

ENVIRONMENTAL ASSESSMENT
LIVESTOCK GRAZING AUTHORIZATION
For the NUT MOUNTAIN ALLOTMENT

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CHAPTER 1: INTRODUCTION

This Environmental Assessment (EA) is prepared to disclose and analyze the environmental consequences of re-authorizing a livestock grazing permit/lease for 10-years as proposed on the Nut Mountain Allotment. The EA is a site-specific analysis of potential impacts that could result with the implementation of one of the alternatives. The EA assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act (NEPA), as well as other laws and policies affecting the alternatives. If the field manager determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a grazing decision will be issued along with a FONSI statement, documenting the reasons why implementation of the selected alternative would not result in “significant” environmental impacts.

Background

The Nut Mountain Allotment is located in northern Washoe County Nevada at T 41- 43 N, R 19 - 21 E; and encompasses 74,721 acres public lands and 6,195 acres private lands. Elevation ranges from 5,400 and 7,000 feet; precipitation varies from 8 to 16 inches depending on elevation.

A wilderness inventory was conducted in 1979 and 1980 pursuant to section 603 [a] of the Federal Land Policy and Management Act of 1976 (FLPMA) in accordance with BLM’s Organic Act Directive 78-61, *The Wilderness Inventory Handbook*. That inventory identified six potential areas which met the initial criteria of size. After analysis of these units was completed, the Massacre Rim unit (CA-020-1013) contained wilderness characteristics. This unit was incorporated as the Massacre Rim Wilderness Study Area (WSA) and encompasses a total of 101,290 acres.

The Massacre Rim WSA was included in the Eagle Lake-Cedarville Final Environmental Impact Statement finalized in October, 1987 which amended the Cowhead/Massacre Management Framework Plan. There were five alternatives analyzed in the EIS; all wilderness alternative, no wilderness and three partial wilderness alternative. The recommendation for the Massacre Rim WSA is to designate 22,465 acres as wilderness and release 78,825 acres for uses other than wilderness. Approximately half of the wilderness study area not recommended for wilderness (44,870 acres) is to be managed as the Massacre Rim Area of Critical Environmental Concern, to provide special protection and management to the significant biological and cultural resources found on the Massacre Bench.

In 2009, the Surprise Field Office reviewed the 1979 wilderness inventory as required by section 201 [a] of FLPMA. The 2009 wilderness inventory reviewed the roadless units that were identified in the 1979 and 1980 inventory. Five of the six roadless units which intersect the Nut

Mountain Allotment were combined into three units for evaluation purposes. The rationale for combination and analysis of three units is because route designation was completed in the *Proposed Resource Management Plan and Final Environmental Impact Statement* for the Surprise Field Office. The Record of Decision (ROD) for the Surprise Resource Management Plan was signed in April 2008. Many of the routes that served as boundaries for the roadless areas in the 1979 wilderness inventory are no longer visible or were not designated as open routes. As a result, it made sense to combine the three units which are: Grassy (CA-N0-07-017), Massacre Rim Contiguous (CA-N0-07-015), and Coyote (CA-N0-07-016). This analysis concluded that there have been no changes to these roadless units, and determined that no substantive changes in conditions had occurred that would warrant reversal of the original wilderness inventory's finding that wilderness characteristics were not present in the area.

The Massacre Rim (WSA) and the Massacre Rim Area of Critical Environmental Concern (ACEC) are located in the northern portion of the allotment. The southern-most portion of the allotment includes 11,915 acres of the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA); and 3,505 acres of the East Fork High Rock Canyon Wilderness Area (see Map 1).

Two Herd Management Areas (HMAs) are within the boundaries of the Nut Mountain Allotment. The Nut Mountain HMA lies entirely within the allotment south of NV road # 8A; a portion of the Bitner HMA lies within the allotment north of NV road # 8A (see Map 2). The Appropriate Management Level (AML) for Bitner HMA is 20 horses, and the AML for Nut Mountain is 55 horses.

The grazing permit for the Nut Mountain Allotment authorizes 815 cattle to utilize 4893 (Active) AUMs from April 16 to October 15 annually. The Nut Mountain Allotment is classified as an "I" (Improve) category allotment, meaning that it is high priority with large amounts of public land, significant resource and grazing management issues that require attention, along with a high potential for improvement in range condition.

This revised EA is being issued in response to a protest filed by Western Watersheds Project on October 16, 2009, to the Field Manager's Proposed Decision Grazing Permit Issuance for the Nut Mountain Allotment dated September 29, 2009. Nevada Department of Wildlife (NDOW) also provided comments to the proposed decision. This EA clarifies certain grazing impacts to special status wildlife species and environmental impacts of constructing new rangeland projects, and one proposed drift fence was eliminated from the proposed action. The EA's proposed action also clarifies the interim grazing system, final grazing system, desired plant communities (DPC's) in Appendix B, Table 1.

Purpose and Need for the Action

The purpose of the action is to consider whether to authorize grazing on the Nut Mountain Allotment. If authorized, grazing would be in accordance with 43 CFR 4100 and consistent with the provisions of the Taylor Grazing Act, Public Rangelands Improvement Act, and Federal

Land Policy and Management Act. The action would also ensure that all authorizations implement provisions of, and are in conformance with the Record of Decision for the Surprise Resource Management Plan approved in April 2008, and the Black Rock Desert – High Rock Canyon Emigrant Trails National Conservation Area (NCA) Resource Management Plan of July 2004.

The current permit was issued under the Appropriations Act, and the BLM has been directed to process livestock grazing permits in compliance with all laws and regulations. This renewal process requires that BLM first determine whether current permitted grazing use conforms to the Surprise and NCA RMPs and the Standards for Land Health and Guidelines for livestock management (S&G determination). If current management does not conform to these mandates, then alternatives would be developed and analyzed to meet these requirements, along with any alternatives raised during scoping.

The Rangeland Health Assessment (RHA) and Determination was completed in February 2009. The Nut Mountain Allotment Land Health Standard Determination found that riparian, stream health and biodiversity standards are not being met. Specific resource issues resulting in this determination were identified in the Mountain Pasture and Hanging Rock use area. Current permitted livestock grazing is considered a contributing factor in failure to meet the standards. This EA will review the environmental and socio-economic impacts of alternatives considered, and determine which grazing changes may be needed. The final grazing permit issued may be dependent upon management changes, the number and type of rangeland developments allowed, including fencing, exclosures and water developments. The BLM may select several different management strategies as means to address standard failures.

The Nut Mountain RHA Determination is incorporated into this EA by reference, and a copy can be found at the Surprise Field Office, and is posted on the Surprise Field Office web page at http://www.blm.gov/ca/st/en/fo/surprise/grazing_permit_renewals.html.

BLM has considered the following criteria as the basis for re-issuance of grazing permits:

- What grazing system(s) and level(s) of grazing intensity should be authorized, to promote sustainable ranching operations and healthy rangelands?
- What additional rangeland development projects, if any, are necessary to promote sustainable ranching operations and healthy rangelands?
- How will BLM grazing management practices and rangeland development affect habitat quality for wildlife management importance such as greater sage-grouse?
- How will BLM grazing management practices and rangeland development affect the wild horse Nut Mountain and Bitner Herd Management Areas?

Scoping and Issues:

The public was first notified of the project in January 2008, and a scoping letter was sent to 66 interested publics of record on January 17, 2008. Comment letters were received from Western Watersheds Project and Nevada Department of Wildlife (NDOW). Permittees have also provided comments. BLM met with local tribal groups to discuss this grazing permit renewal and other projects being proposed.

Modoc –Washoe Experimentally Stewardship Program (ESP) and Northeastern Resource Advisory Committee were consulted and provided updates as to the progress of the grazing permit renewal for the Surprise Field Office.

Following the completion of the Land Health Determination, a second scoping letter/notice of proposed action was sent out in late February to notify the interested publics of our finding and to request any additional input.

A Technical Review Team (TRT) was established by ESP to review resource conditions on the allotment as well as findings from the 2008 Rangeland Health Assessment. The TRT was comprised of representatives from: Natural Resources Conservation Service (NRCS), Nevada Department of Wildlife (NDOW), Friends of Nevada Wilderness, Western Watersheds Project, BLM and Nut Mountain Allotment Permittees. This group met in the field and several times in the BLM office to discuss the resources and potential solutions. In July 2009, the TRT recommendations were consolidated into management strategies which are incorporated into the proposed action for this EA, and include actions to mitigate impacts to riparian areas, uplands, wildlife, sage grouse, soils, through future grazing management while meeting rangeland health standards.

Based on issues identified during scoping and regulatory requirements, three alternatives were developed which are analyzed in this EA.

Issues

The following issues/concerns were raised by the public, state agencies and TRT in response to the Notice of Proposed Action, and scoping:

Wild Horses

Comment: During scoping and the TRT process the permittees, NV Commission for the Preservation of Wild Horses, and NDOW raised concerns that the resident wild horse population in the Nut Mountain HMA is far higher than the AML as result of ingress from the neighboring Bitner HMA, and other adjoining HMAs. This situation is contributing to significant impact on riparian habitats in the allotment, and that attainment of riparian objective is not possible with yearlong wild horse use. NDOW also believes the wild horse habitat suitability needs to be re-examined in consideration of the limited number of adequate public water sources in the HMA. There are concerns that the current and past wild horse population is adversely affecting riparian habitat for other wildlife species.

One commenter questioned the inequality of permitted livestock AUMs when compared with the wild horse AML, and that the AML needs to be re-examined by the BLM.

Response: The 1981 Cowhead-Massacre Management Framework Plan established several goals and decisions to establish the current management units of Bitner and Nut Mountain HMAs and Bitner and Nut Mountain Allotments. The Surprise RMP identifies these HMAs to be managed as a complex, and they are separated by drift fences and natural barriers that allow for the natural movement of wild horses during periods of inclement weather. The drift fences also have “horse gates” that are opened by BLM during the winter months when cattle are not authorized. There may be instances where horses have drifted into the Nut Mountain Allotment in the winter and not moved back to the Bitner HMA when snow cover recedes.

Both HMAs were last gathered in 2007. Bitner HMA population is slightly above AML, and Nut Mountain HMA is slightly under AML. (Refer to the Wild Horse Affected Environment section for additional information). The re-examination of the AML should be addressed by analyzing the AML of both HMAs in the future. Based on the 2009 RHA there was no apparent conflict with wild horses except in riparian areas and alternatives were developed to mitigate impacts to these areas. Therefore, adjustments to wild horse numbers are not warranted at this time.

Monitoring and Resource Objectives

Some members of the TRT suggested that new key monitoring areas be established to measure progress towards meeting Rangeland Health Standards and resource objectives including objectives for bitterbrush. Monitoring plans also need to be implemented that would differentiate cattle and wild horse grazing impacts.

Response: Monitoring and resource objectives are included in the Proposed Action.

Grazing Management

Revision of the existing grazing system and establishment of an interim grazing system until projects are implemented was also recommended.

Response: The Proposed Action includes an interim and final grazing system.

Wildlife Habitat

The EA should include utilization standards for upland sage-grouse breeding habitat and pygmy rabbit habitat.

Response: Maximum allowable use for key upland native grasses is 60% in all use areas and pastures except Hanging Rock use area which is 40%. Also refer to riparian and upland objectives on page 21, and refer to wildlife habitat - threatened and endangered species discussion in environmental analysis section.

Range Improvement Projects

Range improvement recommendations from the permittee included: Cavalry Camp Seeding sagebrush removal (beating, spray) for the purpose of increasing grass production; construction of a larger gathering field near Massacre Corrals to facilitate gathering and shipping of cattle.

Response: These projects are outside the scope of this EA, which would be addressed by separate site specific environmental review. Projects proposed as stated in the proposed action are essential to implement the proposed livestock management and to progress towards achievement of rangeland health standards.

Relationship to Statutes, Regulations, and Plans:

Agreement between State Director and State Historic Preservation Officer Protocol Amendment for Renewal of Grazing Permits and Leases.

The BLM has explicit responsibility to manage cultural resources on public lands consistent with applicable procedures and agreements. To comply with the National Historic Preservation Act the BLM is required to assess the condition of cultural resources on each grazing allotment prior to the renewing of grazing allotment permits. In August 2004, the State Director, California Bureau of Land Management, the California State Historic Preservation Officer (SHPO) and the Nevada SHPO addressed the issue of the National Historic Preservation Act (NHPA) Section 106 compliance procedures for processing grazing permit lease renewals for livestock as defined in 43 CFR 4100.0-5. The State Director and the SHPOs amended the 2004 State Protocol Agreement between California Bureau of Land Management and The California State Historic Preservation Officer with the 2004 Grazing Amendment, Supplemental Procedures for Livestock Grazing Permit/Lease Renewal. This amendment allows for the renewal of existing grazing permits prior to completing all NHPA compliance needs as long as the 2004 State Protocol direction, the BLM 8100 Series Manual Guidelines, and specific amendment direction for planning, inventory methodology, tribal and interested party consultation, evaluation, effect, treatment, and monitoring stipulations are followed.

Each grazing allotment assessment will be completed on a specified date. The results of the assessments may be used to modify grazing permits. If cultural resources are identified as receiving impacts as a result of livestock management or grazing on a specific allotment, the stipulations of the grazing permit will be modified to reflect compliance with the Bureau's responsibility to manage and protect cultural resources. Consultation regarding affected cultural resources will take place with the appropriate Native American tribe and the California and/or Nevada State Historic Preservation Office(s). All cultural resources will be afforded protection consistent with law and policy, including appropriate mitigation measures.

Wilderness

The Wilderness areas are managed primarily to preserve natural conditions. The Wilderness Act prohibits commercial enterprises, permanent and temporary roads, the use of motor vehicles,

motorized equipment, or mechanical transport, landing of aircraft, and placement of new structures and installations. Each of these prohibitions are subject to special provisions provided both in the Wilderness Act and the Act designating the area as wilderness.

For allotments within wilderness areas, the management provisions of the 1964 Wilderness Act and/or the enabling legislation for the wilderness area shall apply. Congress provided additional guidance for managing livestock within wilderness areas through the Congressional grazing guidelines found in the 1980 Colorado wilderness legislation. Regulations to manage livestock in wilderness are found in 43 CFR 6300.

For allotments that contain Wilderness Study Areas, livestock management must be consistent with the direction found in the Interim Management Policy for Land under Wilderness Review H-8550-1.

Plan Conformance:

Determination:

The proposed action is in conformance with the Surprise Resource Management Plan (RMP), and as adopted by the Record of Decision (April 2008), and the NW Nevada and NE California Rangeland Health Standards and Guidelines for Livestock Grazing. The Standards and Guidelines for Livestock Grazing can be found on the Surprise Field Office web site.

The Proposed Action is also in conformance with the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area Resource Management Plan (July 15, 2004).

Rationale:

The proposed action would occur in an area identified as available for livestock grazing in the Resource Management Plans and is consistent with the land use decisions and resource management goals and objectives.

The Surprise Field Office RMP applicable goals and objectives for livestock grazing as described on pages 2-34 to 2-35 are as follows:

- 1) Sustainable, ecologically sound, and economically viable livestock grazing opportunities would be provided, where suitable, in the Surprise Field Office management area,
- 2) Adequate forage would be produced to support sustainable levels of livestock grazing where compatible with objectives for other resources and resource users,
- 3) Continue to modify and adjust grazing management within individual grazing allotments to ensure that a vigorous plant community is sustained in combination with livestock grazing.

Black Rock Desert – High Rock Canyon Emigrant Trails National Conservation Area (NCA) Resource Management key decisions, goals, and objectives include (page 2-23):

- To promote healthy sustainable rangeland ecosystems and maintain or restore public rangelands consistent with Land Health Standard indicators in conformance with the procedures in the Rangeland Health Standards handbook (H-4180-1).
- To provide forage suitable for livestock on a sustainable basis for the foreseeable future, consistent with other resource objectives and with public land use allocations.

Vegetation Objectives, page 2-19

- To consider the maintenance and enhancement of natural ecological processes as the dominant factor in determining the composition and distribution of plant communities in the Wilderness Zone.
- To retain sagebrush communities on at least 75 percent of the potential sagebrush habitat in the planning area with sagebrush cover sufficient to support sagebrush-dependent wildlife species.

Grazing Management, pages 2-23 to 2-25

- The current livestock grazing use authorizations will be maintained until evaluations identify the need for adjustments of livestock grazing practices to meet Land Health Standards or other objectives. Changes in livestock management will conform to regulations and land use plans, monitoring, field observations, ecological site inventories, or other BLM acceptable data will support management changes (GRAZ-1).
- Existing authorized structural rangeland projects will be maintained where beneficial to resource values. New rangeland projects may be developed when consistent with achieving land Health Standards and the objectives of the plan. Projects no longer needed to meet livestock and other resource management objectives will be removed and the sites restored (GRAZ-6).
- All spring developments will be modified where necessary to maintain, improve or restore the biotic integrity of the spring system in accordance with BLM Technical Reference 1737-17. These spring developments will also be modified to provide water for wildlife at ground level adjacent to the spring source (GRAZ-7).
- Authorizations of grazing use including multiple use decisions and activity plans will incorporate specific grazing management prescriptions (covering, but not limited to, timing, duration, intensity, and frequency of livestock use) that an evaluation showed will provide the best opportunity to meet objectives of the plan and the applicable Land Health Standards (GRAZ-8).
- Adjustments in livestock and /or wild horse and burro forage will be implemented in an equitable manner on the basis of monitoring data or site-specific resource evaluations. If monitoring data indicate that impacts on resources are occurring as a result of livestock, or wild horse and burro use, appropriate adjustments will be made to the specific class of use. In the absence of monitoring data, adjustments in available forage will be proportional to the applicable livestock active animal unit months (AUM) and wild horse and burro AMLs (GRAZ-9).

Rangeland Health

The Rangeland Health Assessment and Determination was completed in February 2009. Areas of allotment that meet/do not meet the Secretary of the Interior Approved Rangeland Health Standards are as follows:

Table 1. 1 Achievement of Rangeland Health Standards Nut Mountain Allotment

Rangeland Health Standard	Meets Standard	Does Not Meet Standard	Current livestock are a causal factor for not meeting Yes or No	Remarks (locations, etc.)
Upland Soils	✓			Data from five representative Upland Health Assessments rated Soil/Site Stability as stable and Hydrologically functioning. Transect data collected at the upland health assessments support the determination that the allotment has an abundance of total cover to protect the soil from wind and water (raindrop and surface flow) impacts and the Soil Stability ratings are well within the range of variability for the reference sites.
Stream Health		✓	YES	The Standard for Stream Health is met in the two lower reaches and not met in the upper reach of Hanging Rock Creek, the only perennial stream within the allotment. Streambanks are either deeply incised or shallow with little or no vegetation and sediments are not being trapped by vegetation. Livestock and wild horse grazing is a contributing factor to these conditions. The functioning lower reaches have diverse vegetation that is shading the stream, protecting streambanks from high flows and creating undercuts that further shade the stream and provides hiding cover for fish.
Riparian/Wetland		✓	YES	The Standard for Riparian Wetland Areas is not met. Rock Spring was functioning at risk with an upward trend. The middle and lower reaches of Hanging Rock Creek are properly functioning. The upper reach of Hanging Rock Creek is functional at risk with a downward trend. Miller and Lux Spring and Trough Spring were non-functional. Livestock and wild horse grazing is a contributing factor to these conditions. Riparian areas which were not enclosed by fences within the allotment are showing negative impacts from cattle and wild horse grazing due to heavy use and adjacent water developments.

Water Quality	✓			One water quality station for the allotment is located at the spring source at the head of Hanging Rock Creek. Baseline water quality was established in 2002 and 2003 and is currently meeting the State Numeric and Narrative Standards, Beneficial Use needs and BLM Standards. Neither surface water nor groundwater within the allotment has been listed for exceeding State water quality standards.
Bio-diversity		✓	YES	<p>The Standard for Biodiversity is not met. Riparian areas outside of exclosures observed in 2008 are being negatively impacted by current livestock and/or wild horses grazing. These sites have not improved since the 1980s and are not providing important food, cover, or nesting substrates for wildlife. Perennial water at Miller and Lux, Rock Spring, and Trough Spring occur within about 1.25 miles of each other and about 3.5 miles from upper Hanging Rock, all in the Mountain Pasture. These riparian areas are important in terms of providing season-long water and wildlife habitat since stock reservoirs in the general area are not reliable during dry periods.</p> <p>Upland areas of the allotment generally have good cover and diversity of shrubs and forbs but some sites are lacking native bunchgrasses. This condition is a result of historic grazing not current grazing practices. This conclusion is based on data collected from bitterbrush and upland utilization monitoring and documented actual use records in the Hanging Rock Use area, Upper Field and Mountain Pastures.</p>

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

Alternative 1 - Proposed Action

The Proposed Action is to authorize cattle grazing on the Nut Mountain Allotment with a 10 year livestock grazing permit with applicable provisions as discussed further in this section. This action also includes measures (range improvement projects) which are essential to mitigate impacts from cattle and wild horses to riparian areas on public land. An interim grazing system would be implemented to prevent further impacts to affected riparian areas until the essential projects are complete. Once the projects are complete, a rest-rotation grazing system would be put in place along with more intensive herding to improve livestock distribution throughout the allotment and decrease cattle concentration in areas that have frequently been heavily grazed.

Terms and conditions, range improvements, and monitoring requirements are as follows:

A. Mandatory Terms and Conditions under the Proposed Action

Table 2.1 Authorized Use Summary

Allotment	Number of Livestock	Kind	Class	From	To	AUMs
Nut Mountain	815	Cattle	Cow	4/16	10/15	4893

B. Grazing Management

The proposed rest/rotation system would create three (unfenced) use areas within the Mountain Pasture. The system would provide rest on alternate years for all pastures/use areas except the Mountain (North) and Cavalry Camp Seeding. Furthermore, the proposed grazing system would now provide rest to Mountain East and West instead of deferred use as in the previous system. Additionally, the new system would shorten the season of use in the Hanging Rock and Mountain East use areas to 30 days. Table 2.2 displays the proposed grazing system.

