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ENVIRONMENTAL ASSESSMENT

SOLDIER MEADOWS ALLOTMENT GRAZING PERMIT RENEWAL AND RANGE IMPROVEMENT PROJECT

Environmental Assessment NV- 020- 07- EA- 08

**Winnemucca Field Office, Nevada BLM
Humboldt County, Nevada**



Black Rock Range - Soldier Meadows Allotment

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**U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WINNEMUCCA FIELD OFFICE**

**ENVIRONMENTAL ASSESSMENT
SOLDIER MEADOWS ALLOTMENT
Grazing Permit Renewal
And
Range Improvement Project**

EA Number: NV-020-07-EA-08

1.0 Introduction

This environmental assessment (EA) contains the site-specific analysis of potential impacts that could result with the implementation of the Proposed Action or Alternatives to the Proposed Action. The EA ensures compliance with the National Environmental Policy Act (NEPA). Based on the following analysis of potential environmental consequences, a determination can be made whether to prepare an Environmental Impact Statement (EIS) or issue a “Finding of No Significant Impact” (FONSI). A FONSI documents why implementation of the selected alternative will not result in environmental impacts that significantly affect the quality of the human environment.

1.1 Purpose and Need

The purpose of the Proposed Action, based upon a request by Kudrna Nevada LLC (Kudrna), is to modify the existing livestock grazing system and construct a range improvement (fence) on the Soldier Meadows Allotment (SMA). Refer to Map 1. The Proposed Action would issue a ten year grazing permit that would meet the Standards for Rangeland Health (SRH) or make significant progress toward meeting them. The need for the Proposed Action is to establish a grazing system compatible with the livestock operation of Kudrna, the new SMA grazing permit holder.

Since issuance of the 2004 FMUD the allotment Objectives, Terms/Conditions and SRH have been achieved with the exception of three riparian (lentic) sources in the Warm Springs Use Area. Stubble height vegetative monitoring data collected at these sites indicate that the short term utilization objective on wetland/lentic key riparian species was not achieved in 2006. The Proposed Action will provide a year of rest that ensures achieving the allotment Objectives, Terms/Conditions and SRH.

The existing grazing system was implemented by the SMA Final Multiple Use Decision (FMUD), issued to Estill Ranches LLC (Estill) on May 5, 2004. The grazing system established by this FMUD was a result of BLM’s analysis of a reasonable range of livestock grazing management alternatives and their associated environmental impacts analyzed in the March 10, 2003 EA.

The existing grazing system was selected since it would best achieve allotment specific Objectives, Terms/Conditions and SRH and allowed Estill to graze livestock within the SMA in combination with the adjacent Bare Allotment where he controlled a BLM grazing permit

administered by the Surprise Field Office in Cedarville, California. Under this grazing system livestock trailed between the Bare and SMA seasonally, resulting in annually fluctuating numbers of cattle (344 to 1188 head).

Kudrna purchased the Soldier Meadows Ranch, which was the base property for the BLM grazing permit, from Estill in November of 2005. Kudrna now controls the SMA grazing permit. Since Kudrna does not own the adjacent Bare Ranch he has requested that the BLM modify the existing grazing system so he can maintain a stable herd size.

1.2 Regulatory Authorities

The proposals presented in this EA would be implemented subject to the following regulatory authorities:

- Taylor Grazing Act of 1934 as amended and supplemented
- Federal Land Policy and Management Act of 1976 (FLPMA)
- Public Rangelands Improvement Act of 1978 (PRIA)
- 43 CFR Part 4100 et al – Grazing Administration
- Noxious Weed Act of 1974
- Wild Horses and Burros Act of 1971
- 43 CFR Part 4700 et al – Wild Horse and Burro Management
- Wilderness Act of 1964

1.3 Land Use Plan Conformance

The Proposed Action is in conformance with the Bureau of Land Management (BLM) Sonoma-Gerlach Management Framework Plan, 1982, MFP III decisions including the following:

- Grazing will be managed in the Sonoma-Gerlach Resource Area with multiple uses fully considered (RM-1.1)
- Establish period of use for each allotment and base management on the physiological requirements of key species (RM-1.5)
- Manage, maintain and improve the rangeland conditions on the public lands (RM-1.11)
- Improve and maintain a sufficient quantity, quality and diversity of habitats for all species of wildlife in the planning area (WL-1)

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) including the following:

- The current livestock grazing use authorizations will be maintained until evaluations identify the need for adjustments in 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).
- The class of livestock in allotments will not be changed by this plan (GRAZ-2).
- The Mahogany Creek Enclosure portion of the Soldier Meadows Allotment will be excluded from livestock grazing (GRAZ-4).
- 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 (GRAZ-6).

- 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 the objectives of the plan and the applicable Land Health Standards (GRAZ-8).
- The Stanley Camp Pasture within the Soldier Meadows Allotment will be excluded from livestock grazing on a regular basis. Grazing in this area may occur under an approved grazing prescription developed specifically to accomplish the objectives of the RMP (GRAZ-10).
- Livestock grazing within the fenced portions of the Soldier Meadows ACEC will be authorized when an evaluation process concludes that grazing is consistent with the resource management objectives for the ACEC (GRAZ-11).

1.4 Relationship to Laws, Regulations, and Other Plans

The Proposed Action conforms to the recommendations presented in the SRH as developed in consultation with the Sierra Front-Northwestern Great Basin Resource Advisory Council, other interested publics and approved by the Secretary of the Interior on February 12, 1997. Grazing practices and activities subject to Standards and Guidelines include the development of grazing related portions of activity plans, establishment of terms and conditions of the permits, leases and other grazing authorizations, range improvement activities, such as vegetation manipulation, fence construction and the development of water, must be in conformance with these approved Standards:

- a. Soil processes will be appropriate to soil types, climate and land form.
- b. Riparian/wetland systems are in properly functioning condition.
- c. Water quality criteria in Nevada or California State Law shall be achieved or maintained.
- d. Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.
- e. Habitat conditions meet the life cycle requirements of special status species.

These Standards and Guidelines reflect the stated goals of maintaining or improving rangeland health while providing for the viability of the livestock industry in the Sierra Front – Northwestern Great Basin Resource Area.

The terms and conditions of the permit will be modified if additional information indicates that revision is necessary to conform to 43 CFR 4180 as supplemented by the Sierra Front - Northwestern Great Basin Resource Advisory Council SRH and Guidelines for Grazing Management. 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).

1.5 Identification of Issues

The following concerns have been expressed associated with the current grazing system:

- The numbers of livestock grazing (1188 head) in wilderness areas.

- The variable numbers of livestock (344 to 1188 head) does not provide for a stable ranch operation.

2.0 Proposed Action and Alternatives

2.1 Items Applicable to the Proposed Action and Alternative 1

The following terms and conditions of this grazing permit are in conformance with the Standards and Guidelines for the Sierra Front - Northwestern Great Basin Resource Advisory Council, approved by the Secretary of the Interior on February 12, 1997.

2.1.1 Required Terms and Conditions

The terms and conditions of the permit would be modified if additional information indicates that revision is necessary to conform to 43 CFR 4180 as supplemented by the Sierra Front - Northwestern Great Basin Resource Advisory Council Standards for Rangeland Health (SRH) and Guidelines for Grazing Management.

The authorized officer reserves the authority to make modifications to the annual grazing authorization that are consistent with the SRH, allotment specific objectives and are NEPA compliant.

With the exception of salt or mineral blocks, supplemental feeding is not authorized on public lands unless prior approval is requested and given by the authorized officer.

The permittee is required to install bird ladders in water toughs; BLM would provide the bird ladders.

The permittee is required to perform normal maintenance on the range improvements as per their signed Cooperative Agreements/Section 4 Permits prior to turning out in a pasture or use area scheduled for livestock use.

The permittee's certified actual use report, by pasture/use area, is due 15 days after the end of the authorized grazing period.

Pursuant to 43 CFR 10.4(g), the holder of this authorization must notify the authorized officer, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined at 43 CFR 10.2). Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for thirty (30) days or until notified to proceed by the authorized officer.

Livestock would be trailed in a timely manner between use areas with a minimal amount of acceptable drift.

2.1.2 Temporary Non-Renewable (TNR) Use

When the authorized officer determines that additional forage is temporarily available for livestock, he **may** authorize its use on a nonrenewable basis. Nonrenewable grazing permits or leases may be issued on an annual basis to qualified applicants when forage is temporarily available, provided this use is consistent with multiple use objectives and does not interfere with

existing livestock operations on public lands (43 CFR 4110.3-1 and 4130.6-2).

2.2 Proposed Action

The Proposed Action is to modify the existing SMA grazing system, construct a range improvement project and issue a ten year livestock grazing permit to Kudrna for the SMA.

The Proposed Action would authorize an initial livestock stocking level of 8,785 AUMs and activate approximately 845 of the remaining 3,383 non scheduled AUMs, every two years if allotment Objectives, Terms/Conditions and SRH are achieved. Incremental increases would occur until the Active Preference of 12,168 AUMs is activated. If monitoring data identifies that the allotment Objectives, Terms/Conditions and SRH are not achieved or progress is not being made toward achievement of the SRH, and existing grazing management is a major factor in the failure to achieve these goals, then appropriate actions would be initiated to adjust livestock numbers, season of use and/or AUMs.

The proposed grazing system would allow livestock grazing within the South, Calico, Hot Springs (North & South), Warm Springs, Idaho Canyon, Slumgullion, and Colman Use Areas. Refer to Maps 2 and 3 for livestock grazing strategy for even and odd years respectively. During both odd and even years livestock use would occur in Idaho Canyon and/or Hot Springs North Use Areas from 10/1 to 10/31 depending upon forage availability, resource impacts or weather conditions. These factors would also be considered when livestock use the Hot Springs South and Slumgullion Use Areas from 10/1 to 12/15. During even years livestock use from 4/1 to 6/15 would occur in both the Calico and South Use Areas, followed by rest in the Calico Use Area in odd years. The Idaho Canyon Use Area is grazed annually during the hot season (7/16 to 10/31), however implementation of monitoring and mitigation measures would result in the attainment of allotment Objectives, Terms/Conditions and SRH. Only **prescribed** grazing may be authorized in the Stanley Camp Riparian Pasture (excluding the Mahogany Creek Enclosure) if consistent with the management objectives of the Resource Management Plan. The proposed grazing system schedule would be as follows:

Table 1. Grazing Schedule - Odd Years

Use Area	Cow #s	Begin	End
1 - South	800	01/16	03/31
2 - Hot Springs (South)	800	04/01	04/30
3 - Warm Springs	800	05/01	07/15
4 - Idaho Canyon	800	07/16	10/31
5 - Hot Springs (North)	800	10/01	12/15
6 - Slumgullion			
7 - Colman		11/16	12/15
Calico Mtns.	Rest		
Private Lands		12/16	01/15

Table 2. Grazing Schedule - Even Years

Use Area	Cow #s	Begin	End
1 - South	800	01/16	03/31
2 - Calico Mtns. & South	800	04/01	06/15
3 - Hot Springs (South)	800	04/15	07/15
4 - Idaho Canyon	800	07/16	10/31

5 - Hot Springs (North)			
6 - Slumgullion	800	10/01	12/15
7 - Colman		11/16	12/15
Warm Springs	Rest		
Private Lands		12/16	01/15

In order to fully implement the Proposed Action approximately one mile of fence would be constructed to separate the Idaho Canyon and Warm Springs Use Areas. Refer to Map 4. This proposed range improvement project would consist of approximately a mile of new fence construction that would extend from an existing fence on private land south to the Summit Lake Reservation fence. This new fence would consist of four barb wires and metal posts constructed to antelope specifications.

