of wet meadow habitat to increase habitat diversity and reduce erosion (Bodie Hills Management Area Decision, p. 32).

Additional RMP direction that supports implementation of the proposed action includes:

- Vegetation will be a key element in the plan and management will be directed toward the achievement of desired plant community goals (Area Manager's Guidelines, p. 9).
- Rehabilitation of riparian areas will receive high priority for project implementations. Efforts will be made to return all watersheds in declining condition to equilibrium (Area Manager's Guidelines, p. 9).
- Manage candidate species, sensitive species and other species of management concern in a manner to avoid the need for listing as state or federal endangered or threatened species (Standard Operating Procedure, p. 12).

Purpose and Need for Proposed Action:

The purpose of the proposed action is to improve hydrologic function and streamside riparian/wet meadow habitat conditions by stabilizing historic and active headcuts along the upper reaches of Aurora Canyon Creek.

The stream channel in upper Aurora Canyon is incised in several areas due to historic and active headcutting and associated gully erosion. Remaining meadows are being encroached by silver sagebrush (*Artemisia cana*), rabbitbrush (*Chrysothamnus spp.*) and other upland species due to downcutting and loss of hydrologic function. Remaining meadows are also at risk of continued downcutting that would further compromise hydrologic function. Without action, active headcutting and incision will continue with the end result being additional loss of important riparian meadow habitat in the upper reaches of Aurora Canyon.

Description of the Proposed Action:

Project Overview

The proposed action would involve stabilizing 1 large headcut (~ 6 ft drop) and as many as 25 small headcuts (~ 0.5 - 3 ft drop) along the upper 1.5 to 2 miles of Aurora Canyon Creek in the Bodie Hills, Mono County, California (Map 1).

Headcuts would be stabilized using a combination grade control structures including gabions, log v-weir dams, log beams and loose rock check dams (UDSI NRCS 2007). A small backhoe would be used to aid the installation of stabilization structures for the larger headcuts (> 1.5 ft drop). Smaller headcuts would be stabilized by hand placing log beams and loose rock check dams within the stream channel below each nick point. An estimated 5 to10 grade control structures would be installed the first year, with an additional 5 to 20 structures being installed over the next 4 years. Initial project work would focus on the largest headcuts and the smaller headcuts in the downstream

portion of the project area. Work on the remaining headcuts would generally progress upstream in subsequent years as the downstream sites stabilize.

The proposed action would also include the thinning of juniper (*Juniperus spp.*), rabbitbrush, silver sagebrush and other upland species that are encroaching into the riparian corridor within the project area to enhance meadow habitat conditions. Juniper thinning would be done selectively by hand using a chainsaw. Cut juniper logs would be used in the construction of grade stabilization structures. Shrub thinning would be completed using a weed wacker or mower. Cut shrubs would be chipped on site, or piled and then burned in the early spring while snow is still on the ground.

Grade control structure installation and thinning would occur in the late summer/fall, when the creek is at low flow and soils in the project area are typically dry. Project work would occur for an estimated 1 to 3 weeks each year over the next 1 to 5 years.

Project Area Description

The Upper Aurora Canyon Headcut Stabilization and Riparian/Wet Meadow Habitat Improvement Project area is located in the Bodie Hills approximately 8 miles east of the town of Bridgeport in Mono County, California. The overall project area is approximately 30 acres and occurs within the Aurora Canyon stream corridor immediately adjacent to the Aurora Canyon Road (Road 168). Less than 5 acres of streamside riparian habitat would be directly affected by project implementation. Elevation in the project area ranges between 7,400 - 8,400 feet. The upper reach of the project area is bounded by private land where the stream source is located. The lower reach ends where the stream channel crosses under the dirt road that runs along the south fork of Aurora Canyon. The project area is bisected by 2 parcels of private land. Grade control structures would only be installed on public lands administered by the BLM Bishop Field Office (Map 1).

The largest headcut (~ 6 ft drop) occurs near the upper portion of the lowest reach near the BLM and private land boundary. Meadows in the lower reach are generally flat to gently sloping (< 3 degrees) with a predominately westerly aspect. Riparian vegetation in the lower reach is dominated by wetland grasses, sedges and rushes. Smaller headcuts (~ 0.5 - 3 ft drop) are found throughout the project area with the majority of the smaller headcuts occurring in the upper reach where the slope is greatest (~ 10 degrees). Some smaller headcuts also occur in the lower and middle reaches of the project area where the terrain is relatively flat. Riparian vegetation in the upper reaches is characterized by a narrow band of riparian grasses, sedges, rushes and forbs with an occasional willow. Rocky Mountain iris (*Iris Missouriensis*) occurs in both the meadows and the riparian corridors. Silver sagebrush and rabbitbrush are common in the drier meadow sections and are also encroaching into the riparian corridor.

Water flow in Aurora Canyon Creek is intermittent both spatially and temporally. For much of the year there is little or no surface flow in the proposed project area. The

project area is reached by dirt roads that are accessible by truck during the normal operating season (May - November).

Project Implementation Specifications

The larger headcuts (> 1.5 ft drop) would be stabilized using a small backhoe or similar equipment to remove the top soil layer and assist with the keying and installation of grade stabilization structures. Possible stabilizing structures would include a combination of rock gabions, log v-weir dams, log beams and loose rock check dams (USDA NRCS 2007). After structures are in place, excavated soil would be used to backfill excavated areas and to re-contour the immediate vicinity of the newly installed structures. Structure sites would be re-capped with the removed topsoil layer and intact vegetation plug. Some re-contouring of gully walls immediately adjacent to structure sites may also be done to smooth the surrounding terrain. No soil would be removed from the project area.