Table 2.2 Proposed Final Grazing System (once essential range improvements are constructed)

Use Area/Pasture	YEAR 1		YEAR 2	
	No. of cattle	Use dates	No. of cattle	Use dates
Upper Field	100	5/16 – 6/30	0	REST
Mountain North	715	5/16 – 6/30	815	8/1 – 8/30
Mountain East	0	REST	815	7/1 – 7/30
Hanging Rock	0	REST	815	6/1 – 6/30
Mountain West	815	7/1 – 8/31	0	REST
Massacre Lakes	815	9/1 – 10/15	0	REST
Cavalry Camp Seeding	815	4/16 – 5/15	815	4/16 – 5/30 9/1 – 10/15

C. Interim Grazing System

Table 2.3 Proposed Interim Grazing System

Use Area/Pasture	YEAR 1		YEAR 2	
	No. of cattle	Use dates	No. of cattle	Use dates
Upper Field	100	5/16 – 6/30	0	REST
Mountain North	715	5/16 – 6/30	815	8/1 – 8/30
Mountain East	0	REST	815	7/1 – 7/30
Hanging Rock	0	REST	815	6/1 – 6/30
Mountain West	815	7/1 – 7/31	0	REST
Massacre Lakes	815	8/1 – 9/15	0	REST
Cavalry Camp Seeding	815	4/16 – 5/15 9/16 – 10/15	815	4/16 – 5/30 9/1 – 10/15

D. Other Terms and Conditions

1. All use will be in accordance with the Field Manager’s Final Decision. Billing will be based on actual use reports submitted 15 days following the last authorized take off date for your permit. Actual use report will be submitted no later than October 30. If an actual use report is not submitted, then the permittee(s) will be billed and liable for their full permitted active use.
2. An annual pre-season livestock turn-out meeting will be held with the permittee(s) to discuss previous years use and document current years grazing schedule. Livestock may not be turned out before this meeting has been conducted, and without prior written approval from the authorized officer.
3. Flexibility includes adjustments to livestock numbers; however, adjustment may not exceed permitted active use and must retain permitted season of use and amount of total use in any given pasture.
4. Additional adjustments in livestock use may be required by BLM annually based on utilization, drought, water availability or other conditions.
5. Once essential projects are constructed, all use areas and pastures must be 95% clean of livestock within 5 days of the move date and 100% clean within 10 days of the move.

6. To improve livestock distribution, salt and mineral supplements may be used in the allotment. These must not be located closer than ¼ mile from any natural or artificial water source, archaeological site, aspen stand or riparian area.
7. Protein supplements are not authorized on the allotment.
8. Range improvements assigned to you must be maintained prior to livestock turnout and inspected periodically throughout the period of scheduled use to ensure livestock are restricted to those areas they are scheduled to be in.
9. Maximum allowable use for key upland native grasses is 60% in all use areas and pastures except Hanging Rock use area which is 40%.
10. Livestock would not be placed at either of the unfenced public springs or the upper reach of Hanging Rock Creek.
11. Use areas in the Mountain Pasture including the upper reach of Hanging Rock Creek should be ridden and checked a minimum of three times weekly to remove any drifting cattle. Cattle found in the creek should be removed from the allotment to avoid recurrent use.
12. Permittee will provide compliance records during the entire Mountain Pasture use period and shall provide BLM with these compliance records with the actual use report at the end of the grazing season.
13. Permittee is responsible for determining when annual allowable use has been reached and for moving livestock into the next scheduled use area or off the allotment within five days. Permittee is advised that allowable use may be reached before the scheduled move date and should act accordingly. Any adjustments in move dates or numbers must be communicated to BLM within 7 days of the change and shall be recorded accurately on the actual use report. BLM will monitor permittees' annual performance in meeting utilization objectives at the end of the grazing season.
14. Gates into adjacent pastures may be opened (no more than 2 days prior) to facilitate livestock movement to the next scheduled use area if the permittee determines utilization levels are approached or exceeded, or in preparation of normally scheduled moves. Gates may not be opened more than 2 days prior to these scheduled moves. The scheduled period of use (number of days) may not be exceeded in any pasture or use area as a result of early moves.

Other Terms and Conditions related to the Interim Grazing System

1. During the interim management period, use areas in the Mountain Pasture must be 95% clean by the move date and 100% clean within 5 days of the move date. For movements of livestock between the Upper Field, Massacre Lakes and Cavalry Camp Seeding pastures, 95% of livestock must be removed within 5 days of the move date and 100% removed within 10 days of the move.
2. During the interim management period, if monitoring determines that **livestock use** exceeds either the stubble height or utilization objectives in public riparian areas and the Mountain West and Hanging Rock use areas, permittee and BLM will determine appropriate changes in the next years scheduled use to ensure achievement of objectives. If agreement cannot be reached, scheduled use will be reduced by at least one week.
3. During the interim management period, permittee shall continue to ride and check the use areas in the Mountain Pasture to ensure no livestock drift either into areas previously used or areas not yet scheduled for use.

E. Range Improvements

Only those projects considered essential to meeting rangeland health standards and to implementation of the final grazing system are included. All projects would include SOPs for construction and maintenance; include thresholds for continued relevance of the analysis (example; adjustments in boundaries or footprints not larger than 500 feet are considered in this alternative to still be within the scope of the action and the subsequent analysis.

The following changes (new improvements) are essential to the grazing system and would be implemented as part of this alternative:

- **Hanging Rock Creek riparian protection fence**

Most of Hanging Rock Creek flows through fenced private land on the allotment.

The project would consist of constructing approximately ¼ mile of barbed wire fence (built to BLM wildlife specifications) on BLM lands on Hanging Rock Creek between the two 40 acre parcels of private land (refer to Map 3). A solar pump would transfer water from the creek approximately 700 feet through a 1.5 inch diameter pipeline buried 1 ½ to 2 deep to a trough outside the enclosure to provide water for wild horses, livestock and wildlife.

- **Miller & Lux Spring riparian enclosure**

Miller & Lux Spring is one of the four public springs on the allotment. A small reservoir was constructed below the spring to catch and provide water for livestock. The reservoir is now very shallow and will need to be cleaned out and the levee repaired.

The creation of a fenced 40 to 50 acre riparian enclosure is proposed to protect the site from grazing impacts. The spring source would be developed with a head box to divert water to

trough(s) fitted with float valves outside the enclosure (refer to Map 5). Approximately 500 feet of 1.5” diameter pipe would be required to carry water from the head box to the troughs. Water from the spring not diverted to the trough(s) would flow into the reservoir and overflow back into the original riparian channel.

- **Rock Spring riparian enclosure**

Rock Spring is another of the four public waters on the allotment being impacted by wild horses and livestock. Like Miller & Lux, a reservoir was constructed below the spring source to catch and provide water for livestock. Overflow from the reservoir currently runs north down a drainage for a very short distance before it dissipates. A two-track road accessing the reservoir crosses the overflow channel which is being entrenched by vehicles and is affecting riparian functionality of the spring.

The proposed project would consist of an approximately 14 acre enclosure to protect riparian habitat and cultural resources. Water would be gravity fed approximately 600 feet of through a 1.5” diameter pipeline from the reservoir to a water trough(s) fitted with float valves placed outside the enclosure. In addition, a culvert would be installed where the two-track road crosses the overflow channel to prevent further damage to the riparian system from vehicles (refer to Map 6).

- **Trough Spring development modification**

Trough Spring is public water that has been developed for livestock use. A reservoir was constructed below the spring source similar to Rock and Miller & Lux Springs. The Trough Spring development is completely fenced and acts as a water trap for two pastures in the Nut Mountain Allotment with a portion of the reservoir accessible to livestock and wildlife on the Massacre Mountain Allotment.

The project includes approximately 400 feet of 1.5” diameter pipe and a solar pump to transfer water from the reservoir to troughs fitted with float valves outside the existing enclosure (refer to Map 7).

At each project site, a backhoe or trencher would be used to excavate trenches, bury pipelines 1.5 to 2 feet in depth and clear/level pads for water troughs.

The following Standard Operating Procedures (SOPs) will be adopted for all necessary range improvement projects:

1. BLM will be responsible for survey and design of all projects. Once projects are completed, permittees will be responsible for annual maintenance.
2. An archaeological inventory will be conducted in compliance with 36 CFR 800.4 through 800.5 prior to the survey, design, or construction of the identified range improvement projects.
3. Appropriate water rights or other permits would be secured before construction begins.
4. The Vya and Massacre PMU sage-grouse strategies and guidelines for construction/maintenance of spring developments are as follows:

Construct new spring developments to maintain their free-flowing nature and wet meadow characteristics, install wildlife escape ramps in new water troughs, retrofit existing troughs with wildlife escape ramps”.

Construct new livestock facilities (troughs, fences, corrals) at least 0.6 miles (1 km) from leks, restrict new water developments, use “perch guards” on fence posts and rock cribs, and construct future livestock enclosures large enough to minimize raptor predation.

5. Fences, if necessary, will be built to pronghorn specifications. Top wires will be flagged the first year following construction to increase visibility and reduce the possibility for wild horse and wildlife collisions. Posts used for corner panels and gates will be steel pipe with domed caps to reduce wildlife entrapment.
6. Maintenance of new range improvements will be assigned to the permittee and Cooperative Agreements will be signed before construction begins.
7. Equipment used for construction will be cleaned of mud and debris before entering the construction site to reduce the possibility of introducing weeds.
8. New roads will not be established to sites. Disturbed access routes will be restored at the conclusion of the construction phase.
9. No new projects are proposed in wilderness areas, or WSA.
10. No fences are proposed that would impact wild horse seasonal distribution, migration patterns or limit wild horse use of public waters.

F. Monitoring

Monitoring Objectives

1. By 2012, in coordination with the permittee and the affected interests, evaluate the location of current key areas to determine if they are properly located to represent utilization and management in a given pasture/use area.
2. By 2012 establish new key areas for long and short term monitoring in coordination with the permittee and affected interests.
3. By 2012, establish production and frequency trend transects at key areas to provide for the conversion of desired plant community objectives from cover based to production based.
4. Continue to collect annual utilization data over the entire allotment. This data collection effort should include both pre and post-livestock use to discriminate between wild horse and cattle use.
5. Establish utilization cages at all long term key areas and at representative utilization monitoring sites.
6. Continue to monitor bitterbrush condition and utilization at selected sites.

Utilization data would be collected annually following removal of all cattle from the allotment. Utilization would be read on major ecological sites, and resulting data would be used to create use pattern maps. All monitoring would be performed in accordance to BLM policy following protocols from BLM approved manuals and technical references.

Trend transects (cover, frequency, composition) were established in 1983; data was last collected in 2000. Future trend monitoring would be performed in accordance to BLM policy following protocols from BLM approved manuals and technical references.

Long Term Goals and Objectives (to be accomplished by 2019)

1. Improve riparian functionality on the upper reach of Hanging Rock Creek from functioning at risk with a downward trend to proper functioning condition.
2. Maintain proper functioning conditions at the middle and lower reaches of Hanging Rock Creek.
3. Improve riparian functionality on Miller & Lux and Trough Springs from non-functional to functional at risk with an upward trend.
4. Improve riparian functionality at Rock Spring from functional at risk with an upward trend to proper functioning condition.

Short Term Objectives (measurable annually)

Riparian Objectives

1. In the interim management period, the permittee manages livestock use and distribution to ensure utilization does not exceed a 4-6" stubble height on current years herbaceous riparian growth at any time during the growing season (or by the end of the growing season). Key species include sedges, rushes, and Poa species.
2. In the interim management period, the permittee manages livestock distribution and use through herding or other measures to minimize cattle use on woody riparian species such as willow and aspen.
3. For the purposes of determining achievement of these objectives during the interim management period. No livestock may be placed at either of the unfenced springs or the upper reach of Hanging Rock Creek. Livestock use in Hanging Rock and Mountain West use areas does not exceed 30 days; livestock are 100% cleaned out of each use area at the end of the scheduled use period, and permittee continues to ride the use area a minimum of three times weekly to remove any cattle drifting back to these areas. The permittee will provide records of his compliance riding when he turns in his actual use report at the end of the grazing season.
4. Once proposed projects are constructed and final management is implemented, do not schedule use in the exclosures.

Upland Objectives

1. To promote the increases in cover of key upland perennial grass species (Idaho fescue, Thurber's needlegrass, bluebunch wheatgrass), utilization of current year's growth within the Claypan 14-16" PZ and Loamy 8-10" PZ ecological sites in Hanging Rock use area does not exceed 40% by the end of scheduled use. Utilization data to be collected at the end of the scheduled grazing period.
2. Utilization levels (livestock, wild horses, and wildlife) in other areas of the allotment will not exceed 40%–60% on key species of grasses, forbs, and shrubs. Data to be collected at the end of the grazing season.
3. Utilization of current year's leader growth of bitterbrush within the Nut Mountain Allotment does not exceed 20%.

Alternative 2 - No Action (Current Management)

This alternative involves issuing a new permit with the same terms and conditions as under the expired authorization.

A. Existing Terms and Conditions

Mandatory terms and conditions currently in effect would continue as indicated in the following table; all other existing terms and conditions of the existing land use plan, or other source are the same as described for the proposed action.

Table 2.4 Current Authorized Use Summary

Allotment	Number of Livestock	Kind	Class	From	To	AUMs
Nut Mountain	815	Cattle	Cow	4/16	10/15	4893

B. Grazing System

The Nut Mountain Allotment is comprised of five use areas:

1. Cavalry Camp Seeding
2. Hanging Rock
3. Mountain
4. Massacre Lakes
5. Upper Field

The current grazing system is designed to provide each of the five areas at least one growing seasons rest every other year. April 16 is the anticipated date for range readiness in the allotment. Presently cattle are turned out on the lower elevation areas and are herded and/or allowed to drift to the mountain as the season progresses.

Table 2.5 Current Grazing System

Use Area	Number of Cattle	Year 1	Year 2
Cavalry Camp Seeding	815	Rest	April 16 – June 15
Hanging Rock	815	April 16 – June 15	Rest
Mountain	815	June 16 – August 15	August 16 – October 15
Massacre Lakes	715	August 16 – October 15	June 16 – August 15
Upper Field (used in conjunction with Massacre Lakes pasture)	100	August 16 – October 15	June 16 – August 15

From mid April to early May cattle are trucked to the Massacre holding corrals in the Cavalry Camp Seeding or to a private field (Coyote Camp). Cattle are either turned out directly into the seeding or held at Coyote Camp until they are trailed to the Hanging Rock use area.

C. Range Improvements

No new range improvement projects are proposed under the no action alternative.

Alternative 3 - No Grazing

This alternative would cancel the permit on the Nut Mountain Allotment. As a result, grazing would not be authorized on this allotment. Under this alternative, BLM would initiate the process in accordance with the 43 CFR parts 4100 and 1600 to eliminate grazing on the allotment and to amend the resource management plans.

Actions common to Alternatives 1& 2

Creation of Desired Plant Communities (DPCs)

Alternatives 1 and 2 include establishment of a DPC by BLM in coordination with interested publics. The DPC defines the vegetative community considering the site potential and the desired products of that site. The DPC may or may not be similar to the potential natural community as stated in the Ecological Site Description (ESD); however the ESD describes the potential capability of a site, as well as some of the inherent limitations, allowing DPCs to be created according to reasonably attainable goals. DPCs for the Nut Mountain Allotment would be created for the major ecological sites in each use pasture. These DPCs will be referred to in the EA, and can be found as Attachment 1 in Appendix B.

Alternatives Considered but Dismissed from Further Analysis

During the TRT process, review of Appropriate Management Level (AML) for wild horses in the Nut Mountain HMA was requested by NDOW and NV Commission for the Preservation of Wild Horses. Since the AML for the Bitner HMA (which includes most of the Bitner allotment and a large percentage of the Nut Mountain Allotment) would need to be considered and analyzed in the proper context for both HMAs and allotments. This process is outside the purpose and need for the action and management options are available which would adequately mitigate resource impacts from wild horses. The Bitner Allotment permit renewal is not scheduled in the immediate future. Therefore, an alternative evaluating only the Nut Mountain HMA will not be considered at this time.

Several non-essential range improvement projects were proposed by the permittees during the TRT meeting; however, only those projects essential to implement the proposed livestock management and make progress toward achieving rangeland health standards will be considered at this time.

The current permittee (Pacific Livestock, Inc.) submitted an application to activate suspended AUMs on the Nut Mountain Allotment and requested that it be included as an alternative in this EA. However, activating suspended use is not warranted at this time, as the resource monitoring information indicates current use is not meeting all rangeland health standards. Furthermore, additional AUMs for grazing use would need to be considered and proportioned between livestock and wild horses. Since appropriate management levels for wild horses are not being considered, this alternative for livestock grazing will not be considered.

CHAPTER 3: ENVIRONMENTAL ANALYSIS

A variety of laws, regulations, executive orders, and policy directives mandate that the effects of a proposed action and alternatives on certain supplemental authorities (formerly known as critical elements) of the human environment and several other resource elements commonly affected by livestock grazing be considered. Not all of the supplemental authorities that require consideration in this EA will be present, or if they are present, may not be affected by the proposed action and alternatives (see Table 3.1). Only those mandatory supplemental authorities that are present and affected, or need to be considered, are described in this section.

Background material related to other resources is available on the Surprise Field Office web site and is within the Surprise RMP Final Environmental Impact Statement and Proposed Resource Management Plan. An overview of resources and uses of the NCA area is contained in the BLM’s 2003 for Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area and Associated Land in Nevada (BLM 2003).

To comply with the National Environmental Policy Act (NEPA), the following supplemental authorities of the human environment are subject to requirements specified in statute, regulation or executive order and must be considered:

Table 3.1 Supplemental Authorities of the Human Environment

Supplemental Authority	Not present	Present Not Affected	Present and Affected
Livestock Management			✓
Air Quality**	✓		
Areas of Critical Environmental Concern (ACEC’s)			✓
Cultural Resources			✓
Environmental Justice**	✓		
Essential Fish Habitat**	✓		
Farmlands, Prime and Unique**	✓		
Floodplains**	✓		
Invasive, Non-native Species			✓

Global Climate Change			✓
Native American Cultural Values**		✓	
Recreation**		✓	
Social and Economic Values			✓
Soils			✓
Wastes, Hazardous or Solid**	✓		
Water Quality, Drinking-Ground			✓
Wetlands /Riparian Zones			✓
Wild and Scenic Rivers**	✓		
Wilderness			✓
Wild Horse and Burros			✓
Wildlife/Threatened and Endangered Species			✓
Vegetation/Threatened and Endangered			✓

** Supplemental Authorities that are either not present or present and not affected and will not be discussed further in this document.

LIVESTOCK MANAGEMENT

A. Affected Environment

Nut Mountain Allotment is a perennial grazing allotment authorized for 815 cattle to utilize 4893 (Active) AUMs from April 16 to October 15 annually. The Nut Mountain Allotment is comprised of five use areas:

1. Cavalry Camp Seeding
2. Hanging Rock
3. Mountain
4. Massacre Lakes
5. Upper Field

Table 3.2 Current Grazing System

Use Area	Number of Cattle	Year 1	Year 2
Cavalry Camp Seeding	815	Rest	April 16 – June 15
Hanging Rock	815	April 16 – June 15	Rest
Mountain	815	June 16 – August 15	August 16 – October 15
Massacre Lakes	715	August 16 – October 15	June 16 – August 15
Upper Field	100	August 16 – October 15	June 16 – August 15

The current grazing system is designed to provide each of the five areas at least one growing seasons rest every other year. April 16 is the anticipated date for range readiness for the allotment. Presently cattle are turned out on the lower elevation areas and are herded and/or

allowed to drift to the mountain as the season progresses. During the Mountain Pasture’s season of use, cows are herded and distributed throughout the pasture (based on water availability) in an effort to decrease concentrations and heavy utilization.

From mid April to early May cattle are trucked to the Massacre Holding Corrals in the Cavalry Camp Seeding or to a private field (Coyote Camp). Cattle are either turned out directly into the seeding or held at Coyote Camp until they are trailed to the Hanging Rock use area. At the end of the grazing season cattle are gathered into the seeding and Massacre Holding Corrals before they are transported to winter pasture.

Range Developments

Range Developments (shown on Map 8) include developed springs, troughs, reservoirs, catchments, earth pits, earth tanks, wells, and windmills. Several of these projects are located within Wilderness or Wilderness Study Areas. Existing fences include allotment boundary fences and pasture division fences. Range developments on public land were authorized through BLM permit or cooperative agreement. All or most of the authorized range developments are in good condition and generally maintained on an annual basis. The permittee has recently developed many of the springs on his private land.

New range developments may be authorized only if necessary for resource protection and the effective management of those resources.

Actual Use History

The table below displays actual use on the Nut Mountain Allotment from 1997 to 2009.

Table 3.3 Nut Mountain Allotment Actual Use History

Nut Mountain Allotment Actual Use History								
Year	Pasture/AUMs					Active AUMs 4,893		
	Hanging Rock	Mountain Pasture	Massacre Lakes	Cavalry Camp Seeding	Upper Field	Total use	Percent of Active AUMs	No. of livestock
2009	1,091	1,663	1,449		192	4,395	90%	816
2008		1,866	723	1248	79	3,916	80%	732
2007	457	2,853	51	142	190	3,693	75%	616
2006		1,984	298	428	161	2,871	58%	611
2005		2,487	80	41		2,608	53%	566
2004	999	1,203	563			2,765	56%	622
2003		808	791	172	38	1,809	37%	567
2002	1,061	1,453	1,619		247	4,380	89%	713
2001	919	2,007	752	378	247	4,303	87%	685
2000						3,574	73%	671
1999						4,316	88%	767
1998		3,662	281	965		4,908	100%	760
1997						5,180	105%	760

B. Environmental Consequences

1. Impacts of Proposed Action

The establishment of three unfenced use areas in the Mountain Pasture in addition to new utilization standards in the Mountain West and Hanging Rock use areas would require diligence from the permittee to actively ride the allotment and herd livestock on a more frequent basis.