Under the Proposed Action, the SMA monitoring criteria and objectives would be updated as follows:

A. Short Term Monitoring Criteria:

1. Livestock grazing on Colman (existing Lahontan Cutthroat Trout (LCT) habitat) and Donnelly Creeks (potential LCT habitat) are subject to the following criteria based upon site potential and stream characteristics:
 - a. A minimum of a 6-inch greenline¹ stubble height for riparian herbaceous vegetation in Colman Creek will remain when livestock are removed from the Colman Use Area.
 - b. A minimum of a 4-inch greenline stubble height for riparian herbaceous vegetation, in Donnelly Creek, will remain when livestock are removed from the Calico Use Area.
 - c. Utilization of willow (*Salix*) greater than 5 feet in height will not exceed 30%, and will not exceed 20% on willows less than 5 feet in height, and will not exceed 10% on any height of aspen (*Populus tremuloides*).
 - d. Streambank alteration from livestock trampling will not exceed 10% as measured along the greenline.
2. A minimum of 3 inches of greenline stubble height on key riparian herbaceous vegetation species in wetland lentic riparian sites, not previously identified, will remain at the end of September.
3. A minimum of 4 inches of greenline stubble height on key riparian herbaceous vegetation species in wetland lotic riparian sites, not previously identified, will remain at the end of September.
4. Utilization on key woody species, not previously identified, will not exceed 30% utilization at the end of September.

¹ Greenline – the first perennial vegetation that forms a lineal grouping of community types on or near the water’s edge. Most often it occurs at or slightly below the bankfull stage. (BLM TR 1737-20)

5. Utilization of any key upland plant species; bluebunch wheatgrass (*Pseudoroegneria spicata*), serviceberry (*Amelanchier*), curlleaf mountainmahogany (*Cercocarpus ledifolius*), basin wildrye (*Leymus cinereus*), ephedra (*Ephedra*), winterfat (*Krascheninnikovia lanata*), Idaho fescue (*Festuca idahoensis*), meadow barley (*Hordeum brachyantherum*), Baltic rush (*Juncus balticus*), lupine (*Lupinus caudatus*), Indian ricegrass (*Achnatherum hymenoides*), bluegrass (*Poa*), Nevada bluegrass (*Poa nevadensis*), Sandberg bluegrass (*Poa secunda*), antelope bitterbrush (*Purshia tridentata*), bottlebrush squirreltail (*Elymus elymoides*), needleandthread (*Hesperostipa comata*), Thurber needlegrass (*Achnatherum thurberianum*), and snowberry (*Symphoricarpos*) will not exceed 50% on any key species. Occasional use up to 60% is acceptable since 41 to 60% use is considered moderate grazing. Repeated utilization (two consecutive grazing seasons) of more than 50% on any one species will be considered as not meeting the criteria. Moderate use means that half of the available forage (by weight) on key species appears to have been utilized and 15 to 25% of the current seedstalks remain intact.

B. Long Term Objectives:

1. Maintain or improve public rangeland conditions to provide forage on a sustained yield basis for livestock, with an eventual stocking level of 12,168 AUMs.
2. Maintain or improve public rangeland conditions to provide forage on a sustained yield basis for big game, with a forage demand of 786 AUMs for mule deer, 429 AUMs for pronghorn, and 264 AUMs for bighorn sheep.
3. Manage herd management areas (HMAs) to provide adequate food, water, and living space for the long-term maintenance of healthy wild horses and burros and maintain their free-roaming nature.
4. Sagebrush Habitat-Sagebrush Obligates

Maintain or improve sagebrush plant communities on stable soils with structurally diverse shrub component in various age classes (within a stand or among stands across the landscape) with vigorous, diverse, self-sustaining understory of native grasses and forbs based on ecological site potential.
5. Maintain existing Proper Functioning Condition (PFC) on reaches of Cherry, Coleman, Donnelly, Mahogany, Slumgullion, and Summer Camp Creeks; improve to PFC or make significant progress toward PFC on reaches of Cherry, Coleman, Donnelly, Slumgullion, Snow, and Soldier Creeks presently not meeting standard.
6. Maintain or improve fisheries habitat to a condition appropriate to stream potential.
7. Maintain Mahogany Creek and Summer Camp Creek to the State of Nevada designated Class A (NAC 445A.124) water standards.
8. Maintain Snow Creek to State of Nevada designated Class B (NAC 445A.125) water standards due to the tributary rule found at NAC 445A.145 (or subsequent revisions).
9. All other surface waters within the allotment are subject to the State's water quality standards, found at NAC 445A.121 (or subsequent revisions).

2.2.1 Temporary Non-renewable

Temporary non-renewable use, if granted, would be based on monitoring and actual forage production for the year, not to exceed 16,070 AUMs (Total Grazing Preference = 12,168 AUMs active use + 3,902 AUMs suspended use). The permittee would be required to meet the short term objectives and must meet or make progress towards long term objectives.

2.3 Alternative 1 - No Action (2004 FMUD)

Under the No Action Alternative the existing permit would be reissued to Kudrna Nevada LLC for the SMA consistent with the existing grazing system implemented by the May 5, 2004 FMUD. This alternative would continue to authorize an initial livestock stocking level of 7,680 AUMs and would activate a portion of the remaining 4,481 Non Scheduled AUMs, every two years if allotment livestock Objectives, Terms/Conditions and SRH are achieved. Incremental increases would occur until the Active Preference of 12,168 AUMs is activated. If monitoring data identifies that the allotment Objectives, Terms/Conditions and SRH are not achieved or progress is not being made toward achievement of the SRH, and existing grazing management is a major factor in the failure to achieve these goals, then appropriate actions would be initiated to adjust livestock numbers, season of use and/or AUMs.

The No Action Alternative would allow livestock grazing within the South, Idaho Canyon, Warm Springs, Hot Springs, and Colman Use Areas. The Stanley Camp Riparian Pasture would not be grazed under this alternative. Prescribed grazing may be authorized in the Stanley Camp Riparian Pasture if consistent with the management objectives of the RMP and following site specific analysis. Refer to Map 5. The numbers of cattle fluctuate since the SMA was used in conjunction with the Bare Allotment when Estill controlled the permit, therefore cows trailed between the two allotments annually. The No Action Alternative grazing system schedule would continue to be as follows:

Table 3. Grazing Schedule Yr. 1

Use Area	Cow #s	Begin	End
South	1037	01/16	04/30
Idaho Canyon	300	05/01	07/31
Warm Springs	300	08/01	09/30
Hot Springs & Colman	1037	10/01	12/15
Colman		11/16	12/15
Private Lands	1037	12/16	01/15

Table 4. Grazing Schedule Yr. 2

Use Area	Cow #s	Begin	End
South	1037	01/16	04/30
Warm Springs	300	05/01	07/31
Idaho Canyon	300	08/01	09/30
Hot Springs & Colman	1037	10/01	12/15
Colman		11/16	12/15
Private Lands	1037	12/16	01/15

This two-year cycle grazing system would continue. Approximately 25% of the non scheduled AUMs up to a total active preference of 12,168 AUMs would be activated after each cycle (2 yrs.) if monitoring criteria, Objectives, Terms/Conditions and SRH are being achieved.

The current multiple use objectives for the SMA as identified in the 2004 FMUD are as follows:

A. Short Term Objectives:

1. Grazing on Colman and Donnelly Creeks would be permitted under all or a portion of the following criteria, which BLM will determine are applicable based on site potential and stream characteristics:
 - c. Riparian herbaceous utilization would ensure a 6-inch stubble height is left when livestock are removed from Colman Creek; and/or
 - d. Riparian herbaceous utilization would ensure a 4-inch stubble height is left when livestock are removed and a 6-inch stubble height remains at the end of the growing season on Donnelly Creek; and/or
 - c. Within all use areas, utilization would not exceed 30 percent on willow species greater than 5 feet in height, 20 percent on willows less than 5 feet in height, and 10 percent on any height of aspen species; and/or
 - d. Streambank alteration would not exceed 10 percent.
2. The objective for utilization of key plant species in wetland/lentic riparian habitats is fifty percent (50%) for sedges (Carex spp.), rushes (Juncus spp.) and bluegrass (Poa spp.).
3. The objective for utilization of key plant species in streambank riparian habitats on lotic systems, which are not specified above, is thirty percent (30%) for sedges (Carex spp.), rushes (Juncus spp.) and bluegrass (Poa spp.).
4. The objective for utilization of key plant species in upland habitats is fifty percent (50%) on the following: bluebunch wheatgrass (Agropyron spicatum), serviceberry (Amelanchier), curlleaf mountainmahogany (Cercocarpus ledifolius), basin wildrye (Elymus cinereus), ephedra (Ephedra), winterfat (Eurotia lanata), Idaho fescue (Festuca idahoensis), meadow barley (Hordeum brachyantherum), Baltic rush (Juncus balticus), lupine (Lupinus caudatus), Indian ricegrass (Oryzopsis hymenoides), bluegrass (Poa), Nevada bluegrass (Poa nevadensis), Sandberg bluegrass (Poa secunda), antelope bitterbrush (Purshia tridentata), bottlebrush squirreltail (Sitanion hystrix), needleandthread (Stipa comata), Thurber needlegrass (Stipa thurberana), and snowberry (Symphoricarpos).

B. Long Term Objectives:

1. Manage, maintain, or improve public rangeland conditions to provide forage on a sustained yield basis for big game, with reasonable numbers of 786 AUMs for mule deer, 429 AUMs for pronghorn, and 264 AUMs for bighorn sheep.
 - a. Improve to and maintain mule deer habitat in good to excellent condition within the ecological potential of the rangeland habitat.

- b. Improve to and maintain pronghorn habitat in fair to good condition within the ecological potential of the rangeland habitat.
 - c. Improve to and maintain bighorn sheep habitat in good to excellent condition within the ecological potential of the rangeland habitat.
2. Improve and/or maintain suitable sage-grouse strutting, nesting, brood rearing, and/or wintering habitat in good condition within the site potential of the rangeland habitat.

The following parameters have been found to constitute optimum (good) conditions for sage-grouse use:

Strutting Habitat

Low sagebrush or brush free areas for strutting and nearby areas of sagebrush having 20-50% canopy cover for loafing.

Nesting Habitat

- 1. Sagebrush between 7 and 31 inches in height (optimum= 16 inches).
- 2. Sagebrush canopy cover of 15-30% (optimum = 27%).
- 3. 25-35% basal ground cover.
- 4. Average understory height of 6-7 inches (grasses).

Brood Rearing Habitat

Early Season

- 1. Sagebrush canopy cover 10-21% (optimum = 14%).

Late Season

- 1. Meadow areas that are in functioning condition.
- 2. Residual meadow vegetation of no less than 3-6 inches in height.