Smaller headcuts (< 1.5 ft drop) would be stabilized by hand placing rock to create loose rock check dams at the base of each nick point. Larger rocks would be set first to create a solid base, subsequent rocks would be stacked 1 to several levels high and arranged in a way to minimize gaps and maximize stability. Enough rocks would be placed to reduce the slope between the top and bottom of the headcut. In some cases, small log beams may be installed across the channel to act as sediment traps to raise the streambed and smooth the prevailing grade. As with the larger structures, any hand excavated soil would be used to backfill excavated areas and to re-contour the immediate vicinity of the newly installed structures. The smaller structure sites would also be re-capped with any removed topsoil layer and intact vegetation plug.

All grade stabilizations structures would be built and installed following Natural Resource Conservation Service (NRCS) specifications, including the use of erosion control cloth, as outlined in Technical Supplement 14G - Grade Stabilization Techniques (USDA NRCS 2007).

Silver sagebrush, rabbitbrush and other upland shrubs would be thinned in meadow areas by using handheld weed wackers with metal blades or with a rubber tracked Bobcat or All Season Vehicle (ASV) with a mowing attachment. Thinning would be done selectively and in a way to increase meadow edge habitat.

The proposed action would include the following design features to minimize or avoid inadvertent impacts to other resources within and adjacent to the proposed project area:

- Primary access to the project area would be limited to existing roads. Off-road equipment travel and use would be limited to only that which is necessary to complete the proposed project. No equipment travel or use would be allowed more than 100 meters off existing roads. All other project work would be conducted by hand crews working on foot.
- All project equipment would be equipped with spark arrestors and mufflers.

- No toxic materials or fluids would be used or disposed at the site.
- No off-road equipment work, chainsaw cutting, mowing or pile burning would be allowed during periods of high fire danger. Full or partial shutdown days due to high fire danger conditions would be based on the Inyo National Forest Project Activity Level (PAL) system. All pile burning operations would require and conform to an approved burn plan.
- To minimize soil disturbance and vegetation crushing impacts, off-road equipment access would be limited to the minimum number of trips needed to facilitate project implementation. Ingress and egress routes would be flagged. Equipment would not be parked off-road during extended periods of non-use. Disturbed areas and equipment tracks would be re-contoured and camouflaged by hand following project completion.
- To minimize the importation or spread of invasive non-native species, all equipment, tools and materials from outside the project area would be inspected and washed prior to transport to the project area. The project area would be monitored for non-native invasive species for 3 years following project completion.
- To protect extant special status plant populations, exclusion areas would be flagged and avoided where project specific sensitive plant surveys have identified extant populations of Bodie Hills draba and Mono County phacelia in the vicinity of the proposed project. Equipment would not be used or staged in areas where Bodie Hills draba or Mono County phacelia occurs.
- To protect breeding and nesting birds, including Greater Sage-Grouse, no shrub thinning would occur between March 1st and August 15th.
- To protect pygmy rabbit populations and habitat, exclusion areas would be flagged and avoided if project specific burrow surveys identify extant pygmy rabbit populations and burrow systems that could be negatively impacted by project implementation. No digging or shrub thinning would occur in any area that has not received a site specific pygmy rabbit burrow survey.
- To protect cultural resources, exclusion areas would be flagged and avoided if project specific archeological surveys identify cultural resources that could be negatively impacted by project implementation. No digging or rock collection would occur in any area that has not received a site specific cultural resource survey.
- If previously undiscovered archaeological resources are encountered during project implementation, operations would be immediately stopped and the Bishop Field Office manager and archaeologist notified. The project would be modified to avoid impacts to any late discoveries of archaeological resources prior to the resumption of work.
- To promote vegetation re-growth and soil stability, small livestock exclusion fences would be placed around select stabilization structures if required to accelerate recovery and ensure project success. Any exclusion fence would be built to BLM specifications for 3-wire fences in mule deer habitat and coordinated with the affected grazing permit holder.

No Action Alternative:

The no action alternative would maintain the proposed project area in its present condition. No headcut stabilization or riparian/wet meadow habitat improvement would occur.

Environmental Analysis:

AIR QUALITY

Affected Environment

The proposed project area is not within any federal non-attainment/maintenance area under jurisdiction of the Great Basin Unified Air Pollution Control District (GBUAPCD). Federal actions are not subject to conformity determinations under 40 CFR 93.

Environmental Consequences

Impacts of the Proposed Action

Vehicles would raise dust while accessing the project area via dirt roads. Vehicles and equipment would emit various precursor emissions for ozone. Burning of thinned brush piles would produce smoke. Emission amounts from the proposed action would be negligible. The proposed action would not result in the emission of PM_{10}. The proposed action would not measurably affect air quality.

Impacts of No Action

No fugitive dust, precursor emissions for ozone, or smoke would be emitted as the result of the proposed project. The no action alternative would have no impact on air quality.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC)

The proposed action and no action alternatives would have no effect on any designated Area of Critical Environmental Concern (ACEC) because the proposed project area is not located within or adjacent to any designated ACEC.

CULTURAL RESOURCES

Affected Environment

A Class III intensive cultural resources survey was conducted for the majority of the project area from 08/12/2009 thru 08/19/2009 by Far Western Anthropological, Inc. No cultural sites were located within the active stream channel and immediately adjacent riparian habitat as a result of this survey. Detailed survey results and findings are in the contract survey report CA-170-08-37 (King 2010) which is on file at the BLM Bishop Field Office. Per Project Implementations Specifications, additional project specific cultural surveys would be conducted at each proposed structure location and shrub thinning area prior to implementation to ensure that no cultural sites are located within the Area of Potential Effect (APE).

Environmental Consequences

Impacts of the Proposed Action

As no work would be conducted in identified cultural sites, per Project Implementation Specifications, the proposed project would have no effect on cultural resources. Protection of cultural resources would be ensured by adjusting grade stabilization structure locations, flagging and avoiding exclusion areas, and using non-mechanized treatment where necessary as per the State Protocol Agreement (CA BLM 2007).