The proposed final grazing system would provide rest or deferment for all pastures and use areas except the Cavalry Camp Seeding. Northern portions of the Mountain Pasture have received light use in the past and will now be grazed from 5/16 to 6/30 in Year 1 and 8/1 to 8/30 in Year 2. The seeding would be used each year to allow rest for native pastures.

Maximum allowable use for key upland native grasses would be 60% except in the Hanging Rock use area which would be reduced to 40%, requiring close monitoring by the permittee.

During the interim management period, the permittee would be required to ride and check the use areas in the Mountain Pasture to ensure no livestock drift either into areas previously used or areas not yet scheduled for use. In addition, scheduled use during the interim period in the Mountain West use area would not exceed 30 days to minimize livestock use in affected riparian areas. Further, if monitoring determines that livestock use exceeds either the stubble height or utilization objectives in public riparian areas in the Mountain West and Hanging Rock use areas, scheduled use could be reduced by at least one week the following grazing season.

The proposed riparian protection developments would provide water outside of exclosures to livestock (as well as wild horses and wildlife) and therefore, would not affect grazing use.

2. Impacts of No Action

The No Action Alternative would maintain the current stocking rates and season of use. The existing permit would be re-issued under the same terms and conditions and the allotment would be managed under provisions of the 1983 Nut Mountain Allotment Management Plan (AMP) and Surprise RMP 2008. The permittee would continue his current livestock management practices.

3. Impacts of No Grazing

Under the No Grazing Alternative, no permit would be issued; the permit would be cancelled. As a result, the permittee would not be authorized to graze livestock on the Nut Mountain Allotment.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) (SUPPLEMENTAL AUTHORITIES)

A. Affected Environment

The Massacre Rim ACEC is 44, 870 acres in size and is located within the Massacre Rim Wilderness Study Area (WSA). Approximately 6,859 acres of the Nut Mountain Allotment lie within this ACEC. The Massacre Rim ACEC was established through the Surprise Field Office,

Resource Management Plan/Record of Decision of April 2008. The ACEC was designated to protect and enhance archaeological resources.

In 1984 the Surprise Field Office constructed an enclosure fence within the Nut Mountain Allotment in portions of the ACEC/WSA which contain a National Register of Historic Places (NRHP) Eligible Archaeological District. The intent of the enclosure was to eliminate cattle grazing from 1,836 acres of land within the Nut Mountain Allotment for the protection of non-renewable cultural resources. The enclosure fence has reduced impacts to cultural resources from cattle grazing. However, unauthorized cattle use has continued to occur within the enclosure on a near yearly basis due to fence maintenance issues. The permittee has recently been assigned maintenance responsibilities and asked to increase inspections of the enclosure in an effort to end the unauthorized use. In addition, unauthorized Off-Highway Vehicle (OHV) use and artifact collection continue to occur within the ACEC/WSA, incrementally affecting cultural resource values within the enclosure. Additional cultural resources are located outside of the enclosure and within the ACEC, specifically in the Upper Field. Cattle use is light in this field and no known cultural resources are being affected by range management activities.

B. Environmental Consequences

1. Impacts of Proposed Action

Under this alternative the duration of use for the Upper Field pasture, located within the ACEC, would decrease by two weeks and be earlier in the season, which could reduce any affects that may be occurring to cultural resources (see impacts to cultural resource discussed under the Environmental Consequences, Cultural Resources section). The Upper Field would be rested on the following year which would benefit cultural resources by eliminating any affects that could occur. The ACEC is unaffected by the remainder of the management actions under the Proposed Action.

2. Impacts of No Action

Under the No Action Alternative cattle use could continue to be light in the Upper Field and would not likely affect cultural resources.

3. Impacts of No Grazing

There would be no impacts from range management activities to resources located within the ACEC under this alternative, as there would be no cattle grazing.

CULTURAL RESOURCES (SUPPLEMENTAL AUTHORITIES)

A. Affected Environment

There have been 28 archaeological inventories, totaling 13,360 acres, conducted on the Nut Mountain Allotment. The inventories were completed in preparation for the Cowhead/Massacre Planning Unit, Environmental Impact Statement, range improvement projects, and a land exchange. There were 246 prehistoric archaeological sites recorded during the inventories. The sites are associated with a number of activities such as long-term occupation associated with

exploitation of lake shore resources, hunting and game processing, temporary resource processing, Petroglyphs, and tool stone quarries. National Register of Historic Places (NRHP) eligibility determinations have not been formally made on any of the 246 sites. However, three areas appear to be eligible to the National Register of Historic Places as Districts. The potentially eligible Districts contain a total of 45 sites. In addition, four individual archaeological sites appear to be NRHP eligible.

As discussed in the above ACEC section, an enclosure was built within the Nut Mountain Allotment in 1984 to protect a NRHP eligible archaeological district, which contains 24 prehistoric sites. Unauthorized cattle use has continued to occur within the enclosure on a near yearly basis. In addition, unauthorized Off-Highway Vehicle (OHV) use and artifact collection continue to occur within the enclosure and within other areas of the Nut Mountain allotment which contain cultural resources. The unauthorized activities incrementally affect cultural resource values within the allotment. In addition, impacts from wild horse use to the area on an annual basis are also affecting cultural resources within the allotment.

In preparation for this EA, eight NRHP eligible sites were assessed for impacts from current range management activities. Three of the sites have been severely affected by the development of the water sources and are continuing to receive cattle impacts. Range management activities do not appear to be affecting the five remaining sites due to the nature of the sites and the soils in which they are located.

The condition of the remainder of the previously recorded sites within the Nut Mountain Allotment is unknown at this time. The remaining sites within the Nut Mountain Allotment will be assessed in 2015 in accordance with the Supplemental Procedures Developed for the Livestock Grazing Permit Renewals, An Amendment to the Protocol between the Bureau of Land Management and the California and Nevada State Historic Preservation Offices. In accordance with the protocol the permit may be renewed prior to the cultural resource assessment being completed.

B. Environmental Consequences

1. Impacts of Proposed Action

Under the Proposed Action cultural resource sites have the potential to be affected by range management activities including cattle grazing. Sites that are located in areas where cattle tend to congregate are most vulnerable to livestock impacts. Areas of congregation tend to occur at both developed and undeveloped watering locations, salting locations, along fence lines, and in areas where shade is available. The types of impacts that can occur are: trailing, which can displace and/or break artifacts, and denude vegetation thereby destabilizing the soil causing erosion; wallowing, which causes subsurface disturbance to cultural resources containing buried deposits thereby compromising stratigraphic integrity of a site; and trampling, which causes artifact displacement and breakage.

Under the Proposed Action the authorized use would remain the same. However, a seven pasture/use area rest rotation system would be used, with the Mountain Pasture divided into three unfenced use areas. Intensive herding is essential in this pasture to ensure that utilization levels

are not exceeded. The proposed rest rotation system and intensive herding would likely improve vegetation condition; stabilizing the soil and cultural resource sites that could be indirectly affected by erosion. The three proposed riparian protection projects and the Trough Spring development modification could eliminate cattle impacts to three of the NRHP eligible sites discussed above by including the cultural resources within the exclosures.

Under the Proposed Action, affects to cultural resources under the Interim Grazing System would be similar to those in the Final Grazing System with the exception that use of the Mountain West use area would be two weeks shorter, which could result in reduced impacts to cultural resources. The Cavalry Camp Seeding would be used one month longer than under the Proposed Action, which could result in an increase in impacts to cultural resources.

2. Impacts of No Action

Under the Current Management potential impacts to cultural resources, such as trailing, wallowing, etc., could continue to occur from range management activities, including cattle grazing. There is no pasture rest rotation under this alternative, therefore erosion issues associated with areas of heavy use, which can indirectly affect cultural resources, would continue to occur. In addition, no riparian exclosures would be built and cultural resources associated with these areas would continue to be affected by cattle impacts.

3. Impacts of No Grazing

Under this alternative, there would be no impacts to cultural resources from range management activities.

INVASIVE, NON-NATIVE SPECIES

A. Affected Environment

Weeds are defined in this EA as plants that are invasive, noxious or non-native. Invasive weeds have the ability to out-compete and replace native plants, often creating their own monotypic plant community. Uncontrolled invasive and noxious weed infestations can result in decreases in native vegetation diversity, reductions in forage and wildlife habitat, and declines in agricultural crop values. Once established, invasive and noxious weeds are extremely difficult to eradicate; and returning affected plant communities to their native state can be a challenge.

The Nut Mountain Allotment was last surveyed for the presence of weeds in 2006. Few invasive or noxious weeds have been found within the allotment; however, bull thistle, musk thistle, Scotch thistle and perennial pepperweed were identified in small, localized patches. All known populations of weeds along roads and on public lands, and most known populations on unfenced intermingled private lands have been treated and monitored. Vehicles and OHV traveling on various routes and crossing the associated drainages along these routes, increase the likelihood that weeds will spread. Invasive and non-native plants include cheatgrass and Japanese brome, which were found in small amounts at three of the five evaluation sites during the 2008 rangeland health assessment.

B. Environmental Consequences

1. Impacts of Proposed Action

Livestock grazing in this allotment has not resulted in the establishment of any invasive or noxious weed sites to date. Livestock grazing in general represents a low risk of introduction and spread of invasive, non-native and noxious weed species; continued livestock use would be expected to produce similar low risks of introduction. Invasive, non-native and noxious species which are introduced or become established in the allotment would be expected to be detected early with continued vigilance, and these sites would be expected to be treated under the current weed management program. The implementation of SOPs during the construction of proposed range improvements would reduce the risk of introduction and/or spread of existing weeds. Upland areas in less than desired ecological condition are expected to improve under the proposed action, making these areas less susceptible to cheatgrass and invasive weed establishment and/or expansion in size. Implementation of the proposed action, including fencing would allow disturbed riparian sites to recover. The interim grazing system would have little to no effect on the introduction and spread of weeds.

2. Impacts of No Action

Based on current distribution of weeds, livestock grazing in this allotment has not resulted in the establishment of any invasive/noxious weed sites to date. Livestock grazing in general represents a low risk of introduction and spread of invasive and noxious weed species; continued livestock use would be expected to produce similar low risks of introduction. Invasive, non-native species which are introduced or become established in the allotment would be expected to be detected early with continued vigilance, and these sites would be expected to be treated under the current weed management program.

3. Impacts of No Grazing

Under the no grazing alternative, there would be no impacts from invasive and noxious weeds.

GLOBAL CLIMATE CHANGE

A. Affected Environment

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.

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.

B. Environmental Consequences

1. Impacts of Proposed Action

The amount of GHG emitted by livestock and their management under the Proposed Action is unknown. However, any contribution of GHG due to either alternative is not likely to have an effect on global climate.

2. Impacts of No Action (Current Management)

The amount of GHG emitted by livestock and their management under this alternative is unknown. However, any contribution of GHG due to either alternative is not likely to have an effect on global climate.

3. Impacts of No Grazing

As stated above, the amount of GHG contributed by human activities associated with cattle grazing is unknown; however, the GHG emitted by livestock (methane) would be eliminated in the project area due to the removal of cattle.

SOCIAL AND ECONOMIC VALUES

A. Affected Environment

The Surprise Valley is a rural community with a strong commitment to the tradition of cattle ranching which is the dominant element of the local economy. Many of the ranches have been in operation for several generations and rely on cattle for their income. Local agri-business derives income from related goods and services as well.

Federal permits to graze livestock on public land are an important factor of production for cattle ranchers in the West. The permits are linked to privately-owned base property and enhance the productive capacity of private property by providing additional forage during certain seasons. This allows for rest, or production of hay or other forage on private property. A common practice is to produce alfalfa or grass hay on irrigated pastures during the summer when cattle are on public rangeland.

The current Nut Mountain Allotment permittee does not reside in the local area. His home ranch is located in northwestern California, a few hundred miles from Surprise Valley. He does however, employ local ranch hands to manage his cattle herd on the allotment.

B. Environmental Consequences

1. Impacts of Proposed Action

More intensive herding required in the new terms and conditions (during the interim and final system) would be an added expense for the permittee in the form of increased salary for ranch hands to ride the allotment more frequently. Increased income could mean more dollars spent in the local community.

There could be a slight benefit to the local economy during construction of the proposed range improvements. Furthermore, the addition of these new improvements including water troughs, pipelines and fences would increase maintenance costs to the permittee.

2. Impacts of No Action

The No Action Alternative would have no affect on social and economic values because livestock operations would continue without changes to authorized use.

3. Impacts of No Grazing

If livestock grazing were eliminated, the permittee that relies on forage from the allotment would incur negative economic impacts because he would have to locate other grazing land and forage for his cattle. The availability, location and cost of other land are unknown, but are likely to cost the operator significantly more.

The local economy would sustain negative economic impacts due to the loss of revenue from grazing fees and related goods and services. Local ranch hands employed by the operator could be negatively impacted from the loss of seasonal work.

SOILS

A. Affected Environment

The soil classification for the Nut Mountain Allotment is contained in the Washoe County North Part Soil Survey, NV #759 (an Order III soil survey). The soil survey has been updated by the Natural Resources Conservation Service (NRCS) Reno State Office to current standards and can be found on the NRCS web site.

The primary soil series on the Nut Mountain Allotment that support low sagebrush include Devada, Tinpan, and Ninemile. Common soils supporting big sagebrush include Hart Camp, Westbutte, Ashtre and Tusune; Wyoming sagebrush sites are often located on the Hangrock, Saraph and Tuffo soils.

The BLM completed field assessments on the allotment in 2008 to determine if the rangeland health standards were being met. The allotment was found to meet the Rangeland Health Standards for soils. Data from five Upland Health Assessments rated Soil/Site Stability as stable and Hydrologic Function as functioning for all sites evaluated. Additional soils information is contained in the Nut Mountain Rangeland Health Determination.

Microbiotic Soil Crusts

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. Bryophytes (mosses and liverworts) are the most prevalent in the allotment. The biological crusts benefit soils by increasing moisture retention, fix nitrogen, and may discourage the growth of annual weeds. Most biological crust organisms make their growth

during cool moist conditions. However, Mountain, low sagebrush and Wyoming sagebrush types often lack significant biological (soil) crust cover due to dense vascular vegetation and accumulating plant litter. The relatively dry climate, particular during the summer months is not conducive to crust development on the Nut Mountain Allotment.

There are several reasons for decreases in soil crust which include extensive livestock and wild horse grazing, wildfires, and more recently off-road vehicle use. In addition, the reason for limited soil crust is inversely related to vascular plant cover. 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.

B. Environmental Consequences

1. Impacts of Proposed Action

The Proposed Action is expected to have positive effects on upland soils. The final grazing system would provide rest or deferred use and rotation for all use areas except the Cavalry Camp Seeding. Rest would allow key forage species to complete growth cycles which would result in increased cover, litter and soil organic matter. Although the 2009 Rangeland Health Assessment determined that upland soils throughout the allotment were stable, there is still an opportunity for improvement of ecological condition in the Hanging Rock use area.

Soil disturbance from livestock management and the trampling action of 815 cows in the Nut Mountain Allotment would be light due to the distribution and livestock movement throughout the 75,000 acre allotment and 5 pasture (7 use areas) grazing system. Soil compaction from cattle and wild horses would still be expected at water sources throughout the allotment as well as along newly constructed fences and exclosures. However, with the addition of short term objectives to limit use, more frequent herding to reduce livestock concentrations, and the implementation of proposed monitoring by the permittee and BLM, these effects should be reduced. The Desired Plant Community objectives were meant to address both soil and vegetation health and the proposed DPCs would result in increased cover. This coupled with attainment of use objectives which would increase cover and residual litter should result in more protection for soils over the current system in the long term.

During the interim management period, soils in the Mountain and Hanging Rock use areas would benefit most due to the shortened season of use and rest. Except for the Mountain North, which has received little use in the past, these use areas would be scheduled for use every-other-year for one month. With the shortened season of use, rest and deferment (Mountain North), upland vegetation would complete growth cycles increasing residual litter and cover.

Cattle and wild horses can apply compressional and shear forces to the soil that can reduce the cover of biological crusts; however, they would likely partially recover within days following a precipitation event, (Interagency Technical Reference 1730-2, 2001). Coarse textured sandy soils that are generally associated with Wyoming and big sagebrush communities in the Nut Mountain Allotment are better able to withstand disturbances during moist periods. In the short term, with implementation of the proposed action there would be positive impacts to soil crust

from an expected increase of litter as result of scheduled rest in both the interim and final grazing systems.

2. Impacts of No Action

Moderate utilization guidelines are intended to provide for adequate litter and decrease the likelihood of trampling and compaction of soils. However, under the No Action Alternative, heavy utilization is expected to continue in the vicinity of riparian areas and water sources without the proposed fencing. Furthermore, without more frequent herding, livestock distribution would continue to be uneven with some areas receiving heavier use than others. Soils and associated biological crusts around riparian areas and water sources would likely continue to be trampled and compacted. The erosion to the channel below Rock Spring riparian area would continue due to the culvert not being installed.

3. Impacts of No Grazing

In the short term, plant vigor and litter would improve rapidly. Organic matter would increase but would not be incorporated into the soil as fast as the previous two alternatives. In the long term, plant vigor and litter could decline as the amount of standing dead litter is increased but is not being incorporated into the soil. There would be no disturbance to soil crusts from livestock grazing, however, wild horses will continue to impact soils, including biology crust and vegetation on and near riparian areas in the absence of cattle. Wild horse use would also cause trampling and compaction on riparian soils near watering sites.

C. References

Soil Survey of Washoe County, Nevada, North Part - NV759, 1999
Interagency Technical Reference 1730-2, 2001, Biological Soil Crust: Ecology and Management.

WATER QUALITY, DRINKING-GROUND (SUPPLEMENTAL AUTHORITY)

A. Affected Environment

Water quality in the Surprise Field Office area is discussed in terms of water quality indicators and waterbodies listed as impaired. Primary indicators used for management of impacts on water resources are temperature, nutrients, fecal coliform, turbidity, sediment, dissolved oxygen (DO), and stream channel condition. Indicators were chosen based on the Standards and Guidelines.

The Nut Mountain Allotment falls within three watersheds; Massacre Lake # 16040204, Smoke Creek Desert #16040203 and Guano #17120008. The area is entirely within northern Washoe County, Nevada.

Hanging Rock Creek is the only perennial stream within the Nut Mountain Allotment. One water quality station for the allotment is located at the spring source at the head of Hanging Rock Creek. Baseline water quality was established in 2002 and 2003 and is currently meeting the State Numeric and Narrative Standards, Beneficial Use needs and BLM Standards. Neither surface water nor groundwater within the allotment has been listed for exceeding State water

quality standards. Below is water quality data collected in 2002 – 2003:

Spring Source at Hanging Rock Creek 2002-2003

Estimated discharge: 0.05 cfs
Temperature (C°): 12.03 °C average
DO (mg/l): 7.19 mg/L average
Phosphate (mg/L): 0.26 average
pH: 7.9 average
Fecal coliform: 0

Nevada standard for Class A

Must not exceed 20 °C
Must not be less than 6.0 mg/L
Must not exceed 0.30 mg/L in streams
Range between 6.5 to 8.5
The fecal coliform concentration, based on a minimum of five samples during any 30-day period, must not exceed a geometric mean of 200 colonies/100mL nor may more than 10 percent of total samples during any 30-day period exceed 400 colonies/100mL.

B. Environmental Consequences

1. Impacts of Proposed Action

Only one water quality station has been established on the allotment at the source of Hanging Rock Creek. In 2003 when data was last collected, standards were being met. Since the lower reaches of the creek are at PFC, standards are likely being met on the entire creek. Further, since no management changes had been made since 2003, water quality conditions are probably stable at the site. The proposed action including the interim system would improve water quality due to the exclusion of livestock and wild horses from the upper public portion of the creek.

2. Impacts of No Action

Since water quality standards on Hanging Rock Creek were met under current livestock management, standards would likely continue to be met under the No Action Alternative.

3. Impacts of No Grazing

As stated above, quality standards on Hanging Rock Creek were met under current livestock management; therefore water quality could improve further from the elimination of livestock grazing impacts under the No Grazing Alternative.

WETLANDS/RIPARIAN ZONES (SUPPLEMENTAL AUTHORITY)

A. Affected Environment

The following is summarized from the 2008 Rangeland Health Determination available at the Surprise Field Office website.

Lentic riparian areas on public land within the allotment consist of Rock Spring, Miller & Lux, and Trough Springs; lotic riparian habitat exists along Hanging Rock Creek. Lentic riparian sites all have man-made ponds associated with them to provide water for livestock and wild horses. The ponds are considered livestock developments and therefore exempt from the standards for riparian and wetlands (S&G exception to Standard # 4). Riparian Functional Assessments (RFA) were conducted on riparian habitats within the allotment based on 2008 site visits, aerial photos

from 2001, NAIP 2005 digital aerial photos, water source inventory (WSI) data from 1985, 1993 RFA's, and 2006 NCA spring inventory data for Trough Spring.