Winter Habitat

- 1. Greater than 20% sagebrush canopy cover.
3. Improve and/or maintain public rangeland conditions to provide forage on a sustained yield basis for livestock.
4. Maintain and improve the free-roaming behavior of wild horses by protecting and enhancing their home ranges.
- a. Manage, maintain, or improve public rangeland conditions to provide forage on a sustained yield basis for wild horses.
 - b. Maintain and improve wild horse habitat by assuring free access to water.

5. Improve and/or maintain ceanothus (Ceanothus), mahogany (Cercocarpus), serviceberry (Amelanchier), bitterbrush (Purshia tridentata), ephedra (Ephedra), winterfat (Eurotia lanata) and aspen (Populus tremuloides) habitats by allowing for successful reproduction and recruitment based on site potential.
6. Improve and/or maintain riparian and meadow habitat types to ensure species diversity and quality and to maximize reproduction and recruitment.
7. Improve and/or maintain fisheries habitat in good to excellent condition based upon stream potential.
8. Improve and/or maintain lentic and lotic riparian habitats to properly functioning condition (PFC).
9. Numbers of wild horses will be managed within the Appropriate Management Level (AML) range in the Black Rock Range West, Warm Springs Canyon and Calico Mountains Herd Management Areas (HMAs). Gathers will occur periodically as needed when monitoring reveals numbers are approaching or exceeding the AML range.
10. Maintain Mahogany Creek and Summer Camp Creek to the State of Nevada designated Class A (NAC 445A.124) water standards.
11. Maintain Snow Creek to State of Nevada designated Class B (NAC 445A.125) water standards (due to the tributary rule found at NAC 445A.145 (or subsequent revisions)).
12. All other surface waters within the allotment are subject to, and will be measured by, the State's water quality standards, found at NAC 445A.121 (or subsequent revisions).

2.4 Alternative 2 - No Livestock Grazing

Under the No Livestock Grazing Alternative, no permit would be issued and the existing permit would be cancelled. As a result, Kudrna Nevada LLC would not be authorized to graze livestock on public lands in the SMA.

Selection of the No Livestock Grazing Alternative would not be consistent with the Sonoma-Gerlach Management Framework Plan III (SG MFP) or Resource Management Plan for the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area and Associated Wilderness and other Contiguous Lands in Nevada, 2004 (BRHR RMP). A decision to select this alternative would require a Land Use Plan Amendment. Currently, livestock grazing is identified in the SG MFP and BRHR RMP as an appropriate use of public lands in the SMA.

3.0 Affected Environment

The SMA consists of approximately 342,000 acres of public land located in the northwest portion of Humboldt County, about forty miles northeast of Gerlach, Nevada. The allotment extends from the valley floor of the west arm of the Black Rock Desert to the higher terrain of the Calico and Black Rock Mountain Ranges.

A variety of laws, regulations, executive orders, and policy directives mandate that the effects of a Proposed Action and Alternatives on certain critical environmental elements be considered. Not all of the critical elements that require inclusion in this EA will be present, or if they are present, may not be affected by the Proposed Action and Alternatives. Only those mandatory critical elements that are present and affected, or need to be considered, are described in this section.

In addition to the mandatory critical elements, there are additional resources that require impact analysis relative to the Proposed Action and Alternatives. These are presented in section **3.2 Additional Affected Resources**.

3.1 Critical Environmental Elements

To comply with NEPA, the following elements of the human environment are subject to requirements specified in statute, regulation or executive order and must be considered.

Table 5. Critical Elements

Air Quality	Present Not Affected
Areas of Critical Environmental Concern (ACEC's)	Present Not Affected
Cultural Resources	Present Affected
Environmental Justice	Not Present
Floodplains	Not Present
Invasive, Non-native Species	Present Affected
Migratory Birds	Present Affected
Native American Religious Concerns	Present Not Affected
Prime or Unique Farmlands	Not Present
Threatened & Endangered Species	Present Affected
Wastes, Hazardous or Solid	Not Present
Water Quality (Surface and Ground)	Present Affected
Wetlands and Riparian Zones	Present Affected
Wild and Scenic Rivers	Not Present
Wilderness	Present Affected

The critical elements identified in Table 5 as being not present or present and not affected will not be analyzed further in this document.

The following critical elements have been identified in Table 5 as being present and affected by the Proposed Action and Alternatives: cultural resources, invasive, non-native species, migratory birds, threatened and endangered species, water quality (surface and ground), wetlands and riparian zones and wilderness.

3.1.1 Cultural Resources

The SMA includes a rich array of prehistoric and historic sites. Prehistoric sites range from as early as 12,000 years ago to as late as the mid-1800's when Euroamericans entered the area. Prehistoric sites include rock shelters, occupation sites (with probable buried deposits), Soldier Meadows EA

temporary camps, petroglyphs and pictographs, hunting blinds, quarry sites, and lithic scatters. The highest concentration of prehistoric sites is in association with permanent and intermittent water sources.

Historic routes, which pass through the SMA, include the 1843-44 John C. Fremont Exploration Route, the 1846 Applegate Trail, the 1848 Applegate-Lassen Trail, and the Idaho Stage Route. There are also a number of historic campsites and features associated with these routes in the SMA. A one-mile corridor along the Applegate-Lassen Trail is listed on the National Register of Historic Places. The portion of the Applegate-Lassen Trail, which passes through the Black Rock Desert and High Rock Canyon, is the longest existing segment of emigrant trail, which the public can travel, surrounded by virtually the same vistas witnessed by the emigrants. In order to protect this trail segment and the surrounding setting, Congress established the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area in 2000. The Applegate-Lassen Trail is also part of the California Trail, which Congress designated as a National Historic Trail in 1992.

Other historic sites include an outpost of Camp McGarry (private) at present day Soldier Meadows Ranch, sites associated with homesteading, farming and ranching, Basque aspen carvings and other sites associated with sheep herding, and historic mining sites. During World War II through the 1950s, the Black Rock Desert served as a gunnery range for the military. Remnants of this activity can still be found in the form of bullets, shell casings and targets.

The recently constructed Desert Dace fence reduces or eliminates the potential impacts associated with livestock and wild horse/burro grazing to cultural resources within the enclosure.

3.1.1.1 Native American Religious Concerns

The SMA is within the traditional homeland of the Northern Paiute. The northern portion of the allotment falls within the area used by the Agaipanadokado (fish lake eaters) and/or Moadokado (wild onion eaters) of Summit Lake. The southern portion lies within the area traditionally used by the Kamodokado (jack rabbit eaters) of Gerlach, Nevada. Paiutes from other areas probably also used and passed through the SMA. The Summit Lake Paiute Reservation is adjacent to the SMA to the North.

Ethnographic information and past consultation with Native American Tribes indicate they consider all water sacred. Hot springs are considered particularly valuable because of their role in healing, as places of prayer, and their association with water babies. Many of the plants in the SMA were used for medicinal purposes as well as for food, shelter, baskets, tools, and clothing. Riparian zones are particularly rich sources of such plants. Some Native Americans continue to gather medicinal and other plants.

3.1.2 Invasive, Non-native Species

Several laws authorize control of noxious weeds on public land under the BLM's administrative jurisdiction (e.g., The Federal Insecticide, Fungicide and Rodenticide Act of 1972, Federal Noxious Weed Act of 1974, FLPMA (1976), and the Public Rangelands Improvement Act of 1978).

Nevada Revised Statutes, Chapter 555.05 defines "noxious weeds" and mandates land owners and land management agencies to control noxious weeds on lands under their jurisdiction.

Of the noxious weed species identified in Nevada Revised Statutes, Chapter 555.05, Hoary cress (*Cardaria draba*), yellow starthistle (*Centaurea solstitialis L.*) and Saltcedar/Tamarisk (*Tamaris*

ramosissima) have been found within the allotment. The hoary cress was treated in 2005 and yellow starthistle is scheduled to be treated in 2007.

3.1.3 Migratory Birds

All birds in the Winnemucca Field Office are considered neotropical migratory birds except for all of the gallinaceous birds (California quail (*Lophortyx californicus*), sage-grouse (*Centrocercus urophasianus*), chukar (*Alectoris graeca*), gray partridge (*Perdix perdix*), and the mountain quail (*Oreortyx pictus*)). Migratory birds may be found in any allotment and are either seasonal residents or migrants.

Migratory birds are protected and managed under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq.*) and Executive Order 13186. Under the MBTA nests (nests with eggs or young) of migratory birds may not be harmed, nor may migratory birds be killed. Executive Order 13186 directs federal agencies to promote the conservation of migratory bird populations.

Most of the vegetation communities on these allotments are characterized by salt desert shrub and/or sagebrush species. Migratory birds associated with these vegetative communities may include: black-throated sparrow (*Amphispiza bilineata*), Brewer's blackbird (*Euphagus cyanocephalus*), Brewer's sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), canyon wren (*Catherpes mexicanus*), gray flycatcher (*Empidonax wrightii*), green-tailed towhee (*Pipilo chlorurus*), loggerhead shrike (*Lanius ludovicianus*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), vesper sparrow (*Pooecetes gramineus*), and yellow-breasted chat (*Icteria virens*) (Great Basin Observatory, 2003).

The burrowing owl, loggerhead shrike, and vesper sparrow are BLM designated sensitive species. Most of these species require a diversity of plant structure and herbaceous understory. Good diversity provides sufficient habitat for nesting, foraging, and cover.

3.1.4 Threatened & Endangered Species

Bald Eagle - The Fish and Wildlife Service (2007) lists the bald eagle (*Haliaeetus leucocephalus*) as a threatened species and lists the yellow-billed cuckoo (*Coccyzus americanus*) as a candidate species for the Soldier Meadows Allotment. The bald eagle may potentially occur incidentally as a very rare migrant in the analysis area; however, no foraging, nesting or roosting areas occur locally. For this reason, proposed activities are judged to have no effect on this species or its habitats and it will be dismissed from further analysis.

Yellow-billed Cuckoo - The yellow-billed cuckoo requires extensive, multistory galleries of cottonwoods. No such habitats occur in the analysis area, and no local occupation by this species is known. For this reason, proposed activities are judged to have no impact on this species or its habitats and will be dismissed from further analysis.

Desert Dace - The hot springs and their outflows to the south and west of the Soldier Meadows Ranch are the only known habitats for the desert dace (*Eremichthys across*). The desert dace has been federally listed as Threatened since 1985 (Federal Register Volume 50, p. 50304,) and is the only member of the genus, *Eremichthys*. At the time of listing, critical habitat was also listed, that encompasses 50 feet on each side of designated thermal springs and their outflow streams (USFWS 1997).

Lahontan Cutthroat Trout - Four streams within the Soldier Meadows Allotment support

existing populations of Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*, LCT). LCT is a federally listed Threatened species since 1975 (Federal Register Vol. 40, p. 29864). Mahogany, Summer Camp, Snow, and Colman Creeks exist entirely within the Soldier Meadows Allotment and currently are occupied by LCT. The majority of Donnelly Creek exists within the Soldier Meadows Allotment, although it does not contain a population of LCT, it is a recovery stream for LCT.