Impacts of No Action

The no action alternative may result in the displacement of undiscovered cultural artifacts. Un-stabilized headcuts would continue to incise the stream channel and erode adjacent riparian habitat which would result in the displacement of cultural resources if they are present. There would be no impact on cultural resources as a result of proposed project implementation activities.

ENVIRONMENTAL JUSTICE

The proposed action and no action alternatives would have no disproportionate impact, either negative or positive, on any low-income minority populations because the proposed project would occur on vacant public land and there are no low-income minority populations living in the vicinity of, or dependent upon, the proposed project area.

ESSENTIAL FISH HABITAT

The proposed action and no action alternatives would have no effect on essential fish habitat because the proposed project area is not located within or adjacent to any designated essential fish habitat.

FARMLANDS, PRIME OR UNIQUE

The proposed action and no action alternatives would have no effect on any farmlands, prime or unique, because the proposed project area is not located within or adjacent to any farmlands, prime or unique.

FLOOD PLAINS

Affected Environment

The floodplain in upper Aurora Canyon is characterized by a narrow riparian corridor dominated by wetland grasses, sedges, rushes and forbs with an occasional willow. Stream flow within the proposed project area is both spatially and temporally intermittent and there is often little or no flowing surface water. The upper portion of Aurora Canyon Creek is primarily spring fed with peak flows occurring during the spring snowmelt and run-off period. Sporadic high flows also occur during the summer as the result of localized high intensity thunderstorms. Bank full and overflow events are infrequent and restricted to these high flow periods. The existing floodplain function of the streamside riparian habitat in upper Aurora Canyon has been compromised in many areas due to historic and active headcutting and associated gully erosion.

Environmental Consequences

Impacts of the Proposed Action

Implementation of the proposed action would improve floodplain function in upper Aurora Canyon by stabilizing historic and active headcutting that is currently a primary contributor to reduced floodplain function in the project area. Over the long-term, installed grade stabilization structures would trap sediment and reduce the effective gradient of the active stream channel. The functional width of the riparian corridor and active floodplain would widen and further contribute to improved hydrologic function in the project area. Flow velocities and sediment loading would be reduced, thereby reducing the potential for accelerated erosion and destructive flood events in upper Aurora Canyon.

Impacts of No Action

The no action alternative would allow current floodplain conditions in upper Aurora Canyon to continue over the long-term. Historic and active headcuts would not be stabilized. The effective gradient of the active stream channel and the functional width

of the riparian corridor and active floodplain in Aurora Canyon would not be modified. Flow velocities and sediment loading would remain high and the current potential for accelerated erosion and destructive flood events in upper Aurora Canyon would remain.

GLOBAL CLIMATE CHANGE

Affected Environment

United States Department of Interior, Order Number 3226, signed January 19, 2001, Evaluating Climate Change Impacts in Management Planning, is an order to ensure that climate change impacts are taken into account in connection with planning and decision making. Climate change refers to any significant change in measures of climate (e.g. temperature or precipitation) lasting for an extended period of time (decades or longer). 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).

There is broad scientific consensus that humans are changing the chemical composition of our atmosphere" (Jones & Stokes August 2007). Changes in the atmosphere have likely influenced temperature, precipitation, storms and sea level (IPCC 2007). Rising greenhouse gas (GHG) levels are likely contributing to global climate change.

Impacts of the Proposed Action

The proposed action would result in minor contributions of greenhouse gas (GHG) emissions associated with the operation of vehicles and equipment required for project implementation. These contributions would not have a noticeable or measurable effect, independently or cumulatively, on a phenomenon occurring at the global scale and believed to be due to more than a century of human activities.

Impacts of No Action

The no action alternative would not contribute to GHG emissions and would have no impact on climate change at either the local or global scale.

INVASIVE, NON-NATIVE SPECIES

Affected Environment

Cheat grass (*Bromus tectorum*) occurs in small amounts (<5% cover) throughout the project area but is most common in areas directly adjacent to the Aurora Canyon Road. Other non-native plants in the project area include Kentucky bluegrass (*Poa pratensis)*, common knotweed (*Polygonum arenastrum)*, tumble mustard (*Sisymbrium altissimum*) and mullein (*Verbascum thapsus*); none have a percent cover greater than 5 %, and except for Kentucky bluegrass, all are restricted to near the Aurora Canyon Road

corridor. No California A-rated invasive, non-native species are known to occur within the project area.

Environmental Consequences

Impacts of the Proposed Action

Equipment used to implement the project could introduce non-natives and disturbance caused by equipment use may cause an initial increase of non-native plant cover. Design features incorporated into the proposed action (see Project Implementation Specifications) would minimize the potential introduction and spread of non-native invasive species, therefore the proposed action is not expected to increase the current extent or density of any of the non-natives. Over the long-term, improved hydrologic function is expected to stimulate riparian meadow cover, production and vigor; thereby reducing the risk of weed invasion.

Impacts of No Action

The no action alternative would allow current wetland/riparian habitat conditions to remain; thereby making it more likely for cheat grass and other invasive non-natives to occur.

NATIVE AMERICAN CULTURAL VALUES

Affected Environment

There are 11 Native American communities within, or in close proximity to, the eastern Sierra region administered by the Bishop Field Office. None of these communities are living on, or adjacent to, the proposed project area. No treaty rights (hunting, fishing, etc.) are associated with any of these communities or with the proposed project area.

Some members of these communities hunt and some do subsistence collecting of materials such as basket weaving materials and medicinal plants on public lands. However, this is general use and no specific “traditional use areas” have been identified by any of the tribes at this time. Any other traditional uses or use areas have not been divulged to this office.