Miller & Lux Spring is located at NE ¼ Sec 9 T42N R22E and consists of approximately ¼ acre of riparian habitat above the development and approximately 1,000 feet of riparian habitat below the development (July 2001 aerial photo). In 2008 it was noted that this site was receiving trampling impacts from wild horses and cattle. The riparian habitat above Miller & Lux Spring was visited in 2008 and rated as non-functional based on the lack of vegetation necessary for the riparian to properly function. Riparian habitat below Miller & Lux was not rated but is receiving impacts from wild horses and cattle due to its proximity to the spring source. This habitat will be included in the planned enclosure (see Map 5).

Rock Spring is located at SW ¼ NW ¼ Sec 34 T43N R22E and consists of approximately 600 feet of riparian habitat below the pond (July 2001 aerial photo). The spring source is part of the Rock Spring development and was not rated in 2008. The original 1985 WSI noted wildlife and cattle use and that the area was "degraded". In 2008 it was noted that this site was receiving trampling impacts from wild horses and cattle. The 600 feet below Rock Spring was rated as functional at risk (FAR) with an upward trend.

Trough Spring is located at SW ¼ Sec 9 T42N R22E and consists of approximately 3,600 square feet of riparian habitat above the pond. Additional riparian vegetation exists downstream of the pond on the Massacre Mountain Allotment. The original WSI noted wildlife, cattle, and wild horse use. In 2008 wild horse and cattle impacts were noted. Trough Spring was rated as non-functional based on the lack of vegetation necessary for the riparian system to properly function.

Hanging Rock Creek is the only perennial flowing creek on the Nut Mountain Allotment. The creek flows through both public and private lands. Private segments of the stream as well as some public segments totaling approximately 1.1 miles (6,000 feet) are completely fenced and grazing by cattle and wild horses is limited or restricted. Riparian functioning condition was assessed in August of 2008. Based on the land status and geography, the stream was divided into three reaches for assessment purposes. Private segments of the stream comprising approximately 6,300 feet (62%) of the overall length of perennial flow were not assessed; however a public stream segment flowing between two private parcels was evaluated. This approximately 650 foot reach has herbaceous and woody riparian vegetation which is being heavily grazed by livestock and wild horses. Aspen occur in pockets within the reach and suckers and young trees are not being recruited due to the heavy use. The stream channel is narrow and downcut up to approximately 4 feet in some places. Water temperature at the spring source was recorded at 61° F on 20 August 2008; water at temperature at the bottom of the reach (about 1/3 mile downstream) was recorded at 62° F on 19 August 2008. Results from a Lotic Functional Assessment indicated the reach was functioning at risk with a downward trend.

The Middle reach lies entirely within a fenced private field and consists of approximately 600 feet of public stream situated at the lower end of an approximately 3,800 foot stream segment. This area is not grazed by livestock and the permittee actively works to keep grazing use out of this reach. However, limited wild horse use and unplanned livestock use does occur. The reach terminates at the mouth of Hanging Rock Canyon where a drift fence splits the private lands. This reach is characterized by a narrow riparian zone dominated by herbaceous and woody

vegetation. Aspen, choke cherry, *Ribes* sp., and rose are scattered throughout this reach. Pioneering aquatic vegetation is present within the channel and along streambanks. In many instances, due to past downcutting, sagebrush and other upland plant species extend to the water's edge; however this occurrence is frequently associated with the exposed banks where the stream is actively widening the floodplain. This reach of the stream is negatively affected by frequent scouring by seasonal runoff originating from side drainages and the narrowness of the valley bottom. Exposed banks with coarse rocky debris and sand/silt deposits are common in the pools. A small population of brook trout and speckled dace persists throughout the reach but are isolated to scattered pools during base flow conditions in the summer. Water temperature was measured within the approximately 600 foot public segment and recorded at 57° F on 19 August 2008. The 2008 RFA resulted in a rating of properly functioning.

The Lower public reach consists of two separate segments totaling approximately 2,000 feet of perennial flow divided by a segment of stream occurring on private land. Similar to the middle reach, the permittee actively works to prevent unplanned livestock use in this pasture, and wild horse use is limited. Vegetation along this reach is dominated by herbaceous riparian vegetation. The stream channel is confined in the upper public segment and unconfined in the lower public and private segments. The permittee periodically diverts the water in this reach onto the uplands to irrigate the seeding. Stream bottom substrates in this reach are dominated by smaller diameter rock and sand/silt deposits. There is abundant evidence of frequent high flows outside the channel and floodplains are well established or developing. Only the upper public segment was rated in 2008 for functionality; however observations confirmed that the lower public segment was in a similar condition. The lotic functional assessment for this reach resulted in a rating of properly functioning.

B. Environmental Consequences

1. Impacts of Proposed Action

The construction of the proposed projects would have positive impacts to riparian resources in the allotment. The proposed protective exclosures at Miller & Lux, Trough Spring, Rock Spring, and Hanging Rock Creek, would enable riparian vegetation to recover and allow the systems to progress toward proper functioning condition. The use of standard operating procedures, including ensuring that water diversions maintain free flowing surface water at riparian sites, would ensure that potential impacts from water diversion such as dewatering of the riparian zone, would be reduced or eliminated. Use of float valves at the troughs also ensures that only the amount of water needed for livestock or wild horse use, as well as that needed to replace evaporative water loss, is flowing to the troughs. Greater benefits to species diversity are anticipated at Hanging Rock Creek due to expected increases in woody species as well. Additional habitat would become available for fish and other aquatic species with improvements along Hanging Rock Creek.

The shortened season of use by 15 days in the Mountain West use area during interim management would slightly benefit riparian systems at Rock Spring, Trough Spring, and Miller & Lux by reducing cattle use. Riparian habitat along Hanging Rock Creek could improve since the season of use would be shortened during interim and final grazing management. Herding and turnout procedures outlined in the “Short Term – *Riparian Objectives*” section would contribute to decreased use of all riparian sites including use of riparian woody and herbaceous vegetation

along Hanging Rock Creek during interim management. These interim management actions would not impact wild horses which would be expected to continue using riparian sites in the allotment until the proposed projects are constructed.

2. Impacts of No Action

Under this alternative, the number of livestock and the total amount of use would remain the same with continued uneven distribution and heavy utilization in certain areas. There would be no new projects constructed to protect riparian areas. Impacts to riparian areas at Miller & Lux, Trough Spring, Rock Spring, and Hanging Rock Creek would continue and progress toward achievement of proper functioning condition would not be realized.

3. Impacts of No Grazing

Under this alternative there would be no new projects constructed to protect riparian areas. Impacts to riparian resources from cattle and wild horses would continue; however, there would be less combined impacts from wild horses and livestock. Achievement of proper functioning condition would not be realized due to potential season long use from wild horses.

WILDERNESS (SUPPLEMENTAL AUTHORITY)

A. Affected Environment

Approximately 16,550 acres of the Massacre Rim Wilderness Study Area (WSA) are located in the northern portion of the allotment. The southern part of the allotment includes 11,915 acres of the Black Rock Desert-High Rock Canyon Emigrant Trails NCA and 3,505 acres of the East Fork High Rock Canyon Wilderness Area (refer to Map 1).

Wilderness Areas are to be managed to preserve and protect their wilderness character, provide for their use and enjoyment by the American people in such a manner that will leave them unimpaired for future use and enjoyment as wilderness, and allow for recreational, scenic, scientific, educational, conservation, and historical use (43 CFR 6300). Actions proposed within wilderness are evaluated on the basis of their possible direct and indirect impacts on wilderness values of naturalness, solitude and primitive or unconfined recreation, and special features. Several special features were specifically mentioned for the Wilderness Areas in the NCA Act of 2000; they are: prehistoric Native American sites, untouched segments of the historic California Emigrant Trails, wagon ruts, historic inscriptions, a largely untouched emigrant trail viewshed, threatened fish and sensitive plants, and some of the largest natural potholes in North America.

The Wilderness Act of 1964 and the NCA Act of 2000 allowed grazing to continue in wilderness areas where it was established prior to designation, subject to reasonable regulations that are deemed necessary by the Secretary of the Interior. Congress gave additional insight/interpretation (of the Wilderness Act) in House Report 96-1126. Current livestock grazing within the wilderness area on the Nut Mountain Allotment was addressed in the Black Rock Desert-High Rock Canyon NCA Resource Management Plan (NCA RMP).

B. Environmental Consequences

1. Impacts of Proposed Action

Impacts from livestock use to the small portion of the East Fork High Rock Canyon Wilderness Area located within the allotment would decrease due to a shortened season of use in the Hanging Rock use area. The deferment in both the final and interim grazing system for the Mountain Pasture would reduce impacts to vegetation and associated naturalness, while the objectives and monitoring would ensure continuing progress toward achieving land health standards. Other terms and conditions provide a mechanism to adjust management appropriately in response to unacceptable levels of use in sensitive areas.

No new range improvements are proposed within wilderness or wilderness study areas.

2. Impacts of No Action

Grazing management would remain unchanged under this action and no new range improvements would be constructed. Therefore, there would be no new impacts to wilderness areas.

3. Impacts of No Grazing

No new impacts to wilderness areas are expected under this alternative as cattle would be removed from the allotment and no new range improvements would be constructed.

WILD HORSES AND BURROS

A. Affected Environment

Two Herd Management Areas (HMAs) lie within the boundaries of the Nut Mountain Allotment. The Nut Mountain HMA lies entirely within the allotment south of NV 8A; a portion of the Bitner HMA lies within the allotment north of NV road # 8A (refer to Map 2 Appendix A). Excess wild horses were gathered from both HMAs in 2007 which brought numbers into Appropriate Management Level (AML); AML is 15-20 horses for the Bitner herd and 30-55 for the Nut Mountain herd.

Based on post census and follow-up census in March 2008 and projected recruitment rates of 20% per year, the current estimated wild horse populations on the Nut Mountain HMA is 42 horses, well within established AML ranges (30-55 horses). The Bitner HMA population is currently estimated at 39 horses, moderately above the AML range of 15 to 25 animals. During the September 2007 gather and on previous gathers on the adjacent High Rock and Wall Canyon HMA, marked horses from the Nut Mountain HMA were gathered indicating there are varying levels of horse movement between all of these HMAs.

B. Environmental Consequences

1. Impacts of Proposed Action

The Proposed Action would not affect the wild horse population because the permitted livestock use on the allotment would remain unchanged. Proposed range improvements would be designed and constructed to provide water to wild horses as well as livestock and wildlife. The

construction of the exclosures would slightly reduce the free-roaming behavior of wild horses in the HMA, but fences would be constructed in manner to minimize impacts to wild horses. Spring developments would be constructed to allow for year-around water. The proposed fences would not infer with the free-roaming behavior of wild horses.

2. Impacts of No Action

Forage and water allocations would remain unchanged and wild horses would continue to have access to public water sources year-around. Subsequent wild horse removals would still be required to maintain animal populations in a thriving natural ecological balance. There would be no impacts to the free-roaming behavior of wild horses in the HMAs since the drift fence and exclosures would not be constructed.

3. Impacts of No Grazing

Implementation of the No Grazing Alternative may benefit the wild horse population by eliminating livestock competition for forage. The lack of competition from livestock could result in higher annual population increases. However, wild horse impacts would continue on the limited riparian resource, and associated rangeland health standards are not likely to be met. Appropriate management levels are also unlikely to change due to the limited number of water sources on public lands in the allotment/HMA. Subsequently, periodic wild horse removals would still be required to manage populations within a thriving natural ecological balance.

WILDLIFE/THREATENED AND ENDANGERED SPECIES (T&E SUPPLEMENTAL AUTHORITY)

A. Affected Environment

Data from the Nevada Department of Wildlife NDOW indicates that about 9,000 acres of public land in the eastern half of the allotment are occupied by California bighorn sheep (*Ovis canadensis californiana*). These acres are located entirely in the Mountain Pasture. Habitat for bighorn includes steep rocky terrain for escape cover and bedding opportunities adjacent to open vegetation for foraging and water. Due to predation issues, high quality bighorn sheep habitat (steep areas) generally has water within ¼ mile. This species can be found in a variety of habitats including big and low sagebrush, juniper woodland edges, perennial grasslands and bitterbrush. Although woodlands areas can be used, this species prefers low growing vegetation in order to better spot predators.

Pronghorn antelope (*Antilocapra americana*), or pronghorn, can be found throughout the allotment yearlong and are known to kid in the higher elevations (office and NDOW data). Pronghorn prefer open rangelands that support a variety of vegetative types. Unlike most of their typical range, pronghorn locally can be found in areas with taller vegetation including trees. Predation issues are generally considered to be the factor why pronghorn are not typically found in heavier cover types. Areas with low shrubs typify summer habitat with a diversity of native grasses and forbs (Gregg et. al. 2001). Vegetative heights where pronghorn are found can vary; however 10-18 inches has been reported for pronghorn in grassland and shrub steppe communities (Yoakum 2004). There does not appear to be a dependence on open water, if there is sufficient moisture in the vegetation (Reynolds 1984, O’Gara 1978). Although forbs are an important component of the diet, browse is the dominant food ingested (Pyshora 1977). Like all

big game species forbs are preferred forage and contribute a high amount of protein and minerals to the diet of pronghorn antelope.

Mule deer (*Odocoileus hemionus*) use occurs during the summer at the higher elevations of the allotment. To aid in thermoregulation, deer utilize various topographic aspects, south in the winter and north in the summer. Heavy shrub and tree cover also aids in thermoregulation. Deer are generally classified as browsers, with shrubs and forbs making up the bulk of their annual diet. The diet of mule deer is quite varied and the importance of various classes of forage plants varies by season however sagebrush and bitterbrush are important components throughout the year. Most bitterbrush stands occur in the Mountain Pasture with smaller amounts also occurring in the Lake Field and Cavalry Camp Seeding (see Table 3.5 below).

The Nut Mountain Allotment is split between NDOW hunt unit 011 and hunt unit 012. NDOW collects data based on hunt units and not on an allotment basis and often reports pooled information for big game from several units together. Mule deer data (see link below) for units 011-015 indicate that mule deer numbers are trending down to slightly increasing for the various mule deer populations in northwestern Nevada. The adjacent unit 033, the Sheldon Refuge, is also experiencing continued low recruitment levels. Pronghorn populations in hunt units 011 and 015 are expected to continue increasing trends while those populations within hunt units 012, 013, and 014 are expected to remain static. According to NDOW, big game animals are experiencing declines due to drought conditions (7 of the last 10 years) affects on vegetation, and competition with wild horses. Despite the affects of drought, hunt unit 012 shows a slight upward trend in bighorn sheep numbers. NDOW does not track bighorn in unit 011.

<http://www.ndow.org/about/pubs/index.shtm#general>

Table 3.4 Summary of Major Vegetative Communities in the Nut Mountain Allotment based on soils. Note: Private lands are included in this table; but most private are fenced and only account for 8 percent of the allotment.

Acres	Percent	Community
2145.69	3.0	Big sagebrush (including mountain, Wyoming, and basin)
1703.04	2.4	Combination of big sagebrush and bitterbrush
5914.04	8.3	Combination of big sagebrush and herbaceous vegetation
8270.73	11.6	Combination of big sagebrush and low sagebrush
1962.2	2.8	Combination of greasewood and herbaceous vegetation
12448.5	17.5	Combination of low sagebrush and bitterbrush
3489.36	4.9	Combination of low sagebrush and juniper
240.71	0.3	Combination of silver sagebrush and low sagebrush
4926.23	6.9	Combination of Wyoming big sagebrush and low sagebrush
2275.74	3.2	Low sagebrush, including early, Lahontan, and black sagebrush and rabbitbrush
148.13	0.2	Seasonally wet, no salt influence
919.45	1.3	Seasonally wet, salt influenced
2559.01	3.6	Unvegetated areas (rock, water, playa, etc)
53.72	0.1	Upland herbaceous, no salt influence
24193.61	34.0	Wyoming big sagebrush
71250.16	100.0	TOTAL SUM

Table 3.5 Summary of Major Vegetative Communities in the Nut Mountain Allotment by current pasture. Note: Private lands are included in this table; but most private lands are fenced and only account for 8 percent of the allotment.

Mountain Pasture (includes Hanging Rock Use Area)		
Acres	Percent	Community
70.2	0.1	Big sagebrush (including mountain, Wyoming, and basin)
1703.0	3.6	Combination of big sagebrush and bitterbrush
5914.0	12.5	Combination of big sagebrush and herbaceous vegetation
6297.4	13.4	Combination of big sagebrush and low sagebrush
12130.7	25.7	Combination of low sagebrush and bitterbrush
4057.8	8.6	Combination of Wyoming big sagebrush and low sagebrush
1070.2	2.3	Low sagebrush, including early, Lahontan, and black sagebrush and rabbitbrush
68.5	0.1	Seasonally wet, no salt influence
53.7	0.1	Upland herbaceous, no salt influence
15796.2	33.5	Wyoming big sagebrush
47161.8	100.0	
Upper Field Pasture		
6.0	0.1	Combination of greasewood and herbaceous vegetation
3489.4	68.9	Combination of low sagebrush and juniper
185.4	3.7	Combination of silver sagebrush and low sagebrush
1169.1	23.1	Low sagebrush, including early, Lahontan, and black sagebrush and rabbitbrush
214.0	4.2	Wyoming big sagebrush
5063.9	100.0	
Calvary Camp Seeding – (about 52% of this pasture seeded with crested wheatgrass)		
1631.9	23.3	Big sagebrush (including mountain, Wyoming, and basin)
467.8	6.7	Combination of big sagebrush and low sagebrush
116.2	1.7	Combination of greasewood and herbaceous vegetation
26.2	0.4	Combination of low sagebrush and bitterbrush
859.0	12.2	Combination of Wyoming big sagebrush and low sagebrush
79.7	1.1	Seasonally wet, no salt influence
3837.1	54.7	Wyoming big sagebrush
7017.8	100.0	
Lake Field – (about 5% of this pasture seeded with crested wheatgrass)		
443.4	3.7	Big sagebrush (including mountain, Wyoming, and basin)
1505.6	12.5	Combination of big sagebrush and low sagebrush
1840.0	15.3	Combination of greasewood and herbaceous vegetation
291.6	2.4	Combination of low sagebrush and bitterbrush
55.3	0.5	Combination of silver sagebrush and low sagebrush
9.5	0.1	Combination of Wyoming big sagebrush and low sagebrush
36.4	0.3	Low sagebrush, including early, Lahontan, and black sagebrush and rabbitbrush
919.5	7.7	Seasonally wet, salt influenced
2559.0	21.3	Unvegetated areas (rock, water, playa, etc)
4343.7	36.2	Wyoming big sagebrush
12004.1	100.0	

Other species known to occupy the allotment include black-tailed jackrabbit, ground squirrel, lizards, coyote, raven, northern harrier and various songbirds. Two data points from survey blocks conducted by the Great Basin Bird Observatory on similar habitats adjacent to the allotment indicate that several sage-steppe obligate birds besides Greater sage-grouse are found within the allotment including Brewer’s sparrow, sage thrasher, and sage sparrow. These birds require a mix of open, patchy sagebrush, tall sagebrush, and grass cover for nesting and foraging. Active rodent burrows and ant hills were found during 2008 field tours. Prairie falcons and golden eagles are known to nest within the allotment.

Brook trout have recently been identified in Hanging Rock Creek with other trout species having been found in the creek over the last two decades. Local knowledge indicates that various trout species have been planted in the creek in past years.

BLM Sensitive Species

The 2006 Larrucea survey detected two active pygmy rabbit (*Brachylagus idahoensis*), burrows in the allotment, one located within the 1,480 acre cultural resource protection enclosure and the second located in the Mountain Pasture. Pygmy rabbit are dependent on sagebrush, primarily big sagebrush (*Artemisia tridentata*) located in deeper soils; therefore other sites within the allotment may have pygmy rabbit as well (see Table 3.6). Soil types where burrows are found can be loamy to ashy and burrows are generally found greater than 72 cm (20 in) deep. In Oregon, overall shrub cover at pygmy rabbit sites averaged 28.8% and ranged from 21.0-36.2%. According to the species field report for the Ruby Pipeline, 60.0 percent of sites in Nevada exhibited 26–50 percent canopy cover. Larrucea and Brussard (2008) surveyed the historic range of pygmy rabbits in Nevada and California, and found a greater probability of occupancy by pygmy rabbits at sites with low (or no) understory. Pygmy rabbit burrows are almost always under big sagebrush and only rarely in the open. In some instances they are known to use the old burrows of badger and marmots, as well as other natural cavities or holes in rock or in the ground. Cottontail rabbits are known to use pygmy rabbit burrows. Table 3.6 provides an estimate of acres where pygmy rabbit burrows could be located based on soils adjacent to known active and old sites from the 2006 Larrucea survey.

Table 3.6 Potential pygmy rabbit burrow habitat within pastures in the Nut Mountain Allotment. Note: Private lands not removed in this table; however private lands only account for 8 percent of the allotment.

Pasture	Acres	Percent of Pasture
Calvary Camp Seeding	633	9.0
Lake Field	1,618	13.5
Mountain/Hanging Rock	16,000	33.9
Upper Field	6	0.1

On BLM lands of the Surprise Field Office, historic and active Greater sage-grouse (*Centrocercus urophasianus*) strutting grounds known as “leks” are located primarily in open, low sagebrush habitats. Leks are areas where males display for breeding females. The same display areas are used year after year and are monitored by biologists to help determine population numbers. Two active Greater sage-grouse, or sage-grouse leks exist in the allotment, one being a new lek, Little Nut Spring, found during 2009 surveys by the Nevada Department of

Wildlife (NDOW). These leks are located in the Mountain and Upper Field Pastures. These leks are found in communities dominated by low sagebrush, specifically low sagebrush and juniper and low sagebrush and bitterbrush. Early work estimated that most females nested within 3.2 km (2 miles) of leks; however recent studies indicate that females may nest up to 5.1 km (3.2 miles) away. At least one female radio collared on the Surprise Field Office successfully nested 14.5 km (9 miles) from the lek she was captured on. Although many nests have been found in lower quality habitats these are almost always unsuccessful due to nest abandonment and predation. Sage-grouse nest on the ground, most often under taller sagebrush cover (15-38% shrub canopy; 36 -79 cm shrub height) such as the “big” sagebrush types and Wyoming sagebrush. Successful nesting habitat contains taller grass cover (>18 cm or 7 in) in association with this sagebrush. Based on vegetation and the known location of active leks, the Mountain and Upper Field Pastures have the greatest potential to support sage-grouse nesting in the Nut Mountain Allotment (see Tables 3.7 and 3.8). Peak egg-laying and incubation varies from late March through mid-June, with re-nesting stretching into early July. Sage-grouse utilize sagebrush stands as both winter and nesting habitat. Harvest data for the allotment indicates fall use by sage-grouse and brood rearing data suggests summer use.