3.1.5 Water Quality

The SMA contains numerous surface water resources including: perennial, intermittent and ephemeral streams, cold springs, wet meadows, thermal springs and a reservoir. Refer to Map 6. The area is unique because it generates a high level of public and regulatory interest due to the cultural, recreational and biological diversity. This diversity is intrinsically linked to the water resources of the allotment.

Precipitation within the allotment is spatially variable and orographically influenced with annual estimates ranging from 5 inches on the valley bottoms to 20-24 inches at the upper elevations. Climate patterns are typical of the Great Basin physiographic province with hot, dry summers and cold, moist winters. The hydrography of the area follows this same pattern with north/south trending mountain ranges with primary drainage perpendicular to the ranges, running towards the axes of the valleys.

The perennial stream reaches are located in the primary drainage features. The majority of the perennial stream reaches are found within the Colman Creek, Donnelly Creek, Slumgullion Creek, Snow Creek, Mahogany Creek, and Summer Camp Creek (a tributary of Mahogany) watersheds. They tend to have a runoff flow event in the months of March through May or June at which time they quickly retreat to a baseflow condition extending from July through September or October, and then they tend to rebound slightly as transpiration in the riparian zone slows and evaporation is at a minimum. The magnitude and duration of flow events differ for all of the above listed streams, yet the annual flow behavior of each is similar.

3.1.6 Wetland/Riparian Zones

The SMA contains numerous wetland and riparian resources, including both **Lentic** zones consisting of areas with low flows or standing water such as ponds, seeps, and meadows and **Lotic** zones with running water such as creeks, streams and springs.

Lotic riparian assessments to determine Proper Functioning Condition (PFC) were conducted in the following areas within the SMA. Refer to Map 7 for additional information.

Table 6. Lotic Riparian Areas

Name	Year	PFC (mi.)	Functioning at Risk - Trend			Nonfunctioning (mi.)
			Upward (mi.)	Static (mi.)	Downward (mi.)	
Desert Dace Habitat	2005	3	0	0	0	0
Cherry Ck. (Reach 1)	1998	0	0	0	3.01	0
Cherry Ck. (Reach 2)	1998	1.73	0	0	0	0
Colman Ck. (Reach 1)	1998	0	0	0	0	1.33
Colman Ck. (Reach 2)	1998	0	0	4.00	0	0
Colman Ck. (Reach 3)	1998	4.91	0	0	0	0
Donnelly Ck. (Reach 1)	1998	0	0	0.87	0	0
Donnelly Ck. (Reach 2)	1998	4.34	0	0	0	0

Donnelly Ck. (Reach 3)	1998	3.42	0	0	0	0
Mahogany Ck. (Reach 1)	2000	1.76	0	0	0	0
Mahogany Ck. (Reach 1-3)	1993	4.56	0	0	0	0
Slumgullion Ck. (Reach 1)	1998	0	0	0	8.30	0
Slumgullion Ck. (Reach 2)	1998	1.09	0	0	0	0
Slumgullion Ck. (Reach 3)	1998	3.68	0	0	0	0
Snow Ck. (Reach 1)	1993	0	0	2.31	0	0
Soldier Ck. (Reach 1)	1998	0	0	3.42	0	0
Summer Ck. (Reach 1-3)	1993	5.30	0	0	0	0

Lentic riparian assessments to determine Proper Functioning Condition (PFC) were conducted in the following areas within the SMA. There were a total of 150 lentic areas monitored throughout the SMA, not including the Desert Dace Habitat or the Willow Ck. Meadow. Of the 150 sources monitored, 88 were at PFC, 7 were Functioning at Risk (FAR) Upward Trend, 36 were FAR Static Trend, 21 FAR Downward Trend and 5 Nonfunctioning. Refer to Map 8 for additional information.

Table 7. Lentic Riparian Areas

Name	Year	PFC (ac.)	Functioning at Risk - Trend			Nonfunctioning (ac.)
			Upward (ac.)	Static (ac.)	Downward (ac.)	
Desert Dace Habitat	2005	3	0	0	0	0
Willow Ck. Meadow	1998	3	0	0	0	0
Dispersed Lentic Areas	2003	305.75	10	44.50	160	2

Measured residual stubble heights at three established study sites are presented in Table 8.

Table 8. Riparian Stubble Height

Name	Year	Rush	Bluegrass
Buck Spring	2005	12.42 in.	11.64 in.
Rock Spring	2005	6.03 in.	4.61 in.
Tollhouse Canyon	2005	14.92 in.	6.31 in.
Buck Spring	2006	2.01 in.	1.09 in.
Rock Spring	2006	2.47 in.	2.50 in.
Tollhouse Canyon	2006	14.92 in.	6.31 in.

Prior to 2005, wild horse and burro population estimates were above AML. Ocular riparian stubble heights throughout the Warm Springs HMA ranged from 0.5 to 4 inches, but consistently averaged less than 2 inches in October 2003. Results show a marked reduction in stubble heights when both cattle and wild horses are present. Monitoring results prior to August reveal very little evidence of wild horse use on riparian forage. However, horses do utilize riparian forage in the late summer and fall after upland grasses have matured.

3.1.7 Wilderness

The Proposed Action would affect portions of the East Fork High Rock Canyon, High Rock Lake, Calico Mountains, North Black Rock Range, and Pahute Peak wilderness areas. The Wilderness was designated by the Black Rock Desert High Rock Canyon Emigrant Trails Act on December 31, 2000. Refer to Map 9 for additional information. Detailed descriptions of the areas can be found in the Nevada Statewide Wilderness Report, October 1991.

These Wilderness Areas designated by the Act must be managed in accordance with the

Wilderness Act of 1964. The Wilderness Act of 1964 states that “the grazing of livestock, where established prior to the effective date of this Act, shall be permitted to continue subject to reasonable regulations...”. BLM records support conclusively that practically uninterrupted livestock grazing has occurred throughout the allotment predating the agency (1934).

The NCA Act did not specifically include any “Congressional Grazing Guidelines for Black Rock-High Rock Wilderness Area”; however it did reference section 101(f) of Public Law 101-628, which is commonly referred to as the “Congressional Grazing Guidelines”. The Congressional Grazing Guidelines state that “It is anticipated that the numbers of livestock permitted to graze in wilderness would remain at the **approximate levels existing** at the time an area enters the wilderness system. The term “approximate levels existing” as cited in the Congressional Grazing Guidelines has been interpreted by BLM (IM 87-142) as meaning the level of active preference at the time of wilderness designation. The term active preference (Grazing Preference) includes both the scheduled and non-scheduled AUMs. The Proposed Action would authorize the same level of grazing preference (12,168 AUMs) as the 2004 FMUD.

3.2 Additional Affected Resources

In addition to the critical elements, the following resources may be affected by the Proposed Action and Alternatives: recreation, socio-economics, soils, special status species, vegetation, visual resources, wild horses/burros and wildlife.

A review of the SMA monitoring data was conducted. Baseline data included the Natural Resource Conservation Service, soil survey information, Nevada Department Of Wildlife (NDOW) habitat information, slope topology, the Winnemucca BLM Field office water and weed inventories. Monitoring data included the ReGap (Regional Vegetation classification) data, Nevada Natural Heritage Program cheatgrass monitoring, professional judgment, and utilization. Utilization monitoring was conducted from 1996 through 2005.

3.2.1 Recreation

A large majority of the SMA lies within the boundaries of the Black Rock Desert – High Rock Canyon Emigrant Trails National Conservation Area (NCA). The NCA was established to protect the nationally significant cultural, geological, ecological and recreation resources of the area.

A wide diversity of recreation occurs in the SMA and NCA. Some people visit the area simply to enjoy its solitude and naturalness, while others go there to tour historic trails, ride off-highway vehicles, rockhound, or view wildlife and wild horses. Recreation opportunities in the SMA predominately include camping use, hunting, hot springs bathing, and wilderness trekking. The relative absence of development in these areas provides for unique opportunities to experience an un-manipulated landscape, which has become increasingly rare in modern times. Protection of the recreational experience associated with the primitive and undisturbed landscape is a high priority for several of the high-use areas found within the SMA, and continues to be an important management objective for the area as a whole.

3.2.2 Social Values and Economics

Historically, ranching has played a major role in the northern Nevada way-of-life; therefore, livestock grazing also holds a social value as well as an economic value within the community. Because of ranching, public and private land uses in northern Nevada are often intertwined. Public land is used for livestock grazing during part of the year and private land is used to care

for livestock the remainder of the year. Because of this public and private land use relationship, decisions made in the management of rangelands can amplify impacts to ranchers.

Humboldt County is comprised of 6,169,180 acres (2006 Socioeconomic Report). Of this total, 4,628,625 are publicly owned rangelands, much of which are used for livestock grazing. The SMA includes 331,691 acres of public land which is approximately seven percent (7%) of Humboldt County's total publicly owned land. The privately owned remaining acres within the SMA are utilized, in part, for agricultural purposes in support of livestock operations.

3.2.3 Soils

Soils information is extracted from the Soil Survey of Humboldt County Nevada, West Part, 2003. Refer to Map 10 for biological crust potential based on this soils information.

3.2.4 Other Special Status Species

This section includes taxa that are not previously discussed above as federally listed, proposed, or candidate species. These species include State of Nevada listed species and Nevada BLM sensitive species. BLM policy is to provide these species with the same level of protection as provided for candidate species in BLM Manual 6840.06C, that is to "ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed".

No on-the-ground field investigation was conducted for sensitive/protected plant, or animal species including birds. The Nevada Natural Heritage Program database (March 2007) and the NDOW Diversity database (March 2007) were consulted for the possible presence of endangered, threatened, and/or candidate species.

Species that occur in the SMA:

Springsnails (*Hydrobiidae*) - The "Recovery Plan for the Rare Species of Soldier Meadows" identified several spring systems, which were known to be occupied by springsnails (USFWS 1997). One species, *Pyrgulopsis notidicola* is currently considered a candidate for listing as threatened by the USFWS. Recent surveys have increased the known number of springsnail and pubblesnail species to five and also substantially increased the number of occupied springs within the SMA (Hershler, 2006).

The primary areas of known springsnail concentrations on public lands occur in the vicinity of the desert dace critical habitats that were fenced to exclude livestock and wild horses in 2005.

Soldier Meadows cinquefoil (*Potentilla basaltica*) - This species occurs in moist, salt-crusting clay in alkaline meadows and cooled outflow stream margins below thermal springs, generally on slight southeast slopes. The recorded elevations are 4,380 to 4,580 feet. It occurs in the moist meadow environment of the Hot Springs Use Area. Soldier Meadows cinquefoil appears to invade disturbed sites but does not appear to be a disturbance dependent species. They appear to be confined to a narrow range of micro-sites associated with moist, silty, unsaturated, alkaline soils associated with micro terrain features near thermal springs (Knight, 1990; Nachlinger, 1991).

Cinquefoil is a low-growing, perennial herb with prostrate stems. Flowering begins in May and continues through the summer. Flowers are bright yellow and occur in loose clusters. A total population is estimated at 85,000 individuals in eleven subpopulations adjacent to hot springs in the Soldier Meadows area.

All populations of the species known to exist on public land were excluded from livestock and wild horse and burro use by a fence constructed in 2005. Therefore no known populations of Soldier Meadows cinquefoil occur within areas being proposed for grazing under any alternative associated with this EA.