Environmental Consequences

Impacts of the Proposed Action

The proposed action is not expected to have any negative impacts on Native American cultural values or concerns described above because there would be no measureable detrimental effect on the natural environment upon which Native American cultural values depend.

Impacts of No Action

The no action alternative would have no effect on any Native American cultural values or concerns described above.

RANGELANDS-LIVESTOCK MANAGEMENT

Affected Environment

The proposed project area is within the Aurora Canyon allotment for which there is one permittee. The allotment is used in conjunction with the permittee's unfenced and intermingled private land and the adjacent Potato Peak allotment. Livestock are moved into upper Aurora Canyon in mid-summer at boot stage of grass growth and when utilization standards are met in the lower elevation pastures. Livestock use perennial and intermittent water sources located on both public and private lands throughout the grazing season. Water can be a limiting factor for livestock forcing the permittee to adjust the grazing system. The permittee begins gathering livestock when utilization standards are met or generally around September 1st. The permittee usually has cleared the allotment of straggler livestock by mid-September.

Environmental Consequences

Impacts of the Proposed Action

Stabilizing the stream and thinning silver sagebrush, rabbitbrush and other upland species that are encroaching into the riparian zone would allow for a greater presence of desirable grasses and forbs and improve future rangeland conditions.

As noted in the Project Implementation Specifications, larger stabilization structures may be fenced to promote vegetation re-growth and soil stability. Fencing would negatively impact livestock operations by decreasing water access; however, any enclosures would be temporary and limited to small sections of the total available stream.

Impacts of No Action

The no action alternative would have no effect on existing range conditions or livestock management operations.

RECREATION

Affected Environment

Recreation use associated with the proposed project area and surrounding vicinity is characterized by light, infrequent dispersed use including exploration of semi-primitive backcountry roads and trails, camping, general sightseeing, hiking, hunting and wildlife

viewing. The proposed project area is not located within or adjacent to any developed recreational facilities. No intensive recreation use or activity occurs in or near the proposed project area.

Environmental Consequences

Impacts of the Proposed Action

There would be no impact on developed recreation opportunities because the proposed project area is not located within or adjacent to any developed recreational facilities and no intensive recreation use or activity occurs in or near the proposed project area. Dispersed recreation opportunities would be maintained because no road closures would occur and no recreational access or other uses would be lost or modified. Dispersed recreation opportunities would be enhanced commensurate with improved riparian, scenic (visual resource) and wildlife values.

Impacts of No Action

The no action alternative would have no effect on developed recreation opportunities. Dispersed recreation opportunities would be negatively affected over the long-term if riparian/wetland habitat quality and associated riparian, scenic (visual resource) and wildlife values were further degraded by on-going active erosion.

SOCIAL AND ECONOMIC VALUES

Affected Environment

Mono County's economy, including the town of Bridgeport, is largely dependent on natural resource based tourism. No social or economic values, besides domestic livestock production (see Rangelands-Livestock Management), are known to be directly associated with the proposed project area.

Environmental Consequences

Impacts of the Proposed Action

The proposed action would potentially have a positive effect on social and economic values by enhancing dispersed recreation opportunities, consequently increasing tourism to the general area. Nominal benefits to domestic livestock production are also expected due to increased production of desirable grasses and forbs.

Impacts of No Action

The no action alternative would have no effect on social and economic values.

SOILS

Affected Environment

Soils within the project area are predominantly colluvium derived from andesite or tuff breccia over residuum derived from andesite or tuff breccias with additions of volcanic ash. Riparian soils in upper Aurora Canyon are currently subject to above normal erosion due to historic and active headcutting and associated gully erosion.

Environmental Consequences

Impacts of the Proposed Action

Stabilization of the larger headcuts would involve low to moderate soil disturbance as the result of equipment access and excavation required to install grade stabilization structures. As stated in the Project Description, excavated soil would be used to backfill excavated areas and to re-contour the immediate vicinity of the newly installed structures. Structure sites would also be re-capped with the removed topsoil layer and intact vegetation plug. Finally, disturbed areas and equipment tracks would also be re-contoured by hand following the completion of project work.

Stabilization of smaller headcuts would involve minimal soil disturbance resulting from the hand digging and placement of rocks and logs within the channel. As with the larger structures, any hand excavated soil would be used to backfill excavated areas and to re-contour the immediate vicinity of the newly installed structures. The smaller structure sites would also be re-capped with any removed topsoil layer and intact vegetation plug. Again, disturbed areas would be re-contoured by hand following the completion of project work.

Thinning of juniper, silver sagebrush, rabbitbrush and other upland shrubs would involve low intensity surface soil disturbance, limited primarily to the localized surface effects of equipment and crews moving through the project area.

The overall impact of the proposed project would result in increased soil stability by reducing stream erosion to that more typically associated with natural stream processes and by allowing for an increase in herbaceous plant cover.

Impacts of No Action

The no action alternative would have no impact on existing soil conditions. Active headcutting and above normal erosion of riparian soils would continue.

VEGETATION, including THREATENED, ENDANGERED and SPECIAL STATUS PLANTS

Affected Environment

Vegetation within the proposed project area is characterized by Lower Montane Meadow and Montane Sagebrush habitats typical of the region.

Lower Montane Meadows

The two dominant ecological meadow types within the proposed project area are mesic graminoid and dry graminoid (Weixelman and Zamudio 1999). Mesic graminoid meadows are wet to moist well into the growing season. Depth to saturation averages 34 cm. The most common soil taxa is Typic Cryaquoll with a peat or muck rich surface layer. This type is most common in drainage ways. Dominant species in the mesic graminoid meadow include, but are not limited to: Nebraska sedge (*Carex nebrascensis*), *Carex simulata*, *Carex lanuginosa*, *Carex utriculata*, *Deschampsia cespitosa*, *Hordeum brachyantherum*, *Muhlenbergia filiformis*, *Epilobium ciliatum*, *Stellaria longipes* var. *longipes* and *Aster occidentalis*.