Brood-rearing habitats are wet meadow and riparian areas where the young can find abundant insects which are critical to their diets during the first few weeks of life. Estimated summer home range is 2.5 – 7 km² (618-1,730 ac). Sage-grouse feed on sagebrush buds, flowers throughout much of year, especially fall – early spring; also insects. Forbs are important food sources for brood rearing and pre-nesting hens. During field visits to the allotment, sage-grouse sign was found around some riparian areas indicating use of these areas.

High and low population trends are similar annually to the adjacent Sheldon National Wildlife Refuge (NWR). Consistent counts of bird attendance at leks have only occurred since 2002 on the Surprise Field Office and since about 1990 for the Sheldon National Wildlife Refuge. Survey numbers show that sage-grouse populations peaked between 2004-2007 for both the Surprise Field Office and the Sheldon NWR (see Tables 3.7 and 3.8 below for a comparison of closest Sheldon complex still being counted). The Massacre Bench Complex of leks is tracked within the Vya population management unit (PMU), the Nut Mountain Complex is tracked within the Massacre PMU, and the Gooch Table complex is tracked within the Sheldon PMU. Lek count numbers generally declined on both the Surprise Field Office and the Sheldon NWR in 2008, and then increased in 2009. 2009 data indicates that both the Sheldon and Vya PMU chick/hen ratios are above the estimated ratio of 2.25 chicks/hen needed to sustain or increase population numbers in those PMU’s. The 2009 data for the Massacre PMU was 2.16, slightly below the estimated needed ratio. The county ratio was 2.54 in 2009.

Table 3.7 Lek counts by year for the Massacre Bench complex (NDOW 2009).

Surprise Field Office Leks	2004	2005	2006	2007	2008	2009
Massacre Bench South NV 56	NC	0	0	0	0	7
Massacre Bench (182) NV 78	NC	0	0	0	4	29
Massacre Bench East	36	NC	NC	45	36	33
Massacre Bench North (184) NV 85	NC	14	0	47	33	41
Post Canyon Springs	30	NC	52	42	20	23
Little Nut Spring*	-	-	-	-	-	6

* In the future, Little Nut Spring will be recorded with the Nut Mountain Complex of birds. NC”= no count.

Table 3.8 Lek counts by year for the Gooch Table complex (NDOW, 2009). Data from nine additional leks within this complex not included as they were not counted from 2004-2009.

Sheldon NWR Leks	2004	2005	2006	2007	2008	2009
Mud Lake # 211	64	108	102	85	39	88
South Gooch Lake # 231	100	83	74	64	63	27
West Hell Creek # 238	28	32	36	42	31	23
N. Gooch Lake # 241	2	0	NC	0	2	0

“NC”= no count

Golden eagles regularly forage in the allotment and locally utilize cliffs for nesting. An early study from central California showed that mammals made up 77 percent of golden eagle diets (specifically ground squirrels, jackrabbits, and black-tailed deer fawns), although there was also an assortment of birds (including turkey vulture), snakes, and a few fish (Carnie 1954). There have been three known nesting areas in the allotment, all within the Mountain Pasture. One site was found to be inactive in 2002 and 2003 and has not been revisited. A second site was visited four times from 2002 to 2008 and found active twice. A third site was visited twice in 2002 and 2003 and found active once.

Sage sparrows (*Amphispiza belli*) are often associated with big sagebrush, but other shrublands are also regularly used with bare ground preferred over grass cover between shrubs. Their nest is a cup of dry twigs and herb stems located on the ground beneath a shrub; or in a shrub usually 0.15 to 0.45 m (6-18 in) above ground, but up to 1 m (39 in). Their known breeding in Nevada is from early April to early August, with a few remaining to winter in the Great Basin each year. Sage sparrows tend to abandon sites that lose sagebrush cover or sites with a substantial cheatgrass component. This species feeds mostly on insects, spiders, and seeds while breeding, and mostly on seeds in winter; they also consume green foliage. Although sage sparrows drink regularly, a portion of their water needs are supplied by consumption of invertebrates.

Threatened and Endangered Species

There are no federally listed or proposed for listing species which are known to use the allotment. The sage-grouse became a candidate species in February of 2010 with the USFWS 12 month finding of “warranted but precluded” for this species. Candidates are those species which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance is precluded by higher priority listing actions. “Candidate species and their habitats are managed as Bureau sensitive species”, (BLM Manual 6840, December 2008).

Although some saltgrass is found in the Nut Mountain Allotment, the habitat is not suitable for Carson wandering skipper due to the lack of nectar sources. Potential suitable habitat was surveyed in the adjacent Massacre Lakes Allotment in 2008, about 1 mile from the Nut Mountain Allotment, and no Carson wandering skippers were found. Three more surveys were conducted in the same area in 2009 with similar results; however weather conditions delayed surveys to the latter part of the flight season. Additional Carson wandering skipper potential habitat sites have been surveyed for on the Surprise Field Office but no Carson wandering skipper have been identified. This species will not be discussed further.

B. Environmental Consequences

1. Impacts of Proposed Action

Under the Proposed Action's rest rotation system, residual grass cover would provide more forage, hiding and thermal cover for wildlife over a larger area than the current system provides. Some species that are expected to benefit include sage-grouse, sage sparrow, and small mammals as well as limited cover for young pronghorn antelope and mule deer. Shrub cover is expected to remain within the range suitable for sage-grouse and pygmy rabbit. Wildlife would benefit from improvements in riparian forage and hiding cover as well as water availability at Rock Spring, Miller & Lux, Trough Spring, and Hanging Rock Creek; with large increases in structural diversity of woody plants expected at Hanging Rock Creek. Negative impacts to vegetation adjacent to new water troughs is not expected to be much greater than is currently occurring since these developments would be in close proximity to current watering sites. An exception to this would be at Hanging Rock Creek where the watering troughs will need to be placed uphill of the current watering site. Negative direct impacts could occur to ground nesting birds and pygmy rabbits in the use areas of the Mountain Pasture due to greater densities of cattle compared to the current grazing management; however anticipated improvements in upland and riparian vegetation, yearly rest in all pastures except the Calvary Camp Seeding, and later season of use in the East Mountain Pasture is expected to offset this negative impact. Aquatic species at these sites, including brook trout in Hanging Rock Creek, would benefit from the availability of an additional high quality watered habitat. Negative impacts to wildlife from additional fences would be mitigated by larger sized enclosures and the implementation of SOPs during project construction, which would reduce the likelihood of birds and bats impacting fences near open water. Building fences to BLM standards would reduce the possibility of entanglements of big game in the area including pronghorn antelope and deer. Golden eagles and other raptors would benefit from increased food sources responding to increases in cover and its effects on rodents, cottontails, jack rabbits, pygmy rabbits, and pronghorn.

Sage-grouse and other ground nesting sagebrush obligate species such as sage sparrow would be expected to benefit from residual and new grass cover and forbs as a result of rest/rotation grazing and intensive herding which reduces the potential for heavy grazing and negative impacts to sagebrush stands. Active leks are known in the Upper Field and proposed Mountain East use area with most nesting habitat thought to occur in the vicinity of those active leks. Every other year, direct impacts to nesting sage-grouse from the Proposed Action would be expected to be greater than the current management since grazing would be occurring during the nesting season. The Proposed Action would provide indirect benefits by increasing the amount of residual grass nesting cover available for sage-grouse the next year in the Upper Field. This would also benefit other sage-steppe obligate species such as sage sparrow. The Proposed Action's rest rotation system would also benefit nesting in the Mountain East and West use areas and Massacre Lakes pasture since residual grass cover would be available every year and there would be little to no direct impacts every other year. Any direct impacts to sage-grouse nesting would be greatest in the Mountain North and Hanging Rock use areas due to grazing occurring in the nesting season. These impacts are still less than the current grazing management which prescribes more use earlier in the year in the Hanging Rock use area. The potential for later use in the Mountain East use area could result in less available residual nesting cover the following year.

The recent Federal Register publication pertaining to sage-grouse states "...a complex set of environmental and biotic conditions that support the West Nile virus cycle must coincide for an outbreak to occur. Currently the annual patchy distribution of the disease is keeping the impacts at a minimum" (Federal Register 2010, at page 13970). Increased surface water from the new troughs at Rock Spring, Trough Spring, and Miller & Lux would be minimal in comparison to already available water. Since the troughs would be located relatively close to existing water sources, the increased risk of West Nile virus would be expected to be relatively non-existent.

Redevelopment of watering sites by fencing and providing offsite water would benefit sage-grouse and other wildlife by providing increased riparian habitat, potentially greater amounts of on-site water for a longer period of time, and higher diversities of plant life. Due to potential increases in predation risk, the greater structural diversity of woody plants expected along Hanging Rock Creek would not benefit sage-grouse. Fencing mitigations such as building larger enclosures, use of perch deterrents, and the use of flagging along fences would reduce the probability of increased predation or fence collisions to sage-grouse as well other birds.

Additional water sources at troughs would benefit mule deer and bighorn sheep which are known locally to use water at troughs. Pronghorn would also benefit but to a lesser degree since some research indicates that pronghorn may require less free water (see above). Other wildlife including small birds and mammals would also use water at troughs to some degree; however predation risk would increase for some species. Pygmy rabbit and cottontail would not directly benefit from free water at the troughs but are expected to use water on the ground within the enclosures. Although certain diseases are known to be transmittable between wildlife and cattle, these water developments would not add such a threat. There have been no known disease outbreaks on the Surprise Field Office due to shared water sources.

Pygmy rabbit activity is only known to have occurred in the Hanging Rock use area and Massacre Lakes Pasture. Potential burrowing habitat occurs in the Cavalry Camp Seeding, Upper Field, and proposed Mountain East use areas. The Proposed Action would reduce impacts to known sites by resting the Massacre Lakes Pasture every other year and reducing by ½ the number of days of use in the Hanging Rock use area when compared to the current grazing system. Impacts include potential trampling of burrows and loss of sagebrush cover (Thines et al. 2004). Although the Cavalry Camp Seeding would now be used every year, only about 9% of the pasture has potential burrowing habitat for pygmy rabbits and no known current use. Actions within the Upper Field Pasture are not expected to have any effects on pygmy rabbit since no burrows are known in the pasture and potential for burrowing habitat is very low. Potential habitat in the Mountain East use area was surveyed in 2006; however no pygmy rabbit activity was observed. The Mountain East use area will also be rested every other year. Expected increased grass cover within the Massacre Lakes Pasture and Hanging Rock use area could increase use by cottontail and displace known use by pygmy rabbit as cottontail prefer habitat with higher herbaceous cover and are larger than pygmy rabbit and could outcompete pygmy rabbits (Larrucea and Brussard 2008, Thines et al. 2004).

Due to diet overlap, direct competition between cattle and bighorn sheep can occur; however this competition generally occurs on moderate slopes. In areas of steep rocky terrain where bighorn are generally found, competition is much less due to cattle preferring more gentle slopes. In 2006 and 2007, use of occupied bighorn areas in the proposed Mountain East use area was rated

as severe to moderate (BLM unpublished data). By resting the Mountain East use area every other year, the Proposed Action would remove direct competition between cattle and bighorn sheep on those years rested. In years with no cattle, bighorn sheep are expected to use the more moderate slopes of the Mountain East use area and may also start to use the Mountain West use area in years with no cattle use.

With the built in rest in the Mountain West and East use areas and earlier off dates, bitterbrush form class is expected to improve at a faster rate in comparison to current management. Increased bitterbrush health would provide better quality forage for deer and pronghorn antelope as well as cover and forage for chipmunks and birds. The Proposed Action would lessen competition for forage in Hanging Rock use area and Massacre Lakes Pasture between cattle and big game and would eliminate competition for one season in pastures rested.

Habitat changes towards DPC goals would be expected to provide increases in plant diversity and volume for wildlife. This should provide increased forage as well as opportunities for nesting and reduce the potential for predation on sage-grouse and other ground or near ground nesting birds.

Interim management would lessen impacts to riparian areas prior to the construction of proposed range developments by reducing the season of use in the affected areas. Additional residual forage and cover would be available in the Mountain West use area for wildlife due to the shorter period of use. Term and condition number 2 would ensure that any negative impacts to riparian areas in the Mountain West and Hanging Rock use areas would be immediately addressed to help further improvements to these riparian areas. During interim management, few changes would be expected towards reaching DPC goals due to the expected short time frame of interim management.

2. Impacts of No Action

Negative impacts from cattle and wild horses would continue at riparian areas. Sage-grouse brood rearing habitat as well as summer range for mule deer, bighorn sheep, and antelope would not improve and could worsen depending on wild horse numbers. Fewer areas of increased cover and forage would be available without the rest/rotation and herding built into the Proposed Action; therefore important sage-steppe upland habitats for birds would not benefit and negative impacts from direct competition for forage or potential trampling of nests or burrows would occur over a larger area in any given year. Form class of bitterbrush would continue to improve although slower than the Proposed Action. These improvements would benefit mule deer, antelope, bird, and small mammal foraging opportunities.

3. No Grazing

The No Grazing Alternative would be expected to achieve similar results as the Proposed Action although probably on public lands only. Since this action only affects public lands, fenced private lands could see an increase in use to make up for the loss cattle forage. Private lands make up approximately 8 % of the allotment with only a small portion being fenced. Minor benefits would be seen by limiting fence-associated problems for wildlife.

Lack of cattle would cause some shifts in habitat use over both the short term and long term. If species components are available, immediate increases in forage and cover for wildlife would be expected with increases in upland vegetative species diversity occurring slightly faster than the Proposed Action. Short-term shifts in habitat use could be seen with sage-grouse use of meadows and riparian areas and long-term shifts could be expected with nesting habitat. Based on lek count information in tables 3.7 and 3.8, sage-grouse population trends have been similar on grazed areas of Nut Mountain Allotment compared with ungrazed areas on the Sheldon NWS. Upland bird species breeding densities should increase with higher grass cover and vegetation volume (Mills et al. 1991) and rodent and raptor populations would experience localized increases in numbers. Pronghorn antelope and mule deer use would also be expected to increase with improving condition of upland transition and summer habitats. Higher quality kidding and fawning habitat should result over time, with increased opportunities for use and dispersal.

Riparian areas would not be redeveloped or fenced with this alternative therefore yearlong horse impacts to riparian sites within the allotment would continue.

C. References

Carnie, K. 1954. Food habits of nesting golden eagles in the coast ranges of California. *Condor* 56(1): 3-12.

Mills, G. S., J. B. Dunning jr, and J. M. Bates. 1991. The relationship between breeding bird density and vegetation volume. *Wilson Bull.* 103:468-479.

Larrucea, Eveline; 2006; Bureau of Land Management Surprise Field Office Pygmy Rabbit (*Brachylagus idahoensis*) Survey.

Larrucea, E. S., & Brussard, P. F. (2008). Habitat Selection and Current Distribution of the Pygmy Rabbit in Nevada and California, USA. *Journal of Mammology*, 89(3) , 691-699.

Gregg, M., M. Bray, K. Kilbride, and M. Dunbar. 2001. Birth synchrony and survival of pronghorn fawns. *Journal of Wildlife Management* 65(1): 19-24.

O’Gara, B. 1978. *Antilocapra americana*. Mammalian Species. Number 90: 1-7.

Pyshora, L. 1977. The pronghorn antelope in northeastern California. Department of Fish and Game Wildlife Management Administrative Report Number 77-2. 46 pages.

Thines, N. J., Shipley, L. A., & Sayer, R. D. (2004). Effects on cattle grazing on ecology and habitat of Columbia Basin pygmy rabbits (*Brachylagus idahoensis*). *Biological Conservation* 119 , 525-534.

Yoakum, J.D. 2004. Habitat Characteristics and Requirements. Pages 409-445 in B.W. O’Gara, J.D. Yoakum, and R. E. McCabe, editors. Pronghorn ecology and management. A Wildlife Management Institute Book, University Press of Colorado, Boulder, Colorado.

Species accounts for Brewer’s sparrow, sage sparrow and sage thrasher were compiled from updated versions of the species information in the three-volume set "California's Wildlife" edited

by Zeiner, D.C. et al 1988-1990, available online at <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx>, and from the “Comprehensive Bird Conservation Plan for Nevada – A Plan under Construction. Great Basin Bird Observatory and available at: <http://www.gbbo.org>.

VEGETATION/THREATENED AND ENDANGERED (T&E SUPPLEMENTAL AUTHORITY)

A. Affected Environment

Common soils in the lower elevations of the allotment near Massacre Lake (5600') include Langston gravelly sandy loam and Longdis-Updike association. Ecological sites associated with these soils include Loamy 8-10" P.Z. which supports Wyoming big sagebrush/Thurber's needlegrass dominated communities and Sodic Terrace 8-10" P.Z. dominated by black greasewood/basin big sagebrush/basin wildrye and bottlebrush squirreltail.

The mid elevations (5700 -6500') make up the largest portion of the allotment. Soil series include Saraph-Hangrock-Tuffo association and Ninemile-Hart Camp association. Ecological sites on these soils are Loamy 8-10" P.Z. (Wyoming big sagebrush/Thurber's needlegrass) and Claypan 10-14" P.Z. dominated by low sagebrush, bluebunch wheatgrass, Thurber's needlegrass and Sandberg's bluegrass. The mid-elevation soils also support antelope bitterbrush and mountain big sagebrush.

The dominant soil series in the upper elevations of the allotment around Nut Mountain (above 6500') is the Westbutte-Ashtre-Tusune association. Ecological sites include Loamy 14-16" P.Z. dominated by mountain big sagebrush, antelope bitterbrush, Idaho fescue, bluebunch wheatgrass and Thurber's needlegrass; Steep North Slope which is capable of supporting mountain big sagebrush, mountain snowberry, Idaho fescue and bluebunch wheatgrass; and Ashy Slope 12-14" P.Z. which supports mountain big sagebrush, Idaho fescue, needlegrass and Poa's.

The majority of the drainages and springs at the mid and lower elevations support herbaceous plant communities, including grasses, forbs, sedges, and rushes. Most of the higher elevation drainages and a few of the most perennial lower elevation drainages, especially Hanging Rock Creek, also contain some woody riparian vegetation including willow, rose, and aspen.

Cavalry Camp Seeding

In the spring of 1982 approximately 4,224 acres south and east of Massacre Lake were treated with 2,4D to reduce sagebrush cover and release native grass species; in the fall, approximately 3,853 acres were then drill seeded to crested wheatgrass. Nomad alfalfa and sweet clover were aerial seeded over the treatment area the following spring (1983). The seeding provides early season forage for livestock and reduces pressure on native pastures.

Fire

There have been no catastrophic or prescribed fires within the allotment. According to the field office wildfire database, since 1990 only four fires have burned within the allotment, totaling just over 25 acres.

Special Status Plant Species

Special status species that occur within the analysis area include those terrestrial species listed or proposed for listing under the Endangered Species Act, species designated by the USFWS and candidates for listing and species contained in the BLM’s Nevada Species of Concern list. There are three special status plant species that occur within the allotment. The following table lists the affect environmental and potential impacts from implementation of an alternative:

TABLE 3.4 Special Status Plants –Nut Mountain Allotment July 2009

Plant Name	Status ¹	Locations ²	Habitat	Threats	Needs/Remarks
<i>Astragalus tiehmii</i> Tiehm’s milk-vetch Fabaceae ASTI3	G3/S3 NNPS W	Wall Canyon; Hanging Rock Canyon; S-38	Grows on white ashy barren outcrops and lacustrine soils in sagebrush scrub hills.	None known but monitor grazing practices. Could be impacted by livestock concentrations, mining activity, road maintenance, fire suppression. Potential for OHV impacts.	Continue inventories, & ocular monitor occurrences regularly for potential impacts. This is a short lived perennial and population numbers can vary greatly. Some years produce many seedlings.
<i>Cryptantha schoolcraftii</i> Schoolcraft’s cryptantha Schoolcraft catseye Boraginaceae CRSC3	G3Q/NV S3 NNPS W	Butcher Flat area. S-56- potential habitat in the far southeast corner of Nut Mountain Allotment	Grows on white ashy barren outcrops in sagebrush scrub hills.	None at present. Potential impacts from OHV and mining.	Continue to inventory for in both CA & NV. Ocular monitor occurrences regularly for potential impacts. Note: Jepson Manual combined this sp with <i>C. sobolifera</i> . See Brittonia 38(2): 104. 1986.
<i>Eriogonum crosbyae</i> Crosby’s buckwheat Polygonaceae ERCR10	G3/S3 NNPS W OR – G3/S2, List 1	Butcher Flat area, and High Rock Canyon. S- +/- 40 potential habitat in the south side of Nut Mountain Allotment	Grows on white ashy outcrops and gravelly clay sites in sagebrush scrub hills.	Not grazed by livestock but could be impacted by trampling. Has been some damage from rodent activity - eating roots. Potential impacts from mining activity, OHV & fire suppression impacts.	Continue to inventory for in NV. Ocular monitor occurrences regularly for potential impacts. Recommend for input into WFSA.