Smooth stickleaf (*Mentzelia mollis*) – This is an erect, annual herb that blooms in May and June. Numerous sites occupied by this species exist within the Black Rock Use Area and are thought to have originated from two known populations. Habitat is associated with nearly barren eroding shoulder and side slopes of shrink-swell clay soils formed by hydrothermal alteration and weathering of air-fall volcanic ash deposits along the west side of the Black Rock Range (Holland, 1994). These populations were re-inventoried in 2005 by BLM and additional sites within each population were documented. Plants were observed to be healthy and reproducing.

3.2.5 Sensitive Species

Sensitive species are taxa that are not already included as BLM Special Status Species under: (1) Federally listed, proposed, or candidate species or (2) State of Nevada listed species. BLM policy is to provide these species with the same level of protection as provided for candidate species in BLM Manual 6840.06C, that is to “ensure that actions authorized, funded, or carried out do not contribute to the need for the species to become listed”.

The following designated Bureau of Land Management (BLM) sensitive animal species are described, as portions of the allotment contain habitat characteristics where these species could occur.

Burrowing Owl (*Athene cunicularia*) - Burrowing owls may be found in sagebrush/bunchgrass vegetative communities, so it is possible that they may occur on the allotment. They are dependent on burrowing mammal populations for maintenance of nest habitat. Dense stands of grasses and forbs within owl home ranges support populations of rodent and insect prey. However, there are no known colonies of burrowing owls within the Soldier Meadows Allotment.

Loggerhead Shrike (*Lanius ludovicianus*) - Loggerhead shrikes may be found in sagebrush/bunchgrass vegetative communities, so it is possible that they may occur on the allotment. These birds would benefit from habitat with a diverse structure and species composition. Healthy sagebrush communities would provide these habitat characteristics. According to Paige and Ritter (1999), “Long –term heavy grazing may ultimately reduce prey habitat and degrade the vegetation structure for nesting and roosting. Light to moderate grazing may provide open foraging habitat”.

Vesper Sparrow (*Pooecetes gramineus*) - The vesper sparrow may be found on the allotment since it typically inhabits sagebrush-grass vegetative communities. It differs greatly from the loggerhead shrike in its foraging habits. It forages on the ground and eats mostly seeds from grasses and forbs and will also eat insects when they are available. The vesper sparrow responds negatively to heavy grazing in sagebrush/grasslands. In these habitats, it benefits from open areas with scattered shrubs and a cover of good bunchgrasses for nest concealment, since it is a ground nester (Paige and Ritter, 1999).

Pygmy rabbit (*Brachylagus idahoensis*) - This species is the smallest North American rabbit and is a sagebrush obligate species. The rabbit uses tall, dense stands of big sagebrush, primarily basin big sagebrush, with deep, friable soils typically loamy in texture (Gahr, 1993). Typically pygmy rabbit habitats are micro-sites within the broad range of sagebrush communities. The Pygmy rabbit mates in early spring and summer. Its primary food is sagebrush, which makes up to 98% of its winter diet. Grasses are important during the summer, comprising as much as 30-

40% of its diet (Green and Flinders, 1980). No inventories for pygmy rabbits have been completed within the SMA, and potential high quality habitat sites are considered rare. Potential sites include the edges of floodplains in the upper portions of watersheds and floodplains at lower elevation where channel down-cutting has allowed for the invasion of basin big sagebrush into sites that were formerly occupied by wet and semi-wet meadows.

Presence/absence surveys have been conducted to the north and west of the Warm Springs use area and north of the Idaho Canyon use area. Pygmy rabbits do occupy suitable habitats near the SMA and are therefore likely to occur within portions of the SMA (Larrucea 2006, Larrucea 2007).

Pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*)

Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)

Spotted bat (*Euderma maculatum*)

Small-footed myotis (*Myotis ciliolabrum*)

Long-eared myotis (*Myotis evotis*)

Fringed myotis (*Myotis thysanodes*)

Long-legged myotis (*Myotis volans*)

Yuma myotis (*Myotis yumanensis*)

All of these species uses natural caves and cracks in rock outcrops or man-made cavities for breeding, rearing, and/or hibernating habitat (Bradley, P.V. et al. 2006). There is no specific information related to breeding colonies of any of these species within the allotment. Potential breeding and hibernating habitat is considered common in the mountainous and rocky areas. Bats depend upon insect prey and the best potential for insect prey within the allotment occurs near wet meadows and marshlands. That would restrict potential high quality foraging areas to less than one percent of the allotment.

Preble's shrew (*Sorex preblei*) - This species is a small burrowing mammal associated with meadows and riparian areas in the upper portions of the sagebrush zone. There are no records of shrews within the allotment but potential habitat exists associated with riparian areas and meadows in the northern portion of the Black Rock Range. Shrews feed primarily on insects and other soil invertebrates. Quality habitat includes plant communities dominated by dense herbaceous vegetation that support high levels of prey and soils high in organic matter.

Northern goshawk (*Accipiter gentiles*) - This species is a known breeder in the Mahogany Creek watershed aspen stands. Found in a variety of dense, mature or old growth aspen habitat, goshawks require large, healthy multi-story stands for nesting and foraging. They forage for prey in and near woodland communities.

Nevada viceroy (*Limenithus archippus lahontani*) - The species is a butterfly whose preferred host plants are willows and aspen. Habitat includes riparian areas, meadows, and aspen wood edges.

Greater sage-grouse (*Centrocercus urophasianus*) - The sage-grouse is a sagebrush obligate species and is strictly associated with sagebrush/grasslands. Sage-grouse may eat a variety of grasses, forbs and insects during the breeding season. They feed almost entirely on sagebrush during the winter months, selecting shrubs with high protein levels (Paige and Ritter, 1999).

The allotment contains about 178,620 acres of sage-grouse habitat (55.2 % of the allotment), as well as 10 known leks (communal breeding sites). Recent BLM habitat classifications have been

completed as part of the Nevada sage-grouse conservation planning efforts associated with the Black Rock and Massacre Population Management Units (PMUs). The classifications indicate that about 40 percent of the SMA contain all required habitat components, an additional 12 percent have adequate sagebrush cover but are lacking in appropriate amounts of herbaceous understory. The valley floor south of Soldier Meadows is not sage-grouse habitat.

Nesting habitat management/protection should consist of the following: Support 15-25% canopy cover of sagebrush, perennial herbaceous cover averaging > 18 cm in heights with > 15% canopy cover for grasses and > 10% for forbs and a diversity of forbs (Connelly et al., 2000). A basic requirement of nesting cover is concealment of the sage-grouse hen and her nest. Quality nest sites offer shelter from above by branches, good growth of understory grasses, and sagebrush within 70 cm of the nest.

Hens with broods require well-sheltered areas that provide protection from predators and the weather. Proximity to preferred forbs and insects is important for hen and chick nutrition. Chicks have limited mobility, so suitable food such as forbs and insects must be readily available. As plants mature and dry, broods move to areas still supporting succulent vegetation, especially native meadows and high elevation drainages. These areas are important as a source of forbs, insects, and free water. Adult and juvenile birds congregate in these wetter areas during late summer and early fall.

Summer habitat is generally characterized by relatively moist conditions and many succulent forbs in or adjacent to sagebrush cover. There are numerous springs or seeps within the allotment, further enhancing the area as summer habitat. As these areas dry, sage grouse consumption of sagebrush increases and the grouse move to areas with sagebrush that is taller than the snow for the winter season. During the winter, sage-grouse feed almost entirely on sagebrush leaves. Typical winter ranges are large expanses of sagebrush (>10% canopy cover) with an average height of 25 cm. This association with sagebrush stands typically begins in September and continues through the breeding season.

Most of the sage-grouse habitat within the allotment is also suitable as winter range. Winter habitat management/protection should consist of the following: Maintain sagebrush communities on a landscape scale, allowing sage-grouse access to sagebrush stands with canopy cover of 10-30% and heights of at least 25-35 cm regardless of snow cover (Connelly et al., 2000). During the winter, sage grouse forage almost exclusively on one or more sagebrush species.

3.2.6 Vegetation

The potential vegetation communities have been derived from information extracted from the Soil Survey of Humboldt County Nevada, West Part, 2003. Refer to Map 11, Dominant Potential Vegetation. The potential natural vegetation consists of 14 vegetation types, primarily of shadscale (*Atriplex confertifolia*) and budsage (*Picrothamnus desertorum*), Wyoming big sagebrush (*Artemisia tridentata wyomingensis*), little sagebrush (*Artemisia arbuscula longicaulis*), mountain big sagebrush (*Artemisia tridentata vaseyana*) and basin big sagebrush (*Artemisia tridentata*).

The SMA Ecological Site Inventory (ESI) Vegetation, identifies 26 cover types, dominant vegetation cover types are: S054 Inter-Mountain Basins Big Sagebrush Shrubland, S055 Great Basin Xeric Mixed Sagebrush Shrubland, S065 Inter-Mountain Basins Mixed Salt Desert Scrub, S071 Inter-Mountain Basins Montane Sagebrush Steppe, S078 Inter-Mountain Basins Big Sagebrush Steppe, and S096 Inter-Mountain Basins Greasewood Flat. Refer to Map 12.

Cheatgrass (*Bromus tectorum*) is present in the SMA. Refer to Map 13. The percent cheatgrass cover is highest adjacent to the Soldier Meadows Ranch ranging as high as 31 to 50 percent. Generally, cheatgrass cover on the fan piedmonts adjacent to the Soldier Meadow(s?) Ranch varies from 15 to 20 percent. Cheatgrass cover on the fan piedmonts in the southern portion of the allotment generally ranges from 5 to 10 percent. On the greasewood flats, mountains, and plateaus, cheatgrass cover ranges from 0 to 5 percent.

The Sonoma-Gerlach Draft Grazing EIS identifies the critical growth period for the key plant species as: Nevada bluegrass May 15 to June 15; basin wildrye, May 1 to July 31; Thurber's needlegrass, needleandthread, and bluebunch wheatgrass, bottlebrush squirreltail, May 1 to June 30; Idaho fescue, May 15 to July 31; Indian ricegrass, April 15 to July 15; and winterfat March 1 to September 30.

Ecological Status Inventory (ESI) data for SMA was collected in 1991. ESI is designed to serve as a base inventory of present vegetation compared to potential. Four classes are used to express the degree to which production or composition of the present plant community reflects that of the potential natural community.

Table 9. Ecological Seral Status

Seral Stage	Percent of Present Plant Community to Potential
Potential Natural Community (PNC)	76-100
Late	51-75
Mid	26-50
Early	0-25

Results from numerous upland study sites in the Warm Springs Canyon HMA (includes 100% of Warm Springs Use Area) reveal upland utilization levels have decreased from a high of 62 percent in October 2003 with the removal of excess wild horses in December 2004. Current (2006) upland utilization levels include three studies in the light to moderate range (21-60%) and six studies in the no use to slight range (0-20%).

Several fires have occurred in the SMA. Refer to Map 14. The Mahogany Creek fire in 2000 was the largest. This fire burned primarily late status rangelands and has naturally recovered.