Dry graminoid meadows are most commonly found on trough drainage ways and stream terraces. Soils lack saturation and the most common soils are Haplocryolls indicated by dark, mollic surface horizons. Common species in the dry graminoid meadow include, but are not limited to: basin wildrye (*Leymus triticoides),* squirrel tail (*Elymus elymoides),* June grass (*Koeleria macrantha*), Sandberg's bluegrass (*Poa secunda),* needlegrass (*Achnatherum* sp.), *Muhlenbergia richardsonis*, *Carex praegracilis*, thin-stemmed wheatgrass (*Elymus trachycaulus*), Baltic rush (*Juncus balticus*), *Penstemon rydbergii*, *Gayophytum diffusum*, *Trifolium monanthum* and yarrow (*Achillea millefolium*).

Plant community shifts within both these meadow types are driven primarily by changes in site hydrology and soil compaction. Key compositional shifts that indicate degradation to these site characteristics include the increased dominance of more impact resistant species such as Baltic rush, Rocky Mountain iris and dandelion (*Taraxacum officinale*), as well as the encroachment of shrubs such as silver sagebrush and rabbitbrush into the meadow (Weixelman and Zamudio 1999).

Montane Sagebrush

Montane Sagebrush surrounds the meadow and blends into the riparian corridor. Vegetation is dominated by an over-story of mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana)*, antelope bitterbrush (*Purshia tridentata* var. *tridentata)* and rabbitbrush (*Chrysothamnus viscidiflorus* and *C. nauseosus)*. Understory vegetation includes but is not limited to squirrel tail (*Elymus elymoides*), Indian rice grass (*Achnatherum hymenoides*) and milkvetch (*Astragalus* species).

Environmental Consequences

Impacts of the Proposed Action

Ground disturbance caused by equipment access and use would result in some crushing and breakage of existing vegetation; however, stabilization of the headcuts would allow for a more natural stream channel condition, thereby increasing the potential for riparian/wetland vegetation cover and production. Crushed vegetation is expected to recover within one or two growing seasons. As noted in the Project Implementation Specifications, larger grade control structure sites may be fenced to promote quicker vegetation recovery if needed.

Installation of smaller grade stabilization structures would cause minimal crushing and breakage impacts to existing vegetation. The smaller structures would also promote increased riparian/wetland vegetation cover and production and prevent future erosion of existing riparian/wetland habitat.

Thinning of silver juniper, silver sagebrush, rabbitbrush and other upland species that are currently encroaching into the riparian corridor would allow for the occurrence of more meadow associated grasses and forbs.

Overall, the proposed action would not adversely affect the composition or structure of the riparian/wetland vegetation within the project area. Benefits to riparian meadow vegetation would include: 1) Greater plant cover and production due to increased surface and subsurface irrigation; and 2) Greater resistance to weed invasion due to increased meadow species cover and vigor and the reduction of ruderal sites that would be available for weed establishment.

Impacts of No Action

The no action alternative would allow for continued downcutting of the stream channel and subsequent drying out of riparian meadow habitat. Riparian/wetland vegetation loss would continue and the riparian corridor would be subject to increased encroachment by silver sagebrush, rabbitbrush and other upland shrubs.

Threatened and Endangered Plant Species

No threatened or endangered plant species are known or likely to occur within or adjacent to the proposed project area, based on historical records, field monitoring, and habitat suitability. No threatened or endangered plant species were encountered during surveys conducted on July 24 and August 6, 2010. The proposed action and no action alternatives would have no effect on any federally listed threatened or endangered plant species, nor would it result in the destruction or adverse modification of any designated critical habitat, because none are present within or adjacent to the proposed project area.

Special Status Plant Species

Affected Environment

Special status plant species are those species that have been listed by the California Native Plant Society as List 1B species, which includes plants that are rare, threatened or endangered in California and elsewhere. All of the plants constituting List 1B meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. The Bishop Resource Management Plan (USDI BLM 1993, p. 17) stipulates yearlong protection of sensitive plants (Special Status Plant Species) and their associated habitats.

The proposed project vicinity contains suitable habitat for the following special status plant species:

Arabis bodiensis - Bodie Hills rock-cress
Astragalus oophorus var. *lavinii* - Lavin's milk vetch
Cusickiella quadricostata - Bodie Hills draba
Phacelia monoensis - Mono County phacelia

Cusickiella quadricostata is known to occur at the edge of the project area in upper Aurora Canyon. *Phacelia monoensis* is known to occur on private land near the streams source. Neither species occurs in the riparian corridor or in any immediately adjacent areas likely to be affected by the proposed action.

During surveys conducted on July 24 and August 6, 2010 no *Cusickiella quadricostata*, *Phacelia monoensis* or any other special status plant species were observed in areas that may be impacted by implementation of the proposed project.

Environmental Consequences

Impacts of the Proposed Action

As the Project Implementation Specifications indicate, workers would be made aware of the special status plant populations in the larger project vicinity. Known occurrences of *Cusickiella quadricostata* are adjacent to and may overlap the proposed project area; however, known locations are in an area where no equipment would be used, all work near these occurrences would be done by hand and the population would not be negatively affected.

The known occurrences of *Phacelia monoensis* near the proposed project area are on private land at the upper most extent of the proposed project area as well as on adjacent BLM land. No work is proposed in these areas; however, this area may see a slight increase in vehicle use associated with the project. *Phacelia monoensis* is most commonly found on dirt road edges, berms or unused/infrequently used dirt roads.