1. Status refers to federal and state element ranking (Natureserve) and CA or NV Native Plant Society rarity rankings. California source: California Natural Diversity Data Base (CNDDB), CA Dept of Fish & Game July 2007. CNPS = California Native Plant Society. For CNPS codes see <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf>; NNPS = Nevada Native Plant Society, 2007 list; NNPS W = NV watch species, NNPS T = NV threatened, NV CE = critically endangered, species threatened with extinction in Nevada.(Nevada Natural Heritage Program, 2007; see <http://heritage.nv.gov/spelists.htm>). FT = Federally Threatened, FE = Federally Endangered, FC = Federal Candidate, CE = California Endangered, OR = Oregon Natural Heritage Information Center (ONHIC) Lists 1, 2, 3, 4.

2. Locations and number of known occurrences on BLM lands - a number given, or S for suspected

B. Environmental Consequences

1. Impacts of Proposed Action

All elements of the Proposed Action are expected to have positive effects on upland and riparian vegetation. In order to maintain or improve healthy native vegetative communities, it is essential that plants periodically complete their life cycles. The proposed grazing system provides upland vegetation this opportunity with rest or deferred use for all pastures/use areas except the Cavalry

Camp Seeding. Intensive herding would improve livestock distribution throughout the allotment and reduce concentrations in those areas of the Mountain West and Hanging Rock use areas that have frequently been heavily grazed. The proposed projects would protect sensitive riparian sites and allow for improvement in conditions and progress toward achieving the standards for rangeland health. The development of new terms and conditions for the allotment would establish measurable objectives for the vegetation resource and allow the BLM to more thoroughly evaluate livestock and wild horse use on the allotment.

The rangeland health determination indicated that upland sites are functioning properly; however, the Claypan 14-16" P.Z. and Loamy 8-10" P.Z. ecological sites in the Hanging Rock use area are deficient in deep rooted perennial grasses. The proposed rest and shortened season of use in the Hanging Rock use area would improve vigor and reproductive capability of all perennial grasses as well as bitterbrush.

The three special status plants found on the allotment grow on ashy barren outcrops and are not likely to be impacted by livestock grazing.

2. Impacts of No Action

With the No Action Alternative, proposed projects would not be constructed and riparian areas would continue to receive negative impacts from wild horses and livestock. The lack of new terms and conditions under this alternative would reduce the ability of the BLM, interested publics and permittee to monitor long term progress and utilization from wild horses. Key grass species on the west side of Nut Mountain and portions of the Hanging Rock use area would continue to receive heavy utilization from livestock and wild horses; vigor and reproductive capability of perennial grasses in these areas could decline.

Since most upland sites on the allotment are functioning properly and meeting rangeland health standards, the No Action Alternative is expected to maintain these conditions. However, portions of the Hanging Rock use area would still see declines in deep rooted perennial grasses. Riparian area vegetation would continue to be negatively affected by livestock and wild horses.

Use pattern maps dating back to 1984 clearly show areas of repeated heavy use by cattle and wild horses. These areas are generally associated with water developments and riparian areas. Map 9, Livestock Concentration Areas & Bighorn Distribution which was derived from use pattern maps and observations, illustrates these heavily utilized areas.

The three special status plants found on the allotment grow on ashy barren outcrops and are not likely to be impacted by livestock grazing.

3. Impacts of No Grazing

Upland vegetation conditions are expected to improve in the short under the No Grazing Alternative, if wild horse numbers stay within AML. If AML is exceeded, impacts similar to the No Action Alternative are expected to occur in the Hanging Rock use area. In the long term, plant vigor and litter would decline as the amount of standing dead litter is increased but is not being incorporated into the soil. Riparian vegetation would continue to receive year-round negative impacts from wild horses. Impacts to special status plants are not expected with this alternative.

CUMULATIVE IMPACTS

Cumulative impacts are the “incremental impacts of a proposal when added to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes them” (40 Code of Federal Regulations 1508.7)

Of the affected resources analyzed in this section, livestock and rangeland health will be the focus of the cumulative analysis. Other affected resources are not specifically analyzed in this Chapter because the potential cumulative impacts are directly related to livestock grazing management and their cumulative impacts on vegetation (habitat) quantity and quality.

Table 3.5 Summary of Cumulative Effects Expected to Resources from Each Alternative Compared to Existing Conditions.

- = Negative Impact 0 = No Expected Impacts + = Positive Impacts			
Resource	Alternative 1- Proposed Action	Alternative 2- No Action	Alternative 3 No Grazing
LIVESTOCK MANAGEMENT	0	0	-
AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC)	0	0	+
CULTURAL RESOURCES	+	-	+
INVASIVE, NON-NATIVE SPECIES	0	0	0
SOCIAL AND ECONOMIC VALUES	0	0	-
WETLANDS/RIPARIAN ZONES	+	-	+
WILDERNESS	0	0	+
WILD HORSES AND BURROS	0	0	+
WILDLIFE/THREATENED AND ENDANGERED SPECIES	+	-	+
VEGETATION/ SOILS/ THREATENED AND ENDANGERED PLANTS	+	0	+

For this analysis the following table shows Past, Present and Reasonable Foreseeable Future Actions were considered:

Past Actions	Present Actions	Reasonable Foreseeable Future Actions
<ul style="list-style-type: none"> • Livestock grazing • Range Improvement & road construction/maintenance • Recreation use • Off-road vehicle use • Wild horse management 	<ul style="list-style-type: none"> • Livestock grazing • Range Improvement & road construction • Recreation use • Off-road vehicle use • Unauthorized grazing in exclosures • Wild horse management 	<ul style="list-style-type: none"> • Livestock grazing • Range Improvement & road construction/maintenance • Recreation use • Off-road vehicle use • Ruby Pipeline construction • Wild horse management • Wind energy • Mining • Vegetation management

Cumulative Impacts to Affected Resources

LIVESTOCK MANAGEMENT

Past and Present Actions

Livestock grazing has had a long history in the region dating back to the late 1800's. Today, it remains the dominant use in the cumulative impact assessment area. Throughout its history, ranching has remained a dispersed activity characterized by localized areas of more intensive use. Impacts of past actions include generally over-utilization of forage resources that resulted in a decrease in the composition and production of native bunchgrass, and the loss of riparian vegetation. To implement provisions of the Taylor Grazing Act and Nut Mountain Allotment management plan, a mixture of range improvements projects were constructed on the allotment. The projects include fences, cattleguards, wells, springs developments, reservoirs, and corrals.

Impacts of present actions include the maintenance of existing projects, and continued grazing as authorized.

Reasonable Foreseeable Future Actions

Since the life of the Proposed Action is ten years, the time frame is considered to be most appropriate for considering the incremental effect of reasonably foreseeable future actions. Many of the past and present actions discussed above are expected to persist through this time frame, though the relative intensity of these actions could vary depending on a variety of economic factors.

The Ruby Pipeline is expected to begin construction in the spring of 2010. This is a natural gas pipeline that will bisect the allotment through the Mountain Pasture. The reclamation plan for the pipeline route requires reseeding and other measures to allow for soil and vegetation recovery. The details can be found in the Ruby Pipeline Project FEIS Appendix L *Draft Restoration and Revegetation Plan: Nevada, October 2009*.

There are no planned or proposed mineral exploration or wind energy test sites.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to livestock grazing: recreation, off-road vehicle use, unauthorized grazing in exclosures, mining, and wind energy.

Alternative 1 - Proposed Action

There would be no cumulative impacts to livestock management as a result of the Ruby Pipeline. Increases in recreation and OHV use could result in incrementally higher impacts to livestock management through added pressures and workload by the permittee in keeping gates closed and fences maintained.

Alternative 2 - Current Management (No Action)

The cumulative effects under the Current Management Alternative would be similar to the Proposed Action.

Alternative 3 - No Grazing

The cumulative effect of this Alternative would be that the operator would no longer manage his cattle on public lands in the Nut Mountain Allotment.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC) (SUPPLEMENTAL AUTHORITIES)

Past and Present Actions

Since many Great Basin prehistoric sites are surface or near surface sites, any ground disturbing activities destroy site integrity, spatial patterning and ability to determine site function. Datable organic features are either destroyed or contaminated. Previous localized grazing, range improvements, road construction/maintenance and gravel pits have caused these types of impacts to cultural resources. Grazing has probably affected a larger number of cultural sites than is documented. Looting sometimes occurs but inadvertent actions from recreation, rock hounding and other off-road activities affect cultural resources as well.

Reasonable Foreseeable Future Actions

Recreational use is expected to increase and these activities sometimes disturb sensitive cultural resources causing displacement and mixing deposits of prehistoric/historic and modern debris.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to ACECs: Ruby Pipeline construction, vegetation management, unauthorized grazing in exclosures, mining and wind energy.

Alternative 1 - Proposed Action

The cumulative effects of the Proposed Action on cultural resources should be an incremental reduction in the rate of disturbance to site integrity, spatial patterning, and site function. Impacts to datable organic features would also be reduced. This reduction in impacts would be a result of the expected improvement in ecological condition over an extended period of time as concentrated grazing in sensitive riparian zones would be reduced. However, continued

unauthorized use of the archaeological enclosure would result in incremental cumulative effects to cultural resources.

Alternative 2 - Current Management (No Action)

The cumulative effects of this alternative on cultural resources within the ACEC would be a continued rate of disturbance to sites and organic features as a result of the no change in management.

Alternative 3 - No Grazing

Alternative 3 would not contribute to cumulative effects to ACEC resources, because no grazing would be authorized under this alternative.

CULTURAL RESOURCES (SUPPLEMENTAL AUTHORITIES)

Past and Present Actions

Since many Great Basin prehistoric sites are surface or near surface sites, any ground disturbing activities destroy site integrity, spatial patterning and ability to determine site function. Datable organic features are either destroyed or contaminated. Previous localized grazing, range improvements, road construction/maintenance and gravel pits have caused these types of impacts to cultural resources. Grazing has probably affected a larger number of sites than is documented. Looting sometimes occurs but inadvertent actions from recreation, rock hounding and other off-road activities affect cultural resources as well.

Reasonable Foreseeable Future Actions

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 Ruby Natural Gas Pipeline would affect a significant number of cultural resources by damaging or destroying site integrity. Vegetation management activities could increase the visibility of cultural sites potentially exposing them to increased looting. Inventories associated with planning for vegetation management would increase the state of knowledge concerning the local and regional cultural setting.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to cultural resources: wind energy and mining.

Alternative 1 - Proposed Action

The cumulative effects of the Proposed Action on cultural resources should be an incremental reduction in the rate of disturbance to site integrity, spatial patterning, and site function. Impacts to datable organic features would also be reduced. This reduction in impacts would be a result of the expected improvement in ecological condition over an extended period of time as concentrated grazing in sensitive riparian zones is reduced. Local and regional knowledge regarding the cultural setting would be increased as a result of implementation of the standard operating procedures which would require that all projects be preceded by inventory and site evaluation. The completion of inventories and evaluations would result in incorporation of mitigation measures which would act to further reduce long term cumulative impacts.

Alternative 2 - Current Management (No Action)

The cumulative effects of this alternative on cultural resources would be a continued rate of disturbance to sites and organic features as a result of no change in management. The failure to construct range improvement projects could contribute to continued cumulative effects to cultural resources associated with riparian areas.

Alternative 3 - No Grazing

Alternative 3 would not contribute to cumulative effects to cultural resources, because no grazing is being proposed under this alternative.

INVASIVE, NON-NATIVE SPECIES

Past and Present Actions

Past ground disturbing activities are mechanisms for the transport and introduction of weeds; however, these actions have not led to the spread of invasive and non-native species in the allotment. The inventory and treatment of weeds has been on-going in the allotment, which has reduced the spread of invasive species.

Reasonable Foreseeable Future Actions

While currently invasive weeds are limited in number and distribution, future increases in recreation are likely to increase the risk of spreading invasive species to the allotment, and adjacent areas. Recreation and other activities could also introduce new species not currently found on the allotment.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to invasive, non-native species: road maintenance, gravel pits, recreation, OHV use, unauthorized grazing in enclosures, and livestock grazing.

Alternative 1 - Proposed Action

Improvements in rangeland health conditions, including adherence to utilization guidelines would decrease the likelihood of invasive species becoming established. However, there would continue to be a risk of invasive species becoming established along roads by non-grazing activities such as vehicles and OHVs.

Alternative 2 - Current Management (No Action)

Increases in the proliferation of invasive, non-native species is not expected to increase over existing levels. Other non-grazing activities within the allotment could lead to the spread or introduction of new species in the allotment. Proliferation and the spread of invasive species is likely to continue without inventory and treatment of known populations.

Alternative 3 - No Grazing

The No (livestock) Grazing Alternative is expected to result in incremental improvement in ecological condition over the long term, which should decrease the likelihood of invasive, non-native species becoming established.

WETLANDS/RIPARIAN ZONES (SUPPLEMENTAL AUTHORITY)

Past and Present Actions

Wetlands and riparian areas prior to the mid-1980s were considered “sacrifice areas” which were expected to be used severely in order to achieve proper use of the uplands. As a result, wetlands and riparian areas did not receive management emphasis except in relation to their ability to provide needed water for domestic animal use.

In 1991 the BLM implemented the “Riparian – Wetland Initiative” for the 1990s which, for the first time, established national goals and objectives for management of riparian and wetland resources on BLM administered public lands. Chief among these objectives was the mandate that 75 percent or more are in proper functioning condition by 1997. Since the launching of this initiative, the BLM has provided management focus on achieving this goal, and many areas were improved. Some areas continue to not achieve the goal of properly functioning condition. Livestock use is one of the activities which can negatively impact wetlands and riparian areas. As riparian zones decline, riparian vegetation is less capable of dissipating energy and filtering sediment. Erosion increases and water storage capacity is reduced. In the Nut Mountain Allotment, most riparian areas are not properly functioning.

Reasonable Foreseeable Future Actions

Future activities from livestock grazing management, dispersed recreation and transportation would continue to impact riparian areas within the assessment area. Impacts to wetland riparian areas from dispersed recreation and transportation is low, but would be expected to continue in some areas, with some reductions over time. There would not be any expected impacts to wetlands and riparian areas from vegetation management or the Ruby Pipeline.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to wetland/riparian zones: wind energy, mining, Ruby pipeline and vegetation management.

Alternative 1 - Proposed Action

The cumulative impact of the Proposed Action would be long term improvements in local riparian systems. Interim management would also provide benefits. Riparian areas in the Mountain West and Hanging Rock use areas would see the greatest benefits given their current conditions.

Alternative 2 - Current Management (No Action)

Cumulative impacts of current management would not provide long term benefits to riparian systems in the general area.

Alternative 3 - No Grazing

Alternative 3 would not contribute to cumulative effects to riparian resources, because no grazing is being proposed under this alternative.

WILDERNESS (SUPPLEMENTAL AUTHORITY)

Past and Present Actions

In the 1980s Wilderness Study Areas (WSA) were designated within the analysis area. WSAs have been managed similar to wilderness under Interim Management Policy to protect their wilderness values until Congress decides to designate them as wilderness or releases them for other purposes. Impacts to these areas have been primarily limited to unauthorized motorized traffic. The NCA Act of 2000 changed the status of some areas, including East Fork High Rock Canyon to designated Wilderness Areas. Since this enactment, management of Wilderness Areas has improved, resulting in increased boundary identification, route rehabilitation, and compliance checks. These management actions have improved wilderness values for those seeking naturalness, solitude, and a primitive or unconfined type of recreational experience.

Reasonable Foreseeable Future Actions

The NCA RMP proposes a wilderness management plan for the Wilderness Areas within its scope, including the East Fork High Rock Canyon Wilderness Area. When completed, such a plan would improve management of this and other Wilderness Areas to achieve the goals set out in the Wilderness Act of 1964 – i.e., provide for wilderness values and opportunities for solitude and primitive or unconfined types of recreational activities.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to wilderness areas: range improvement and road construction/maintenance, recreation use, unauthorized grazing in exclosures, Ruby Pipeline construction, wind energy, mining, vegetation management.

Alternative 1 - Proposed Action

Incremental impacts to the East Fork High Rock Canyon Wilderness have remained relatively consistent since the early to mid 1980s as special designations continue to offer some management guidelines and protection for wilderness values.

None of the proposed projects or any of the reasonable foreseeable future actions are within the Wilderness areas/WSAs; therefore there would be no cumulative impacts related to project implementation. Management changes over the long-term would slightly decrease impacts to forage utilization of native grasses within the wilderness areas and WSAs thereby maintaining vegetative cover and natural conditions.

Alternative 2 - Current Management (No Action)

The No Action Alternative impacts represent continued degradation of riparian natural conditions, which are inconsistent with current policy for the rangeland health standards within wilderness/wilderness study areas.

Alternative 3 - No Grazing

The No Grazing Alternative impacts would result in degradation of riparian natural conditions from the year-round presence of wild horses only, due to the removal of livestock from the allotment. Allowing continued degradation of resources is inconsistent with current policy for

the rangeland health standards within wilderness/wilderness study areas.

WILD HORSES AND BURROS

Past and Present Actions

The herd areas within the Nut Mountain Allotment were designated by the former Management Framework Plan (MFP) Record of Decision (ROD), and carried forward in the Surprise RMP as the Nut Mountain and Bitner Herd Management Areas as suitable for the long-term management of wild horses. There have been several gathers and removals since the 1970s. The last gather occurred in 2007, which reduced the population down to the low AML range. Past movement of wild horses from nearby HMAs and present management, including gathers, removals and released horses, has led to the representation of age and sex classes and the genetic diversity evident in the herd today.

Reasonable Foreseeable Future Actions

The population would reach the high limit of AML in about 2011 or 2012. Future wild horse gathers would be conducted about every 3-4 years over the next 10-15 year period in order to continue to manage the HMA within the established AML. Fertility control may also be applied in future gathers in an effort to slow population growth. Cumulatively over the next 5-15 years, these actions should result in fewer gathers and less impacts to the soil and vegetative resources in the allotment and HMAs.

If wild horse AMLs continue to be achieved in the future, monitoring of resource conditions would provide data to reaffirm or reestablish AML numbers to achieve and maintain a thriving natural ecological balance and multiple-use relationship. Any adjustments to AML would be accomplished with sufficient utilization, trend, actual use, and seasonal production data through a reasoned interdisciplinary analysis and Environmental Assessment, including public involvement and appropriate coordination (4710 Handbook). Downward adjustments to AML would be necessary if monitoring indicates wild horses or burros to be a causal factor in non-attainment of resource objectives.

Any future proposed projects within these HMAs would be analyzed in an appropriate environmental document following site specific planning. Future project planning would also include public involvement.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to wild horses and burros: recreation use, off road vehicle use, unauthorized grazing in exclosures, wind energy, mining, Ruby Pipeline construction, vegetation management.

Alternative 1 - Proposed Action

This alternative proposes fencing three spring sources and associated meadows currently used by wild horses for water and forage.

Perennial waters and water production are limited on public lands in this area, and they become particularly important during drought conditions when reservoirs or dirt catchments are dry.

Implementation of the Proposed Action would develop nearly all of the perennial water sources on public lands in the allotment. While water would be provided outside the improvements, these projects are dependent on the maintenance of functioning structures (pipelines, valves, and troughs). Water may not be available if the structures become non-functioning. Limiting access to any current watering sites would increase the use on remaining available sites. It is not uncommon to observe several bands of horses watering at numerous small dirt catchments in late spring. When these water sources dry up in the summer, pressure on natural springs increases. This is especially true if any of the few developed waters become non-functioning during the summer/fall seasons. The result would be to decrease summer/fall water availability in the drier portions of the HMA. In functioning condition, the water volume at the 4 sites proposed for development is capable of supporting the 30 to 55 horses with the AML for the Nut Mountain HMA.

Alternative 2 - Current Management (No Action)

Under the No Action Alternative, grazing impacts would continue at riparian water sources, and ecological habitat resources would not improve. Riparian standards would not be met, and sites functioning at risk could degrade further, possibly below biological thresholds, making recovery periods longer.

Alternative 3 - No Grazing

Reduced competition on the uplands from a lack of cattle grazing may improve wild horse health, which could result in increased wild horse herd growth rates.

WILDLIFE/THREATENED AND ENDANGERED SPECIES (T&E SUPPLEMENTAL AUTHORITY)

Past and Present Actions

Minor to moderate amounts of displacement have resulted from disturbances to habitat for wildlife, including sage-grouse and pygmy rabbit, associated with livestock grazing management, transportation and access management, and dispersed recreation use. There are no known federally listed Threatened or Endangered Species in the allotment. Long term benefits to wildlife have been realized as watershed conditions have been stabilized. This has been as a result of the replacement of lost vegetation by plant species which are more desirable than invasive and noxious weeds and which are more effective at stabilizing watershed conditions.

Reasonable Foreseeable Future Actions

The proposed Ruby Pipeline is scheduled to begin construction in the spring of 2010. This is a natural gas pipeline that will bisect the allotment, running roughly east to west through the Mountain Pasture, and Cavalry Camp Seeding. The reclamation plan for the pipeline route will require reseeding and other measures to allow for soil and vegetation recovery. The details can be found in the Ruby Pipeline Project FEIS Appendix L *Draft Restoration and Revegetation Plan: Nevada, October 2009*.

It is expected that wildlife would be impacted directly via noise and the presence of equipment and personnel during construction of the pipeline and rehabilitation along the right of way which would be expected to last several months within the allotment. Temporary wildlife corridors, use of limited operating periods, and buffer zones are proposed to mitigate this impact as well as

species specific projects to be proposed in the future. Indirect impacts could occur from temporary and permanent loss of vegetation and vegetation changes along the 115 foot wide construction right of way.