The following climatological data has been collected from 1995 through 2006 at the Gerlach and Virgin Valley National Oceanic and Atmospheric Administration (NOAA) Stations. The Gerlach station is south of the SMA and Virgin Valley is north therefore these sites should best represent the climatological conditions on the allotment.

Table 10. Precipitation Data Gerlach NOAA

Gerlach NOAA Station	
Year	Growing Season (Inches)
1995	13.23
1996	9.55
1997	10.07
1998	11.28
1999	7.67
2000	7.23

2001	4.91
2002	6.98
2003	5.57
2004	3.94
2005	11.34
2006	9.7
Station Mean	7.43
Note: Growing season is defined as September through June. Precipitation in the allotment averages from 1 to 12 inches annually with much of it coming in the form of snow and rain during the winter months.	

**Table 11. Precipitation Data Virgin Valley NOAA
Virgin Valley NOAA Station**

Year	Growing Season (Inches)
1995	9.28
1996	8.7
1997	5.55
1998	2.27
1999	3.85
2000	0.56
2001	0
2002	3.88
2003	2.64
2004	4.79
2005	7.78
2006	4.32
Station Mean	6.23
Note: Growing season is defined as September through June. Precipitation in the allotment averages from 1 to 12 inches annually with much of it coming in the form of snow and rain during the winter months.	

3.2.7 Visual Resource Management

BLM uses visual resource management (VRM) in the planning area to manage the quality of the landscape by minimizing potential impacts to visual resources resulting from human activities or developments. The objectives of these classes vary from very little change in the landscape, (e.g. Class 1) to activity that allows major landscape modifications (e.g., Class IV). VRM classes within the SMA vary from Class I to Class IV.

3.2.8 Wild Horses and Burros

Under the authority of the 1971 Wild Free-Roaming Horses and Burros Act, the BLM protects, manages, and controls wild horses and burros to ensure that healthy herds thrive on healthy rangelands.

Two HMAs and a portion of a third are included within the SMA. HMAs are established for the maintenance of wild horse and burro herds (43 CFR 4710.3-1). An AML is defined as the number of wild horses/burros determined to be consistent with the objective of achieving and Soldier Meadows EA

maintaining a thriving, natural ecological balance and multiple-use relationship in a HMA.

AMLs (Table 12) for the Black Rock West (NV-227), Calico Mountains (NV-222), and the Warm Springs Canyon (NV-226) HMAs were originally analyzed in the Sonoma-Gerlach Final Grazing Environmental Impact Statement and Sonoma Gerlach Management Framework Plan (MFP) Record of Decision (ROD), June 30, 1982. Additional analysis occurred in the allotment evaluation and 1994 Final Multiple Use Decision (FMUD) for the Soldier Meadows Allotment.

Table 12. Established AMLs within the Allotment.

HMA	Percent of HMA within SMA	AML Range	AUMs
Black Rock Range West	100	56-93 H	1,116
Calico Mountains*	29	49-65 H	780
Warm Springs Canyon	100	105-175 H; 14-24 B	2,388
Totals		210-333 H; 14-24 B	4,284

* only the portion within Soldier Meadows allotment; H= horse, B=burro

Aerial counts completed within the past ten years reveal wild horse populations in excess of the established AML (Table 13) and recruitment rates in excess of 20%. However, wild horse gathers and selective removals of 1,809 head in December 2000 and 702 head in December 2004 have reduced current herd populations to AMLs (Table 14). Fertility control treatments are expected to reduce recruitment rates, improve animal health and body condition (deferral of reproduction/lactation costs), and extend the gather cycle from 3 years to 4-5 years. The next tentatively scheduled gather is set for late 2008 or early 2009.

Table 13. Inventory (aerial) History.

HMA/AML Range	Date	Count	Recruitment Rate foal/adult (%)
Black Rock Range West AML Range: 56-93	July 2001	108	33
	July 2000	416	19
	August 1997	316	26
Calico Mountains AML Range: 200-333	October 2004	722	18
	July 2000	1,148	23
	August 1997	840	28
Warm Springs Canyon AML Range: 105-175	October 2004*	384	15
	July 2000	749	20
	August 1997	453	25

* partial count

Table 14. Estimated Wild Horse and Burro Populations.

HMA	Population Estimate February 2007 Soldier Meadows Allotment	Population Estimate February 2007 HMA
Black Rock Range West	76 H	76 H
Calico Mountains*	53 H	264 H
Warm Springs Canyon	139 H; 21 B	139 H; 21 B
Totals	268 H; 21 B	479 H; 21 B

* only the portion within Soldier Meadows allotment; H= horse, B=burro

Black Rock Range West HMA - This HMA is located entirely within the SMA. Elevations

range from 4,000 feet at the valley floor to 8,594 feet at Big Mountain. The area is comprised of approximately 93,206 acres; 87,427 acres (94%) of public land and 5,779 acres (6%) of private land.

Herd Characteristics - December 2004 gather data reveal sex ratios are (male) 43:57 (female) and herd age structure is normal. Gather data slightly skews sex ratios as more female horses are gathered than males.

The annual recruitment rate calculated at 26%. Twenty-three release mares were treated with a 2-year fertility control agent in December 2004. Genetic diversity is high. Herd color is primarily bay, black, brown, sorrel and buckskin.

Calico Mountain HMA - The terrain in this 157,000-acre HMA, of which 45,500 acres are within the allotment, consists of steep, north-south trending mountains made up of volcanic materials, separated by narrow valleys. Elevations range from 4,000 feet along the Black Rock Desert to 8,533 at Donnelly Peak. Perennial water sources are limited. This HMA is contiguous with the Warm Springs Canyon (north), Granite Range (southwest), and Fox Hog (west) HMAs. Some herd mixing is known to occur between HMAs as evidenced by capture/release/recapture of branded horses.

Wild horses in the Calico Mountains HMA (SMA portion) also have two patterns of movement. Some horses summer on the highest elevations of the Calico Range and move west into the High Rock Lake basin or Leadville area to winter while several bands remain year round along the lower eastern slopes of the Calicos. Mixing with Black Rock herds across the arm of the Black Rock desert seldom occurs, however some mixing does occur to the north with Warm Springs Canyon horses.

Herd Characteristics - December 2004 gather data reveal sex ratios are (male) 43:57 (female) and herd age structure is normal. Gather data slightly skews sex ratios as more female horses are gathered than males. Horses gathered from the northern section of the HMA were estimated as very thin to moderately thin (Henneke 1983) and unthrifty. Foals were small, undernourished, and unthrifty suggesting a lack of adequate nutrition and/or lack of water affecting milk production in lactating mares. Elsewhere, estimated body conditions ranged between thin to moderately fleshy (Henneke 1983). Horse populations at the time were twice the high AML and the area was in sustained drought conditions. Current field monitoring reveals body conditions as moderate or better.

The annual recruitment rate calculated at 12%. This is low compared to historical rates for this herd and might be a result of insufficient habitat (drought) and resultant horse health and body conditions. A 1-year fertility control agent was administered to 112 release mares in December 2000. Ninety-two release mares were treated with a 2-year fertility control agent in December 2004. In addition, release horses were selected to ensure a normal age structure and a 50:50 sex ratio. Genetic diversity is high. Calico horses are highly desired by adopters and make good ranch and performance horses. Herds are colorful - buckskin, palomino, grulla, cremello, and overo pintos are common. Medicine hat, splashed white, and sabino patterns are also present.

Warm Springs Canyon HMA - This 83,000-acre HMA is managed for both wild horses and burros. The area consists of a plateau that is dissected by steep, north-south trending canyons made up of volcanic materials. Elevations range from 4,550 feet at Fly Canyon to 7,084 feet at Trough Mountain. Perennial water sources are limited. Burros are usually found near Fly Canyon. This HMA is contiguous with the Calico Range (south), High Rock and Wall Canyon

(west), and Black Rock Range West (east) HMAs. Some herd mixing is known to occur between HMAs as evidenced by capture/release/recapture of branded horses.

Wild horses in the Warm Springs Canyon HMA spatially utilize the habitat in two defined patterns. Horses that spend the spring and summer on the west side move west into the High Rock HMA to winter. Historical fence maintenance issues, trailing evidence, and horse observations support this. Horses on the east side of the HMA, including Idaho Canyon, and above Mahogany Creek (Black Rock Range West HMA) move south into Slumgullion and Chukar Gulch basins to winter. Black Rock West horses winter in Slumgullion as well, as evidenced by the horses gathered from that area in December 2004. Few if any horses remain in the higher elevations once the weather change forces them down to lower country. Burros tend to stay year-round in the Fly Canyon area.

Herd Characteristics - December 2004 gather data reveal sex ratios are (male) 38:62 (female) and herd age structure is normal. Gather data slightly skews sex ratios as more female horses are gathered than males. Horses gathered from the south and west sections of the HMA were estimated as very thin to moderately thin (Henneke 1983) and unthrifty. Evidence of strangles occurred in some bands. Foals were undernourished and unthrifty. Horses gathered from the Mahogany Creek and Idaho Canyon areas, and the Slumgullion drainage were in much better condition - estimated as moderately thin to moderately fleshy (Henneke 1983). Horse populations at the time were more than twice the high AML and the area was in sustained drought conditions. Current field monitoring reveals body conditions as moderate or better.

The annual recruitment rate calculated at 22% is consistent with historical rates. A 1-year fertility control agent was administered to 61 mares in December 2000. Twenty-six release mares were treated with a 2-year fertility control agent in December 2004. In addition, release horses were selected to ensure a normal age structure and a 50:50 sex ratio. Genetic diversity is high. Horses exhibit a wide range of colors and are generally of a ranch-type, although a few Spanish-type occur. Colors of bay, sorrel, brown, buckskin, and palomino are common, and a few striking overo pintos are present. Burros are standard grays.

The quantity and distribution of water in the Warm Springs Canyon HMA is limited, especially in drought years. Prior to the 2004 gather, wild horses were observed waiting in large groups for water at Rock Springs and Trough Mountain trough. While many dispersed dirt catchments are present, they are small, many are non-functional, and most dry up by early summer.

3.2.9 Wildlife

Terrestrial wildlife resources on the SMA are typical of much of the Northern Great Basin. Priority terrestrial species for the allotment include mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), and bighorn sheep (*Ovis canadensis californiana*). There are many other wildlife species that occupy habitats within the allotment including raptors, predators, small mammals, reptiles, amphibians, and small game species. The above species were chosen because of past consideration in BLM's planning process, knowledge about habitat needs and conditions and potential impacts from livestock grazing.

Mule deer - Mule deer are widespread and typically associated with complex, middle to upper elevation landforms that support a wide variety of sagebrush, mountain shrubs, quaking aspen and herbaceous vegetation. Mule deer also use lower elevations during years when heavy snowfall depth forces them to move. Mule deer habitat in the SMA is comprised of about 90,000 acres for winter habitat, 8,000 acres for summer habitat, and 25,000 acres for yearlong habitat.

Mule deer are frequently associated with meadow and riparian habitat contiguous with large expanses of brush. The presence of green vegetation in riparian areas and palatable shrubs with high protein levels in the fall is essential for healthy fall breeding. It prepares mule deer for winter.

Mule deer habitats within the SMA occupy about 35 percent of the allotment (121,000 acres). Most of the mule deer habitat is winter range (87,750 acres) with yearlong range occupying 25,150 acres and summer range occupying 8,100 acres.