Phacelia monoensis is an annual plant that is typically done flowering and fruiting by late summer. As indicated in the Project Description, the proposed action would take place in the late summer/fall after *Phacelia monoensis* has fruited and soil would not be removed from areas where *Phacelia monoensis* occurs, therefore *Phacelia monoensis* would not be negatively impacted.

Impacts of No Action

The no action alternative would have no effect on special status plants.

VISUAL RESOURCES

Affected Environment

The proposed project area is located within a VRM Class III area. The objective of VRM Class III as defined in the Bishop RMP 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 from key observation points 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."

The basic elements of form, line, color and texture of the proposed project area and surrounding vicinity are characterized by riparian meadow and open sagebrush steppe habitats typical of the western Great Basin. Key observation points as defined in the Bishop RMP (USDI BLM 1993) are located along the county-maintained Aurora Canyon Road.

Environmental Consequences

Impacts of the Proposed Action

The proposed action would temporarily degrade the visual quality of the project area while project work was being done and equipment was on site. This impact would be very short-term. Over the long-term, the proposed project would return the riparian corridor to a more natural state and the overall visual quality of the area would be maintained and improved. The existing character of the landscape would be retained and there would be no change in the basic elements of form, line, color and texture. VRM III objectives would be met.

Impacts of No Action

The no action alternative would allow the scenic quality of the area to degrade by allowing existing headcuts and associated gully erosion to continue. The basic elements of form, line, color and texture of the character of the existing landscape would change commensurate with changes in the riparian corridor. VRM III objectives would

be met, but the overall visual quality of the area would likely be reduced over the long-term.

WASTE, HAZARDOUS OR SOLID

Affected Environment

The proposed project area is not within or adjacent to any existing hazardous materials site.

Environmental Consequences

Impacts of the Proposed Action

The proposed action does not involve the use or storage of hazardous materials, other than fuel and oil used in project vehicles and equipment. No hazardous materials would be brought on site or produced during project operations. The proposed action would not generate any hazardous or solid waste within the proposed project area.

Impacts of No Action

The no action alternative would have no impact to hazardous materials.

WATER QUALITY

Affected Environment

The proposed action occurs within the upper stream corridor of Aurora Canyon Creek. Stream flow within the proposed project area is both spatially and temporally intermittent and there is often little or no flowing surface water. The upper portion of Aurora Canyon Creek is primarily spring fed with peak flows occurring during the spring snowmelt and run-off period. Sporadic high flows also occur during the summer as the result of localized high intensity thunderstorm events. Aurora Canyon Creek is primarily used as a water source for wildlife and livestock; the stream is not used as a municipal water source. Aurora Canyon Creek is a tributary to the East Walker River; however, surface flows rarely connect with the larger East Walker system. Existing surface water quality is negatively affected by excessive sediment loading and associated high turbidity.

Environmental Consequences

Impacts of the Proposed Action

The proposed action would temporarily increase the potential sediment load within the stream while grade stabilization structures were being installed and the adjacent gullies were being re-contoured. However, equipment work within the riparian corridor would occur during the late summer/fall when much of the channel is dry thus minimizing the

potential for increased sediment transport. Over the long-term, installed grade stabilization structures would trap sediment and reduce sediment loading and associated turbidity during high flow periods. Increases in riparian vegetation cover would further reduce sediment loading within Aurora Canyon Creek and contribute to improved surface water quality.

Thinning of juniper, silver sagebrush, rabbitbrush and other upland shrubs would have negligible impacts on surface water quality.

Overall, implementation of the proposed project would result in a more properly functioning stream and riparian corridor thereby reducing large scale erosion during normal and moderate flow events and improving the overall surface water quality in Aurora Canyon Creek.

The proposed action would have no effect on drinking water quality as Aurora Canyon Creek is not used as a municipal water source.

Impacts of No Action

The no action alternative would allow for continued above normal erosion due to the presence of historic and active headcuts and associated gully erosion in the active channel. Excessive sediment loading and associated high turbidity would continue to be primary factors negatively affecting surface water quality in upper Aurora Canyon Creek.

The no action would have no effect on drinking water quality as Aurora Canyon Creek is not used as a municipal water source.

WETLANDS/RIPARIAN ZONES

Affected Environment

The proposed action would occur within the wetland/riparian corridor of upper Aurora Canyon Creek. Riparian vegetation in the lower reach is dominated by wetland grasses, sedges and rushes. Riparian vegetation in the upper reaches is characterized by a narrow band of riparian grasses, sedges, rushes and forbs with an occasional willow. The stream channel in upper Aurora Canyon is incised in many areas due to historic and active headcutting and associated gully erosion. The riparian corridor is being encroached by silver sagebrush (*Artemisia cana*), rabbitbrush (*Chrysothamnus spp.*) and other upland species due to downcutting and loss of hydrologic function. Riparian/wetland condition in upper Aurora Canyon Creek is rated as Functioning at Risk.

Environmental Consequences

Impacts of the Proposed Action

The proposed action would temporarily have negative impacts on riparian/wetland vegetation in the riparian zone by crushing and breaking vegetation where equipment was used. Due to the productivity and resiliency of deep rooted riparian/wetland species, vegetation within the riparian/wetland corridor is expected to recover quickly once equipment work is complete. Over the long-term, stabilization of the stream channel would result in a more properly functioning wetland/riparian zone and would improve riparian/wetland habitat quality.

Thinning of juniper, silver sagebrush, rabbitbrush and other upland species would allow for increased density and productivity of riparian/wetland vegetation further improving the overall quality of riparian/wetland habitat in upper Aurora Canyon.

Impacts of No Action

The no action alternative would allow riparian/wetland habitat degradation in upper Aurora Canyon to continue due to active headcutting and associated gully erosion and the continued loss of hydrologic function within the proposed project area.