The last horse gather in the allotment was in 2007 with the next gather of excess horses scheduled to occur in 2011 or 2012. A horse gather would take additional pressure off of public and private riparian areas in the allotment and reduce direct and indirect competition for forage. Additional cover would also be made available for nesting birds and mammals.

Livestock management, dispersed recreation, and transportation and access would continue displacing wildlife in areas immediately adjacent to these activities. Vegetation management via pasture rotation would benefit wildlife by restoring vegetative conditions and diversity and reducing direct impacts to wildlife.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to wildlife/threatened and endangered species: unauthorized grazing in exclosures, wind energy and mining.

Alternative 1 - Proposed Action

Livestock and wild horse grazing in upland habitats would continue to impact wildlife directly mainly through competition for food and water; however, most impacts to wildlife occurred in the past with changes in deep rooted perennial grasses. Indirect impacts would be lessened by subdivision of the Mountain Pasture into smaller pastures and use areas thereby providing more nesting opportunities, cover and forage available for birds and mammals in the surrounding area. Any possible direct impacts to sage-grouse, sage-sparrow, or pygmy rabbit would be reduced by resting pastures and use areas. Improvement of riparian areas to properly functioning condition and beyond will benefit wildlife in the area by providing higher quality water sources with more adjacent hiding cover and more diverse availability (ground, troughs). With water sources in close proximity to each other, improvements of riparian sources in the Mountain West use area may alter, to some extent, local migration patterns of big game.

Alternative 2 - Current Management (No Action)

Cumulative impacts from livestock and wild horse use would continue, negatively impacting water sources within the allotment. Cattle would not be as easily controlled and negative impacts would be more widespread in the Mountain Pasture.

Alternative 3 - No Grazing

Under the No Grazing Alternative, grazing management would be eliminated as a reasonably foreseeable future action. All cumulative effects to wildlife habitat in the analysis area that are associated with livestock use would cease.

VEGETATION/SOILS/THREATENED AND ENDANGERED (T&E SUPPLEMENTAL AUTHORITY)

Past and Present Actions

Prior to the Taylor Grazing Act (TGA) of 1934, forage utilization was high when thousands of cattle, sheep, and horses grazed lands in northern Nevada. The TGA for the first time regulated grazing on public lands, required ranchers who met base property qualifications to have a permit and to pay a grazing fee. Also during this period, thousands of horses roamed the Nevada desert unbranded and unclaimed. Prior to the Taylor Grazing Act grazing practices contributed to significant impacts of soil and vegetation resources. The soil tolerance was exceeded and the soil medium for plant growth was not maintained. Grazing impacts include a significant reduction of understory plants on some sites. Cheatgrass was also believed to have been introduced into the area in the early 1900s.

In order to manage livestock, a variety of range improvement projects have been implemented through the years dating back to the 1930s. While past livestock grazing decisions resulted in changes of livestock numbers and seasons of use, carrying capacities were not established until the late 1960s on the Nut Mountain Allotment. Also, there was little interest to improve wetland and riparian zones until the 1990s, and therefore riparian systems generally continued to decline or were in poor condition through this period.

The present livestock grazing system and efforts to manage livestock grazing within the Nut Mountain Allotment has reduced past historic soil impacts and improved current soil resource conditions; however, current management is continuing to contribute to heavy utilization in some areas, which is affecting vegetation and soils resources. This includes trailing and trampling damage to riparian areas, and is slowing potential vegetation recovery. Special status plants occur on certain soils that are used by cattle or wild horses, and therefore are not expected to be impacted under any of the alternatives.

Reasonable Foreseeable Future Actions

The proposed Ruby Pipeline is scheduled to begin construction in the spring of 2010. This is a natural gas pipeline that will bisect the allotment, running roughly east to west through the Mountain Pasture, and Cavalry Camp Seeding. The reclamation plan for the pipeline route would require reseeding and other measures to allow for soil and vegetation recovery. The details can be found in the Ruby Pipeline Project FEIS Appendix L *Draft Restoration and Revegetation Plan: Nevada, October 2009*.

Cumulative Impacts

Analysis has determined the following Past, Present and Reasonable Foreseeable Future Actions have no cumulative impacts to vegetation/soils/threatened and endangered plant species: recreation use, off-road vehicle use, wind energy and mining.

Alternative 1 - Proposed Action

Reclamation success within the 150 foot wide construction corridor for the Ruby pipeline would be affected by climatic conditions following seeding treatment. Livestock management under the proposed action and no action alternatives could cumulatively affect reclamation success as a

result of grazing of young seedling plants, particularly in the first two growing seasons following the seeding treatment.

Under the proposed action, grazing use during the establishment phase of the reclamation seeding would be annually in the spring beginning in mid April for one month and again in the late summer for one month in the Cavalry Camp Seeding, and every other year in midsummer in the Mountain East and Mountain West Use Areas. In the Mountain use areas this summer use alternates with rest. Seeding success in the Cavalry Camp Seeding would be threatened under this grazing schedule, and would be negatively impacted in the Mountain use area which is grazed in midsummer. Seeding success would not be cumulatively impacted in the other Mountain use area which is rested. These potential negative impacts are offset by other measures in the Ruby Pipeline Reclamation and Compliance plan however.

This offset is provided by the presence of fallback standards for retreatment or near site mitigation. As a result, impacts to vegetation, soils or wildlife resulting from any failures in reclamation success would be expected to be reduced or eliminated by follow-up treatments. Livestock concentration areas and the associated impacts should be reduced with better distribution of cattle, though some areas would remain. This is presently only a factor around watering sites and along fences. This continuation of impacts would be offset however, by the relocation of watering sites out of wetland/riparian areas and onto uplands.

Alternative 2 - Current Management (No Action)

Current management would be in place in the event the proposed action is not implemented. Cumulative impacts to vegetation, soils and wildlife under this alternative would be the same as for the proposed action due to the fallback standards for retreatment.

Alternative 3 - No Grazing

Cumulative impacts of the No Grazing Alternative coupled with impacts from past, present, and reasonably foreseeable future actions would result in foregoing an opportunity to improve rangeland health on the uplands, provided wild horses are managed in balance with the available water and forage. Since range improvement projects would not be constructed, over-utilization of vegetation and other habitat resources would continue to occur by wild horses. Furthermore, impacts from wild horses would be expected to continue on riparian areas, particularly during the hot season. Rangeland health riparian standards would not be met and resources may degrade even in the absence of cattle grazing.

CHAPTER 4: CONSULTATION AND COORDINATION

Persons, Groups, and Agencies Consulted

Modoc/Washoe Experimental Stewardship Program (ESP) Technical Review Team
representative agencies and groups:

Natural Resources Conservation Service (NRCS)

Nevada Department of Wildlife (NDOW)

Friends of Nevada Wilderness

Western Watersheds Project

Nut Mountain Allotment Permittees

Ft. Bidwell Tribal Council

Cedarville Rancheria

As previously mentioned, a Technical Review Team (TRT) was established by ESP to review resource conditions on the allotment as well as findings from the 2008 Rangeland Health Assessment. The team visited the allotment including affected riparian areas and met to discuss and propose alternatives for mitigating impacts to riparian areas, meeting rangeland health standards, and future grazing management.

BLM met with local tribal groups to discuss this grazing permit renewal and other projects being proposed.

<u>List of Preparers</u>	<u>Title</u>
Penni Borghi	Archaeologist
Elias Flores, Jr.	Wildlife Biologist
Steve Mathews	Rangeland Management Specialist
Steve Surian	Supervisory Rangeland Management /Wild Horse and Burro Specialist

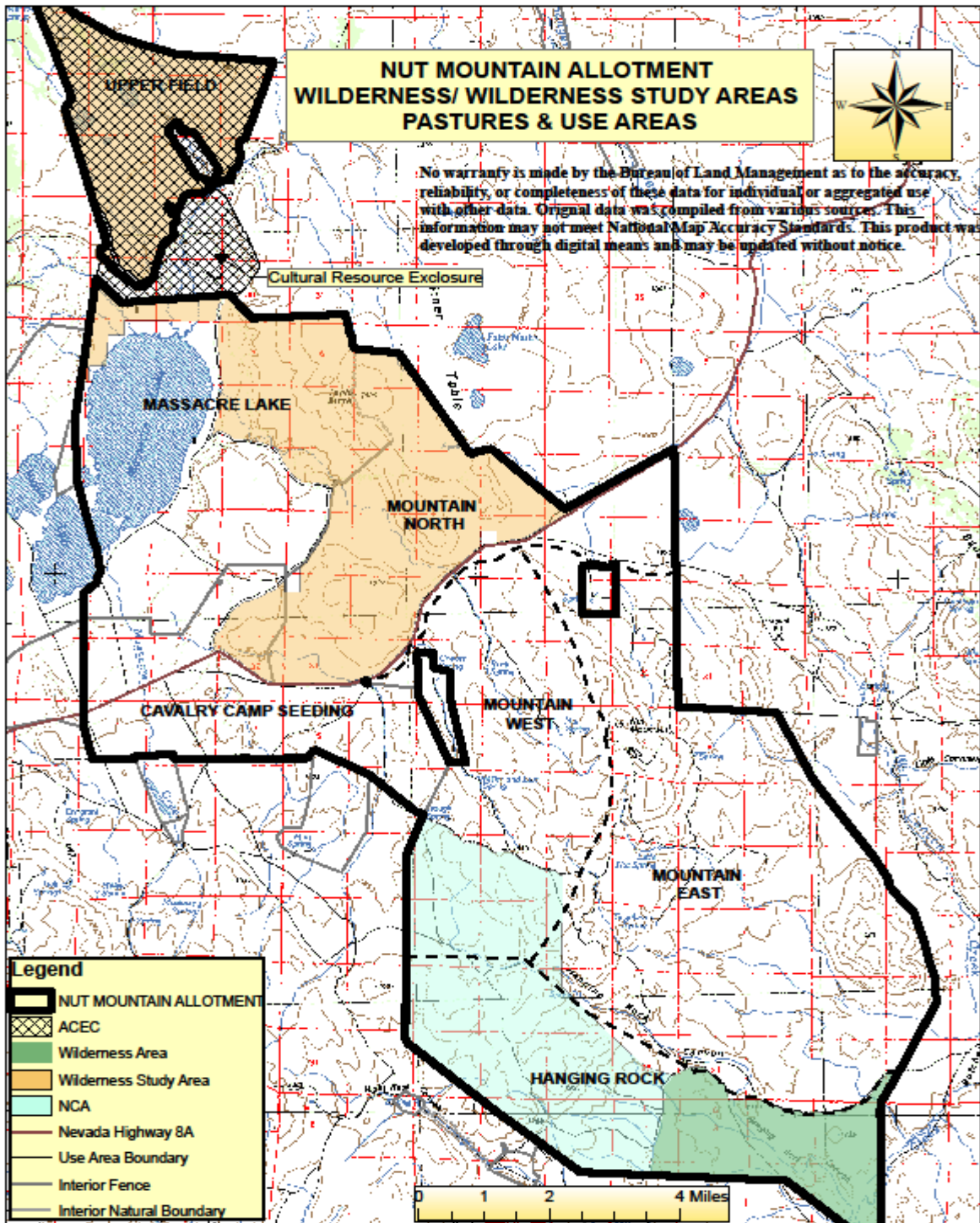
APPENDICES

APPENDIX A: ALLOTMENT MAPS

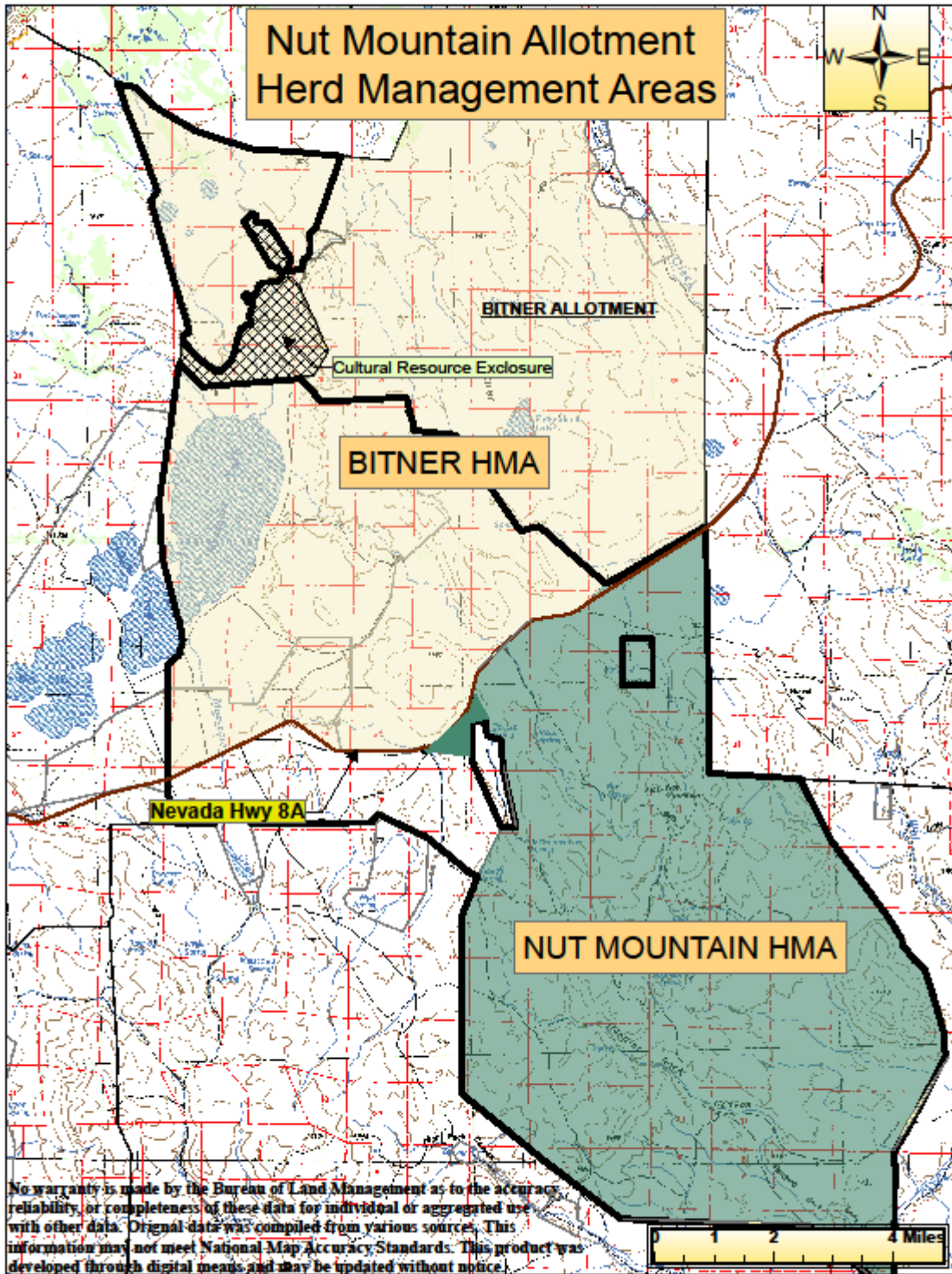
APPENDIX B: TABLES

APPENDIX A

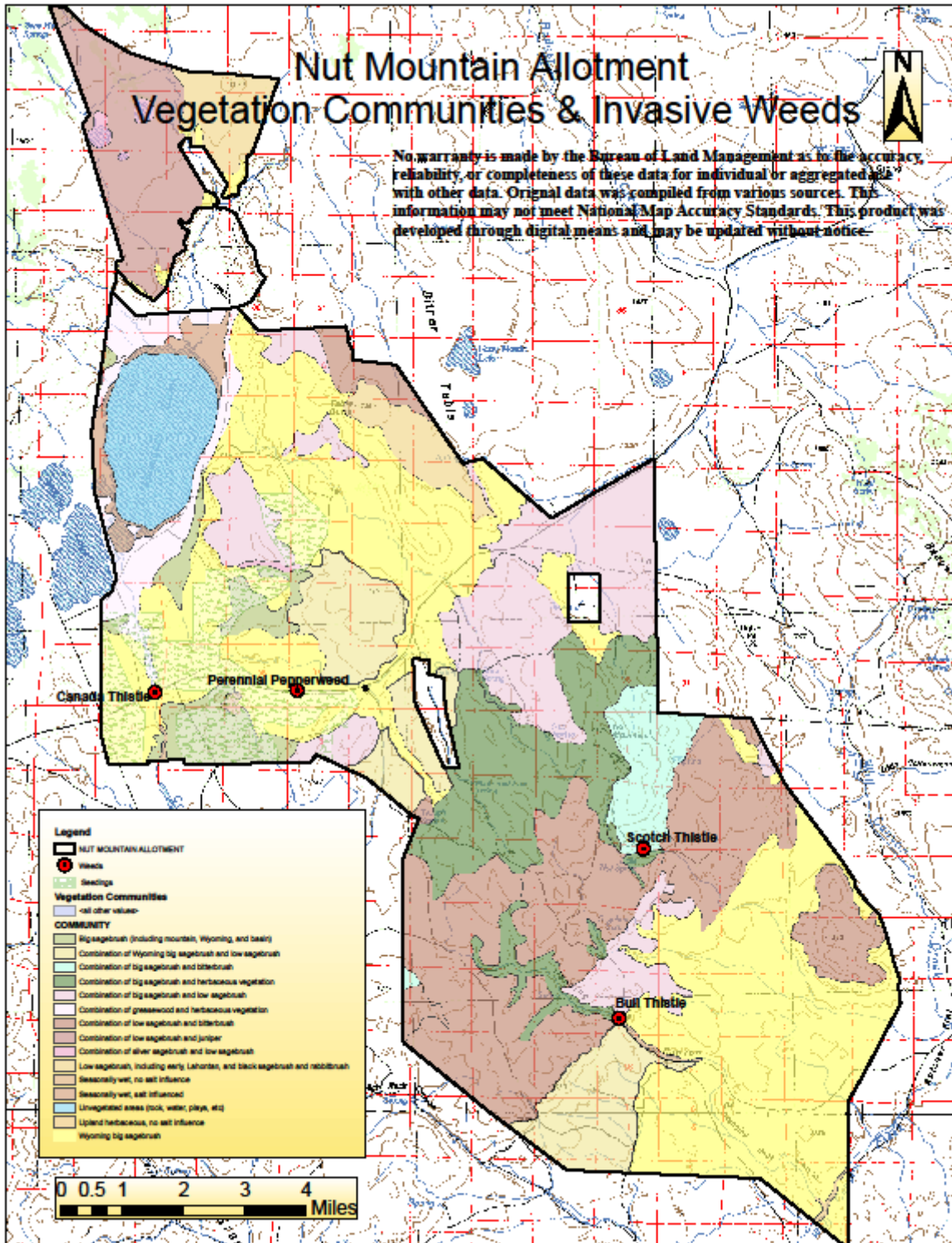
MAP 1 WILDERNESS/WILDERNESS STUDY AREA/ACEC & PASTURES