Deer migrating from higher elevations to lower elevations increase populations of some local herds in winter. NDOW data for 2001 to 2003 indicate that mule deer populations within the Unit 012-014 and 031-035, which includes all the SMA, has been healthy based upon fawn production of greater than 40 fawns per 100 does (NDOW, 2001, 2002 and 2003). Based on NDOW survey data, mule deer numbers are currently low, relative to historic numbers and State management objectives. Drought and other biological factors have contributed to these low numbers.

Deer are generally classified as browsers as shrubs and forbs make up the bulk of their annual diet. The diet of mule deer is quite varied, however, and the importance of various classes of forage plants varies by season. In winter, especially when grasses and forbs are covered with snow, the entire diet may consist of shrubby species. Tall shrubs and trees are very important for food and cover.

Pronghorn antelope - The pronghorn antelope is a relatively common ungulate of the sagebrush steppe zone within the Great Basin. Pronghorns are found on flat or rolling topography primarily on slopes below 30% with sagebrush heights of about 0.5 meter. Pronghorn require free water and will generally be found within 5 km of water. Pronghorn also make extensive use of meadows associated with upland springs, as these locations often provide the only green forage during the hot season.

Pronghorn antelope are widely distributed on the open portions of the SMA where they are summer or yearlong residents within the sagebrush habitats depending upon elevation. There are about 100,000 acres of summer habitat, where pronghorn antelope are widely distributed throughout valleys and mountain foothill habitats. Yearlong habitat comprises about 35,000 acres. Pronghorn are known to use salt desert scrub communities during the late winter and spring. Rangelands with a mixture of grasses, forbs, and shrubs provide the best habitat (Yoakum 1972). The pronghorn habitat within the SMA was rated using an established method. The rating yielded a score of 78 % of optimum for summer range and 77 % for winter range and revealed that the limiting factor is percent cover of forbs.

NDOW data for 2001 to 2003 indicate that pronghorn populations within the Unit 012-014 and 031-035 which includes all the SMA, has been healthy based upon fawn production of greater than 40 fawns per 100 does (NDOW, 2001, 2002 and 2003). Northern Washoe and Western Humboldt counties showed increasing populations each year during the 1999 to 2003 period and kidding ratios improved during the same period in spite of drought conditions observed during this period (NDOW, 2003).

Bighorn sheep - Populations of this species occur on the Black Rock and Calico Mountain Ranges. Due to a number of factors, bighorn sheep were eliminated from northern Nevada early in the 20th century. Existing populations are the result of numerous NDOW-initiated

reintroductions and supplemental releases that began as early as 1963 and most recently in January 2003. The total population in both ranges is estimated by NDOW to be about 170 animals and they currently occupy about 7,000 acres of about 100,000 acres of potential habitat. Populations increase slowly as sheep expand into vacant habitat. The NDOW data for both populations show excellent fall recruitment of lambs, which is indicative of bighorn sheep populations that are healthy and viable. Bighorn sheep occupy mountainous areas with extensive areas dominated by large rock outcrops that serve as escape cover. Their diet is primarily grasses supplemented by forbs and limited browse.

Topography is the primary source of cover for bighorns. Steep broken escarpments (60% plus slope) or rock outcrops at least five acres in size with transversable terraces is optimum. Bighorn sheep are adaptable foragers but three characteristics are common to quality forage: abundance, continuous distribution, and low stature. Grasses have high importance but mixed with forbs and/or shrubs are optimum. Potential Natural Community (PNC) or climax community is optimum with early seral stage the poorest. Also, no fences are an optimum condition for bighorns. For improving and maintaining the habitat for bighorns the sagebrush/bunchgrass communities, wet meadows, and riparian areas for PNC seral stage adjacent to rock outcrops and rimrock is optimum.

4.0 Environmental Consequences

4.1 Proposed Action

The environmental consequences of livestock grazing were analyzed in the Sonoma-Gerlach Grazing Environmental Impact Statement (EIS), the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area Resource Management Plan (RMP) and the 2003 SMA Multiple Use Decision EA. The following site specific analysis relevant to impacts of the Proposed Action and Alternatives are in addition to these documents.

4.1.1 Cultural Resources

Trampling and trailing associated with livestock grazing has the potential to affect cultural resource values by dispersing and destroying artifacts, disrupting site integrity, eradicating surface and subsurface datable cultural deposits. Cattle tend to congregate at water sources; springs, riparian areas, troughs, and salting grounds. Within the SMA, these locations coincide with known or potential areas of high cultural resource sensitivity. Cattle also tend to use historic structures for shade and rubbing posts. If cattle are dispersed, these impacts are generally minor.

Under the Proposed Action, the livestock stocking level (Active Preference) would be consistent with the existing grazing system. The allotment site specific objectives and SRH would ensure that livestock are properly managed to reduce potential impacts to cultural resources.

There is a range improvement project proposed for the SMA which would require an archaeological survey. If the project does encounter cultural resources vulnerable to the effects of livestock grazing these impacts would be considered by BLM under the protocol agreement with the State Historic Preservation Office. Effects from range improvements on National Register eligible archaeological sites would be mitigated by using any one or a combination of the following measures: avoidance, protection measures, (e.g., fencing) testing, or data recovery.

4.1.2 Invasive Non-native Species

Implementation of the Proposed Action would result in achievement of allotment specific objectives and SRH reducing the risk of increasing existing invasive, non-native species or establishing new populations. Attainment of the objectives and SRH would result in maintaining or increasing healthy native perennial plants and ultimately hinder the establishment and spread of invasive, non-native species.

Implementing the Proposed Action could reduce the spread of invasive and noxious plant species. Healthy native perennial plants would maintain or increase competition with invasive and noxious weed species, reducing weed establishment. The concentration of livestock in the immediate vicinity of water sources and salting areas could result in disturbed areas more susceptible to colonization of invasive or noxious weeds.

There is a possibility for invasive and noxious weeds to become established during fence construction. Mitigation is identified to include treatment and inventory of project areas following construction (see section 6.0, Monitoring and Mitigation Measures).

4.1.3 Migratory Birds

Grazing can impact the quantity and quality of riparian habitats that support Neo-tropical Migrants. Grazing animals can remove herbaceous or woody vegetation that support nests and provide seeds, buds and leaves to birds. Decreased vegetation due to grazing also decreases insect production, which decreases food availability of insectivores. Grazing can lead to nest disturbance and changes to the hydrology of riparian areas. These changes can lead to habitat loss or reduce the number of bird species supported within each riparian area.

Hot season livestock grazing would be more likely to directly or indirectly affect neo-tropical migrants when compared to dormant season or spring grazing. During this period, livestock tend to concentrate in riparian areas because of the limited availability of water and green forage in the uplands. Forage quality of grasses on the uplands decreases as grasses cure and dry. Livestock make less use of riparian areas during the dormant and spring seasons. During these two seasons, temperatures are cooler, with riparian areas in canyons being too cold for livestock to use for bedding sites. Cooler temperatures allow cattle to forage up to several miles from water sources. Green forage is readily available on the uplands during the spring season and usually fall rains allow for green-up of upland grasses during the dormant season. This upland forage is often of higher quality to livestock than riparian vegetation during these periods.

In this alternative, hot season grazing occurs every other year (odd years) in the Warm Springs use area and every year in the Idaho Canyon use areas. Riparian vegetation communities of high value to neo-tropical migrants are rare in these two use areas. Hot season grazing in these would have little impact on neo-tropical migrants.

Colman and Donnelly Creeks are other riparian areas that provides migratory bird habitat. Colman Creek within the Colman Use Area would allow livestock grazing only during the winter from November 16th to December 15th therefore there would be no impact to migratory birds. Donnelly Creek within the Calico Mountain/South Use Area is another riparian area potentially providing migratory bird habitat. This area allows spring use from 4/1-6/15 in even years that may potentially impact habitat by the removal of herbaceous cover along streams and bank trampling. Since livestock use would occur prior to the hot season, livestock would not be expected to congregate in riparian areas or harvest woody vegetation. Implementing the

allotment specific riparian objectives and the SRH would ensure that this potential habitat is functioning properly to meet the life cycle requirements for migratory birds.

The most important riparian areas in the SMA, within the Stanley Camp Pasture, the Mahogany Exclosure, would not be grazed under this alternative. Therefore, there would be no impact to neo-tropical migrants that prefer climax riparian communities, yet bird species that prefer early to mid successional riparian communities may be impacted. Aspen-willow communities within the Colman-Slimgullion use area would only be grazed during the dormant season. Neo-tropical migrants would be absent from these use areas at this time.

The allotment objectives and SRH would provide additional assurance that healthy riparian habitat for migratory birds would be maintained or improved. Specifically, the herbaceous and woody riparian vegetative objectives limit livestock use throughout the allotment ensuring migratory bird habitat is protected. Furthermore, the allotment-wide SRH provide additional assurance that riparian/wetland systems are in properly functioning condition and habitat conditions meet the life cycle requirements of neo-tropical birds. The Proposed Action is not likely to impact these populations or their habitat.

Migratory bird best management practices will be based upon applicable guidelines contained in the NV Bird Conservation Plan (Neel, 1999), Birds in a sagebrush sea: managing sagebrush habitats for bird communities (Paige and Ritter, 1999) and BLM Nevada Migratory Bird Best Management Practices for the Sagebrush Biome (USDI-BLM 2003).

The proposed fence is not expected to impact migratory birds since the project will not remove any vegetation that is potential habitat.

4.1.4 Threatened and Endangered Species

Desert Dace - The hot springs and their outflows that provide critical habitat for the desert dace, and they occur entirely within the Desert Dace Exclosure which is excluded from livestock use (prescriptive grazing only), therefore, there would be no impacts to the desert dace or their critical habitat.

Lahontan Cutthroat Trout -Livestock can directly and indirectly affect stream conditions and fisheries habitat through soil compaction, bank shearing, or severing roots of riparian vegetation (USDOI 2006); and also through alteration of streambanks, reduction of shade, increased sedimentation, decrease in cover, and subsequent changes in stream temperature (Platts 1990).

Mahogany, Summer Camp and Snow Creeks are entirely within the Stanley Camp Riparian Pasture and/or inside the Mahogany Creek Exclosure. These areas would be excluded from livestock grazing (prescriptive grazing only). The Proposed Action would not impact these populations or their habitat.

Colman Creek lies entirely within the Colman Use Area which under the Proposed Action would allow livestock grazing only during the winter from November 16th to December 15th, consistent with the existing Biological Opinion issued by USFWS (2004). Livestock would not be dependent upon water during this cool season and therefore would have little potential to impact Colman Creek and the LCT habitat under the Proposed Action. The Proposed Action includes the following measures that would lessen the potential impacts to the LCT habitat: (1) riparian herbaceous utilization would ensure a 6-inch stubble height remains when livestock are removed from Colman Creek, (2) utilization of willow greater than 5 feet in height shall not exceed thirty

30%, 20% on willows less than 5 feet in height, and 10% on any height of aspen, and (3) streambank alteration from livestock trampling would not exceed 10%.