WILD AND SCENIC RIVERS

The proposed action and no action alternatives would have no effect on wild and scenic rivers because the proposed project area is not located within or adjacent to any designated wild and scenic river corridor or eligible wild and scenic river study segment corridor.

WILDERNESS

The proposed action and no action alternatives would have no effect on wilderness because the proposed project site is not located within any designated wilderness area or designated wilderness study area.

WILDLIFE, including THREATENED, ENDANGERED and SENSITIVE SPECIES

Affected Environment

Riparian meadow habitats provide important cover, forage and water resources to a wide variety of wildlife species including Greater Sage-Grouse, mule deer, migratory songbirds, small mammals and many other species. Meadows are uncommon in the larger project vicinity and meadows in the upper Aurora Canyon riparian corridor provide an important resource for wildlife.

The proposed project area is located within 3 miles of an active Greater Sage-Grouse lek (Lek 7/8 Big Flat), or strutting ground, where mating takes place during the spring breeding season. After mating, sage-grouse hens typically establish nests in suitable sagebrush or sagebrush/bitterbrush habitat in the vicinity of leks. Meadow habitat within the project area is not suitable for nesting, but does provide important foraging habitat for sage-grouse and their young during the late spring and summer. Greater Sage-Grouse are a BLM designated sensitive wildlife species and a candidate for listing under the Endangered Species Act of 1973 (ESA). Sage-grouse in the proposed project vicinity occur within the northern portion of the Bodie Population Management Unit (PMU) as defined in the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California* (NDOW 2004) and are part of the recently designated Bi-state distinct population segment (USDI FWS 2010).

Other birds using the project area may include sagebrush-obligate songbirds such as Sage Sparrow, Sage Thrasher and Brewer's Sparrow, and generalists utilizing the meadow and surrounding upland shrub habitats. Species observed in a previous monitoring study in the area include: Mountain Quail, Mourning Dove, Costa's Hummingbird, Western Wood-Pewee, Solitary Vireo, Steller's Jay, Common Raven, Mountain Chickadee, Bushtit, Rock Wren, House Wren, American Robin, Chipping Sparrow, Black-headed Grosbeak, Brewer's Blackbird and House Finch (PRBO 2005).

Sagebrush-obligate mammals that may be in the vicinity include pygmy rabbits and sagebrush voles. Pygmy rabbits are a BLM California designated sensitive species and the upper Aurora Canyon riparian corridor does provide some suitable habitat; however, broad-scale pedestrian surveys for pygmy rabbits within the project area have not detected the presence of either active or historic burrows systems to date. Pygmy rabbits remain close to their distinctive-looking burrows, so their presence or absence in a specific area may be determined with a high degree of confidence by searching for their burrows. As described in the Project Implementation Specifications, additional site specific pygmy rabbit surveys would be conducted prior to any digging or shrub thinning to ensure that any extant pygmy rabbit populations or burrow systems would not be negatively impacted by project implementation.

The proposed project area provides valuable habitat to the East Walker mule deer herd, during both the spring and fall migration periods, as well as during the summer. Migrating mule deer do not remain in any one location for an extended time, but move throughout the migration corridor using shrubs (principally bitterbrush) for food and thermal/hiding cover. Riparian habitat in upper Aurora Canyon provides essential foraging habitat and water sources for mule deer during the summer season and is especially important to lactating does with fawns.

Environmental Consequences

Impacts of the Proposed Action

The proposed project would have no measurable detrimental effects on the current or

long-term availability of habitat for any animal species known or likely to occur in the proposed project vicinity. There would be some short-term disturbance and displacement of wildlife, such as mule deer and songbirds, from the immediate project vicinity as the result of noise and activity associated with project implementation. Displacement and disturbance impacts would be short-term and no measureable detrimental effects are expected.

The proposed project would ensure the long-term productivity and availability of key late brood/summer meadow habitat in upper Aurora Canyon for Greater Sage-Grouse in the northern portion of the Bodie PMU. The proposed project would also improve summer cover and forage conditions for mule deer and other riparian/wetland associated species in the project vicinity. It would also benefit other sagebrush-obligate and generalist birds and mammals dependent upon adjacent riparian habitat.

The project design would require locating and avoiding any pygmy rabbit burrows; therefore pygmy rabbits and their habitat, if present, would not be adversely affected by the proposed action.

Overall, the proposed action would help maintain and improve riparian habitat conditions in upper Aurora Canyon and benefit and wide variety of riparian associated wildlife species over the long-term.

Impacts of No Action

As compared to the proposed action, the no action alternative would not maintain or improve important riparian habitat for Greater Sage-Grouse, mule deer and other wildlife species likely to occur in the project vicinity.

Threatened or Endangered Wildlife Species

No threatened or endangered wildlife species are known or likely to occur within or adjacent to the proposed project area, based on historical records, field monitoring, and habitat suitability. The proposed action and no action alternatives would have no effect on any federally listed threatened or endangered wildlife species, nor would it result in the destruction or adverse modification of any designated critical habitat, because none are present within or adjacent to the proposed project area.

Sensitive Wildlife Species

The proposed project would improve habitat for Greater Sage-Grouse, a California BLM designated sensitive wildlife species by improving riparian meadow habitat conditions along Aurora Canyon Creek. Pygmy rabbit, another California BLM designated sensitive wildlife species, would not be adversely affected by the proposed action because the project is designed to avoid impacts to pygmy rabbit burrows during implementation.

Cumulative Effects:

Cumulative effects are defined as the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR § 1508.7). A description of current conditions inherently includes the effects of past actions and serves as a more accurate and useful starting point for a cumulative effects analysis than attempting to discern the effects of individual past actions. “Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.” (CEQ Memorandum ‘Guidance on the Consideration of Past Actions in Cumulative Effects Analysis’ June 24, 2005). By comparing the no action alternative (current condition) to the proposed action, we can discern the cumulative impact resulting from adding the incremental impact of the proposed action to the current environmental conditions and trends.