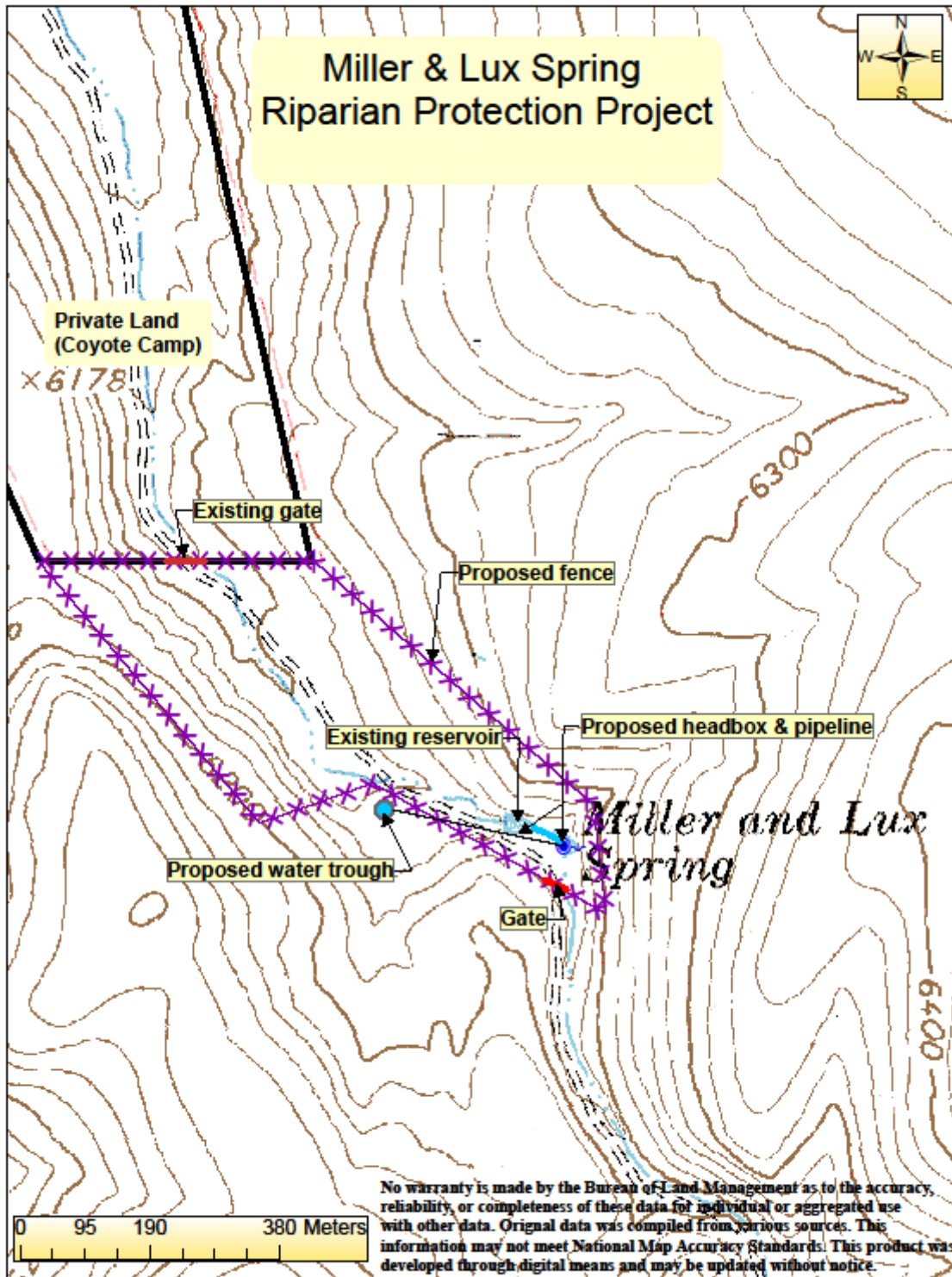


MAP 2 HERD MANAGEMENT AREAS

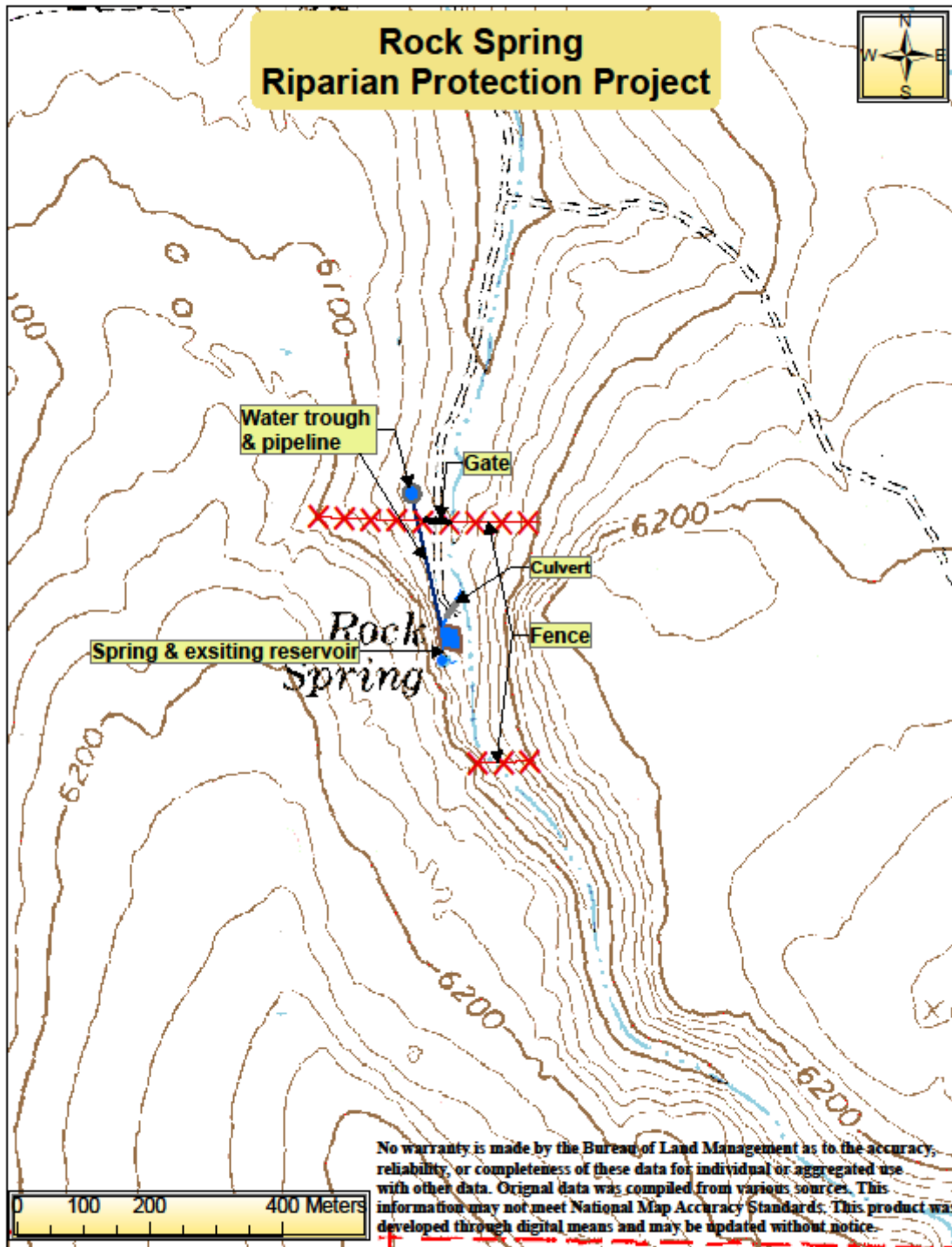


MAP 4 VEGETATION COMMUNITIES & INVASIVE WEEDS

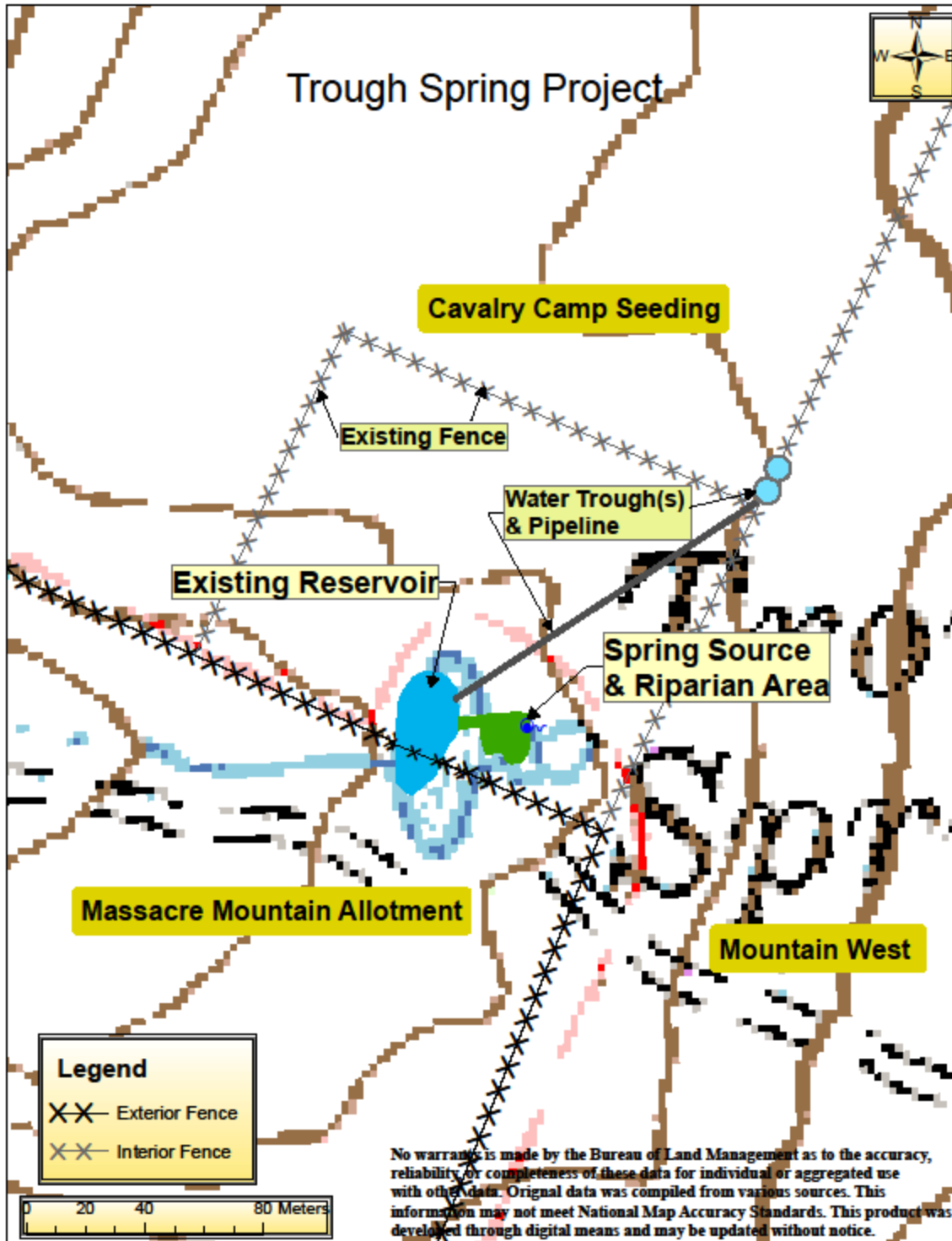


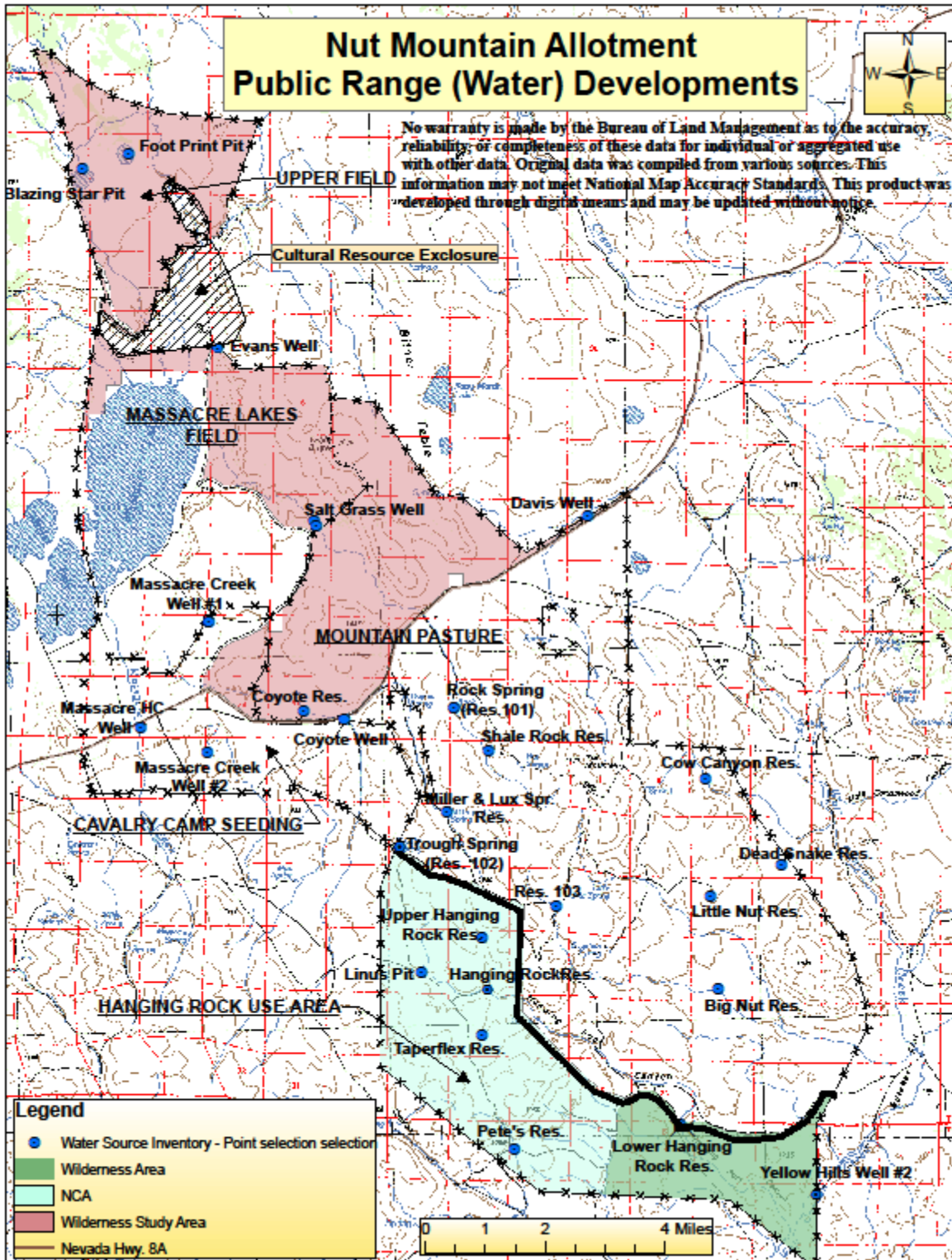


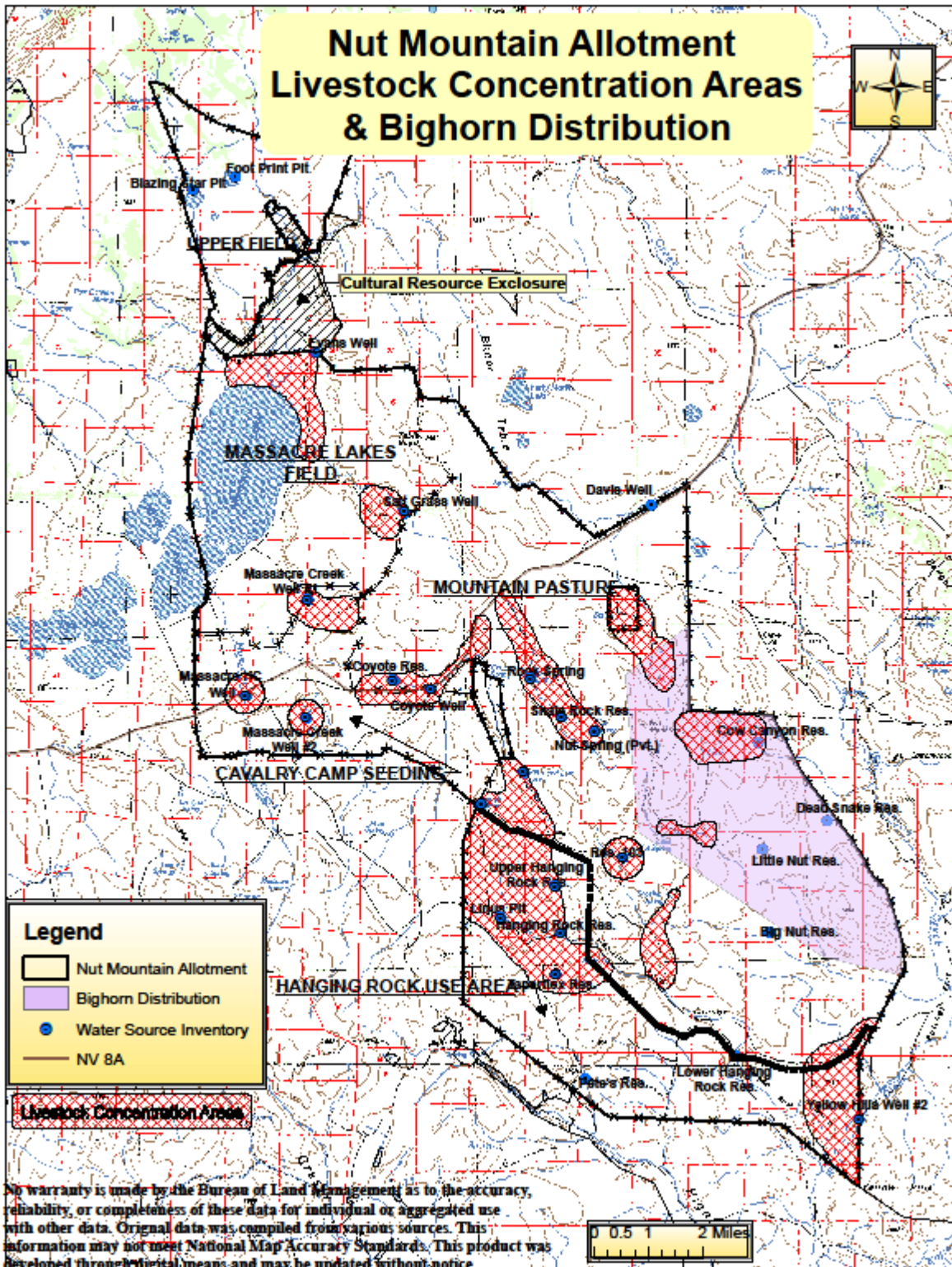
MAP 6 ROCK SPRING PROJECT



MAP 7 TROUGH SPRING DEVELOPMENT







APPENDIX B

TABLE 1 DESIRED PLANT COMMUNITIES

The table below displays current vegetative cover and desired plant community (by % cover).

PASTURE	ECOLOGICAL SITE	POTENTIAL NATIVE VEGETATION % COMPOSITION	EXISTING CONDITIONS 2008 (% COVER)	SPECIES COMPOSITION 2008 (% COVER)	POTENTIAL NATURAL COMMUNITY (PNC) % of total community by dry weight	DESIRED FUNCTIONAL/ STRUCTURAL GROUP	DESIRED PLANT COMMUNITY (DPC) BY % COVER
Hanging Rock	Loamy 8-10" PZ 023XY006NV	60% grasses 5% forbs 35% shrubs	8% grasses 3% forbs 21% shrubs	Squirreltail 7% Indian ricegrass 1% Lupin 2% Annual forbs 3% Wyoming big sage 21%	Thurber's needlegrass 30-45%, Indian ricegrass 2-15%, Sandberg's bluegrass 2-5%, other perennial grasses 2-5%; perennial forbs 5-10%; Wyoming big sagebrush 20-30%, spiny hopsage 2-5%, other shrubs and trees 2-10%	*Deep-rooted, cool season, perennial bunchgrasses >> tall shrubs (Wyoming big sagebrush) >> associated shrubs > shallow-rooted, cool season, perennial grasses > deep-rooted, cool season, perennial forbs = fibrous, shallow-rooted, cool season, annual and perennial forbs	≥ 12% grasses, ≥ 3% forbs, 20-30% shrubs, bare ground < 40%
Hanging Rock	Claypan 14-16" PZ 023XY017NV	65% grasses 10% forbs 25% shrubs	24% grasses 9% forbs 30% shrubs	Bluegrass (Poa) 22%, Squirreltail 2.33%, Perennial forbs 7% Annual forbs 5.33% Low sage 32%	Idaho fescue 30-40% Bluebunch wheatgrass 30-40% Thurber's needlegrass 2-15% Poa 2-8% 2-5% Perennial forbs 5-15% Low sagebrush 10-20% Other shrubs 5-10%	*Deep-rooted, cool season, perennial bunchgrasses>>low shrubs (low sagebrush)>deep-rooted, cool season, perennial forbs> shallow-rooted, cool season, perennial bunchgrasses>asociated shrubs>fibrous, shallow-rooted, cool season, perennial and annual forbs.	≥ 25% grasses, ≥ 9% forbs, 25-30% shrubs, bare ground ≤ 40%
Mountain	Ashy Slope 023XY094NV	70% grasses 10% forbs 20% shrubs	35% grasses 4% forbs 40% shrubs	Bluegrass (Poa) 18% Squirreltail 8%, Idaho fescue 8%, Needlegrass 2.33%, Lupin 2.33% Perennial forbs 2% Annual forbs 3% Mountain big sagebrush 40%	Idaho fescue 40-50% Needlegrass 5-15% Bluebunch wheatgrass 2-8% Poa 2-8% Perennial forbs 5-15% Mountain big sagebrush 10-20% Other shrubs & trees	*Deep-rooted, cool season, perennial bunchgrasses >> tall shrubs (mountain big sagebrush) > deep-rooted, cool season, perennial forbs = fibrous, shallow-rooted, cool season, perennial and annual forbs > associated shrubs = shallow-rooted,	≥ 35% grasses, ≥ 5% forbs, ≤ 40% shrubs, bare ground ± 30%

					2-8%	cool season, perennial grasses	
Massacre Lakes	Loamy 8-10" PZ 023XY006NV	60% grasses 5% forbs 35% shrubs	17% grasses 2% forbs 20% shrubs	Thurber's needlegrass 7% Squirreltail 8% Other perennial grass 2% Perennial forbs 2% Annual forbs 15% Wyoming big sage 20%	Thurber's needlegrass 30- 45%, Indian ricegrass 2-15%, Sandberg's bluegrass 2-5%, other perennial grasses 2-5%; perennial forbs 5-10%; Wyoming big sagebrush 20- 30%, spiny hopsage 2-5%, other shrubs and trees 2-10%	*Deep-rooted, cool season, perennial bunchgrasses >> tall shrubs (Wyoming big sagebrush) >> associated shrubs > shallow-rooted, cool season, perennial grasses > deep-rooted, cool season, perennial forbs = fibrous, shallow- rooted, cool season, annual and perennial forbs	≥ 20% grasses, ≥ 3% forbs, 20-30% shrubs, bare ground < 50%
Upper Field	Claypan 10-14" PZ 023XY031NV	65% grasses 10% forbs 25% shrubs	30% grasses .33% forbs 25% shrubs	Bluegrass (Poa) 24% Squirreltail 5%, Annual forbs 5% Low sage 25%	Bluebunch wheatgrass 30-50% Thurber's needlegrass 15-35% Poa 5-10% Other perennial grasses 2-5% Perennial forbs 5-15% Low sagebrush 10-20% Other shrubs 5-10%	*Deep-rooted, cool season, perennial bunchgrasses>>1 ow shrubs (low sagebrush)>deep -rooted, cool season, perennial forbs> shallow-rooted, cool season, perennial bunchgrasses>as sociated shrubs>fibrous, shallow-rooted, cool season, perennial and annual forbs.	≥ 30% grasses, ≥ 3% forbs, 25-30% shrubs, bare ground < 40%

Existing condition figures from 2008 line-point intercept information.

* Listed in order of descending dominance by above-ground weight using symbols >>, >, = to indicate much greater than, greater than, and equal to.