The proposed action is expected to contribute to positive cumulative effects. It would improve stream channel stability and reduce soil erosion. It would also improve streamside riparian habitat and return the riparian system in upper Aurora Canyon to a more functional condition. The proposed action would prevent the future loss of important riparian/wetland habitat and benefit a wide-variety of resources and resource values in the immediate project vicinity.

The no action alternative would contribute to negative cumulative effects by allowing for continued degradation and loss of important riparian/wetland habitat in upper Aurora Canyon.

There are no identified incremental or long-term negative impacts associated with implementation of the proposed action that would contribute to cumulative impacts within, or beyond, the immediate project vicinity. The addition of the proposed action to existing and future local and regional activities and impacts would not add to, or cross a threshold of, impacts that would result in a significant effect on the human environment.

Implementation Monitoring:

BLM Bishop Field Office staff would visit the proposed project area during and after project implementation as needed to ensure that work is conducted according to Project Implementation Specifications identified in this document.

Effectiveness Monitoring:

Installed grade stabilization structures would be maintained and evaluated for effectiveness annually for the first 5 years following installation. The proposed project area would be evaluated for overall stream channel stability and streamside riparian habitat conditions on an estimated 5 to 10 year cycle.

Persons/Agencies Consulted:

Technical advice, field surveys and design assistance for the proposed project was provided by the USDA-NRCS, Minden Service Center.

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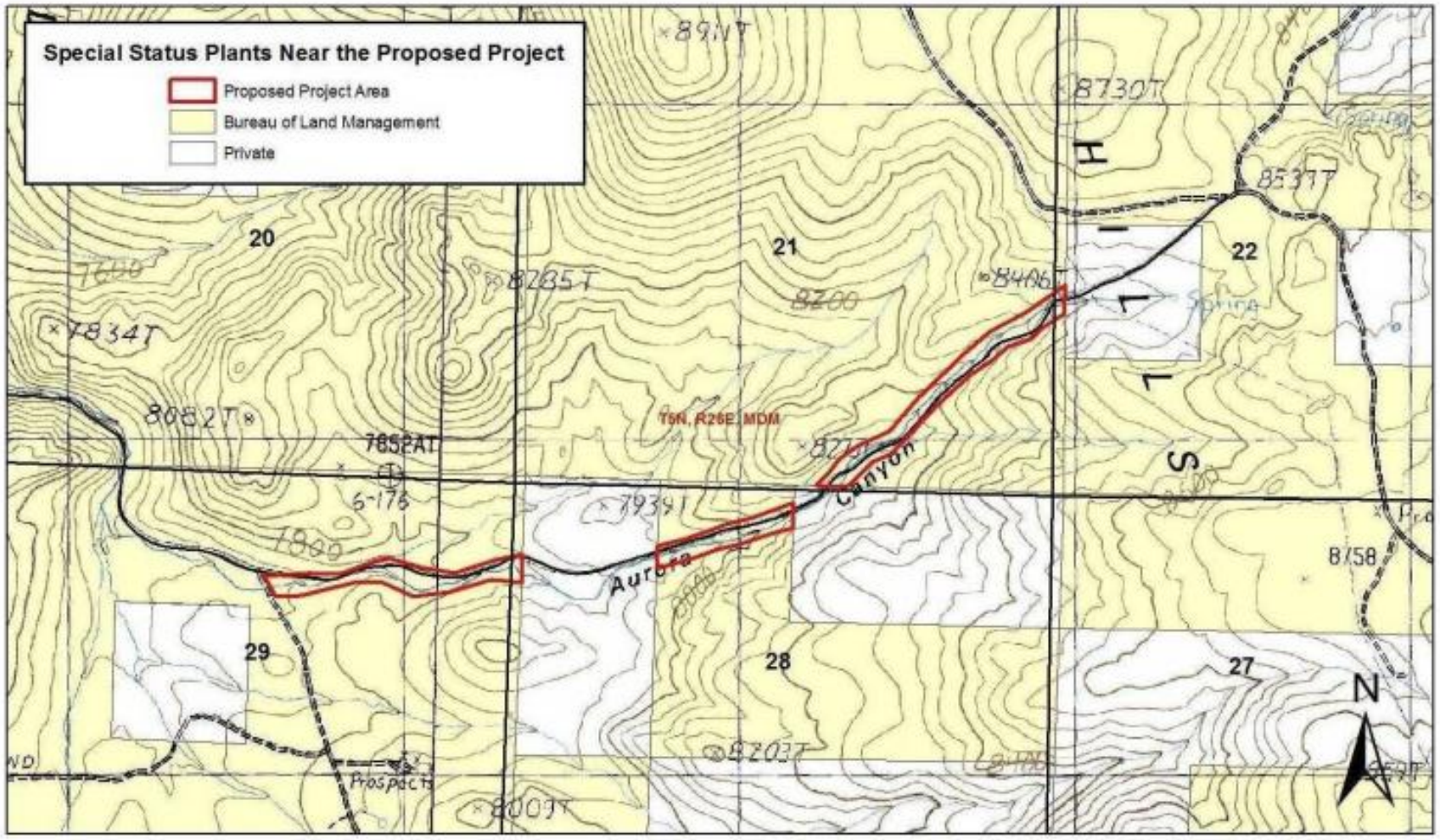
Date: September 15, 2010

Reviewed By:

_/s/ Steven Nelson_____ **Date:** _9/16/2010_____
Steven Nelson, Environmental Coordinator

Upper Aurora Canyon Headcut Stabiliaztion & Riparian/Wet Meadow Habitat Improvement Project



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