The Slumgullion Use Area is near the Colman Use Area. The Slumgullion Use Area would allow livestock grazing from October 1st to December 15th. Refer to Maps 2 and 3. The boundary between Slumgullion and Colman Use areas is not fenced, therefore, mitigation that would be in place to reduce the potential of livestock straying from Slumgullion into the Colman Use Area would be: (1) topography and herding by the permittee, and/or (2) seasonal gap/drift fencing.

The proposed fence is not expected to impact any affected threatened and endangered species since the construction will not be within their habitat.

4.1.5 Water Quality

In general, livestock grazing activities can impact water resources in many ways. Potential impacts include altering the chemical, physical and biologic integrity of water and modifying the hydrologic response of watersheds by reducing infiltration and surface roughness and increasing compaction. All of these impacts are known to occur, but cannot be quantified in a predictive manner. There are too many independent variables that influence the degree of impact. Although impacts cannot be quantified, causal relationships have been identified that impact water resources and water quality.

The majority of the water resources in the SMA are Mahogany, Summer Camp and Snow Creeks within the Stanley Camp Riparian Pasture and the Mahogany Enclosure and the hot springs complex associated with the Desert Dace habitat. All of these areas are fenced and are not scheduled for grazing. Consequently, there should be no impacts to these resources from the Proposed Action. Colman and Donnelly Creeks are other important water sources in the allotment. Colman Creek within the Colman Use Area would allow livestock grazing only during the winter from November 16th to December 15th therefore it is unlikely there would be impacts to water quality related to cool season grazing. Donnelly Creek within the Calico Mountain/South Use Area allows spring use from 4/1-6/15 in alternate years that is not likely to impact water quality due to hot season avoidance.

The proposed grazing in the Idaho Canyon pasture would likely result in impacts (as identified in the first paragraph) to the water quality of the 12 dispersed springs that are located in that pasture. Given the proposed annual hot season grazing for this area, these impacts would be unavoidable in the absence of constructed barriers.

The proposed fence is not expected to impact water quality since it will be constructed entirely within upland sagebrush sites away from any source of water.

4.1.6 Wetland/Riparian Zones

Livestock grazing activities can impact wetland and riparian areas primarily by removal of vegetation and soil disturbance. Potential impacts include grazing herbaceous and woody vegetation and mechanical damage resulting from livestock hoof action. These impacts may result in insufficient vegetation to protect streambanks thus increasing soil erosion and compaction.

Riparian areas associated with Pole, Mahogany, Summer Camp and Snow Creeks occur within Soldier Meadows EA

either the Mahogany Creek Exclosure or the Stanley Camp Riparian Pasture. Additionally, meadows associated with the desert dace habitat are fenced. Livestock grazing would have minimal affect on these wetland/riparian zones. No livestock grazing is authorized in the Mahogany Creek Exclosure and only **prescribed** grazing **may** be authorized in the Stanley Camp Riparian Pasture if consistent with the management objectives of the Resource Management Plan.

Under the Proposed Action, livestock would graze in the South Use Area from January 16 to March 31 annually. Lentic riparian assessments in this area indicate that most areas are at PFC. The winter season of use has maintained and/or improved riparian conditions which would continue to improve due to short duration cool season grazing.

The Proposed Action would allow livestock to graze in the Calico Mountain Use Area from April 1 to June 15 one year followed by a year of rest. Riparian conditions on Donnelly and Cherry Creek within the Calico Mountain Use Area should improve and make progress towards PFC due to the lack of hot season use.

Livestock would graze the Hot Springs South Use Area under the Proposed Action from April 15 to July 15 one year and April 1 to April 30 the next year. Riparian conditions should be maintained or improved by providing a rest from hot season use every other year.

The Hot Springs North and Slumgullion Use Areas would be grazed from October 1 to December 15 each year under the Proposed Action. Riparian conditions should be maintained or improved by providing a rest from hot season use every other year.

The Warm Springs Use Area would be grazed from May 1 to July 15 one year followed by a year of rest. Riparian conditions should be maintained or improved by providing a rest from hot season use every other year.

The Idaho Canyon Use Area would be grazed from July 16 to October 31 each year under the Proposed Action. Hot season livestock grazing would occur every year in the Idaho Canyon Use Area. When combined with wild horse use, twelve springs and one seep may be heavily grazed each year. Consistent hot season use would not improve riparian areas and conditions are likely to decline; however, implementation of monitoring and mitigation measures would result in attainment of the allotment objectives and SRH.

The Coleman Use Area would be grazed from November 16 to December 15 under the Proposed Action. Riparian conditions should be maintained or improved considering the winter season of use and limited time livestock would graze this area. It is unlikely that livestock would impact the riparian areas since there would be limited cool season grazing.

The proposed fence is not expected to impact any riparian areas since it will be constructed entirely within upland sagebrush sites away from any riparian (lentic or lotic) zones.

4.1.7 Wilderness

Specific impacts from the Proposed Action to the wilderness characteristics of naturalness, untrammled and undeveloped character, opportunities for solitude and primitive recreation and special features are found below.

The Congressional Grazing Guidelines for Wilderness (which were incorporated into the Soldier Meadows EA

wilderness designation within the SMA) state, “It is anticipated that the numbers of livestock permitted to graze in wilderness would remain at the approximate levels existing at the time an area enters the wilderness system. If land management plans reveal conclusively that increased livestock numbers or AUMs could be made available with no adverse impact on wilderness values such as plant communities, primitive recreation, and wildlife populations or habitat, some increases in AUMs may be permissible.” No increases in livestock grazing over what were permitted at the time of wilderness designation are being proposed. The Proposed Action does provide for a phased in increase in the Grazing Preference up to 12,168 AUMs, which will be activated over a ten year period based upon meeting the allotment Objectives, Terms/Conditions and SRH. The number of AUMs (12,168) that would be authorized in the Proposed Action is consistent with the 2004 FMUD.

Naturalness, Untrammled and Undeveloped Character - No additional facilities would be developed within wilderness areas; therefore there would be no impact on naturalness or the untrammled and undeveloped character of wilderness associated with the Proposed Action.

Based upon field observations of livestock use patterns, as much as 80% of the wilderness areas are rarely or never used by livestock due to distance from water, rocky conditions, and steep slopes. Implementation of the Proposed Action would not be expected to change this pattern or the intensity of livestock use in these areas. Implementation of the proposed grazing system with systematic rest or seasonal deferral of livestock use, stubble height limits in riparian areas, and herbaceous and woody vegetation utilization limits would lead to improved vegetation conditions of the livestock use areas within designated wilderness. This improvement would be expected on about 25,000 acres.

Livestock grazing would result in some localized decreases in naturalness due to creation or maintenance of trails, and creation of bare areas associated with bedding grounds. Assuming one mile of livestock trail and one bed ground per section, the total impact would be less than 50 acres or less than 0.1 % of wilderness areas.

Opportunities for Solitude/Primitive or Unconfined Recreation - The presence of livestock would impact some visitors’ sense of being in a remote area away from the signs of civilization when livestock were present in wilderness areas. This perception would vary among visitors; some would see it as a real loss to their primitive recreation experience, and others would not perceive any impact. The use of the SMA by livestock and wild horses/burros would continue to affect areas near water sources. These effects include the presence of fecal matter, impacts to soils, vegetation and water quality as discussed in other sections of this document. Based upon the seasonal pattern of livestock use and the periods of major recreational use this would affect fewer than 100 visitors per year.

Special Features - Potential impacts to bighorn sheep can be found in the wildlife section. No impacts would occur to any other special features.

The proposed fence is not expected to impact wilderness values as it would be located outside of any wilderness or wilderness study areas.

4.1.8 Recreation

Active livestock operations, including herding, trailing, fence construction and the repair of water structures and range improvements could have some short and long-term impacts to the primitive recreation experience (see wilderness impacts section for further discussion). Although

a large percentage of the SMA has been subject to domestic livestock grazing in the past, increasing AUMs could impact the recreation experience. Most impacts would be short-term in duration and dependant on the location and perception of individual visitors. If the SRH are achieved, as proposed, there would be a long-term improvement to naturalness and the visual appearance of the landscape, which would benefit the primitive recreation experience.

A large portion of seasonal recreational activities occurs in the vicinity of thermal springs within the Hot Springs Use Area and along creeks in the Stanley Camp Riparian Pasture. Since these areas have been fenced to exclude livestock grazing, interactions between recreationists and livestock have been eliminated in these areas. The rest of the allotment would be subject to seasonal grazing activities resulting in potential interactions between livestock and the public, primarily near sources of water where much of the recreational activities are concentrated. The presence of fecal matter from livestock and wild horses/burros and the resulting impacts to the soils, vegetation and water quality as discussed in other sections, have the potential to impact the primitive recreation experience.

The Proposed Action would authorize specific grazing seasons within defined use areas throughout the allotment. Livestock would be dispersed throughout these use areas and managed in accordance with allotment specific objectives and SRH. It is anticipated that the Proposed Action would result in minimal interactions between livestock and the public and reduced resource impacts at popular recreation destinations near water sources.

The proposed fence is not expected to impact recreation activities since gates will be installed on any existing access routes.

4.1.9 Social Values and Economics

The Proposed Action would maintain or improve rangeland resources which would sustain the ranching operation. The Proposed Action would also activate the non scheduled AUMs resulting in a beneficial economic impact. There would be some economic impact to the ranch operations related to the costs associated with fence construction and maintaining range improvement projects. Other economic impacts of the Proposed Action would be the labor costs required to herd livestock within and between designated use areas throughout the allotment. Refer to wilderness and recreation sections for impacts to other social values.

The proposed fence action is not expected to impact social values and economics with the exception of reducing the labor cost with herding to keep the livestock in the proper use area.

4.1.10 Soils

Soils would be managed to maintain the natural habitat of the area and to minimize the potential for accelerated (man caused) wind and water erosion. In order to maintain soil processes a healthy, productive and diverse plant community is necessary. Improved ecological condition would increase productivity, litter, soil fertility, infiltration and nutrient cycling. Healthy native plant communities must be able to complete their life cycle by limiting use during the critical growth period.

The following are use areas that livestock graze outside the critical growth period: Idaho Canyon, Hot Springs North, and Coleman. This proposal allows key plant species to complete their life cycle, increasing plant vigor, cover, productivity and diversity. Soil processes would be improved.

The following are use areas that livestock graze one year during the critical growth period, followed by rest the next year: Calico Mountain, South, Hot Springs South, and Warm Springs. This proposal allows key plant species to complete their life cycle periodically, increasing plant vigor, cover, productivity and diversity. Soil processes would be improved.

Biological soil crusts are least vulnerable to shearing and trampling from livestock when soils are moist and the most vulnerable when soils are dry. For biological crust potential refer to Map 10. High salinity and sodicity prevent or restrict biological crust development in the lower elevations of the South Use Area. Surface rock fragments mitigate shearing and trampling by livestock throughout the remainder of the SMA. In the Idaho Canyon Use Area, livestock graze when soils are dry. Surface rock fragments prevent damage to biological soil crusts.

The proposed fence, if completed, would create trails and ruts adjacent to the fence. Concentration of both livestock and wild horses adjacent to the fence would increase compaction when soils are moist increasing runoff and dust when soils are dry. The majority of the fence would be located on soil with a moderate wind erosion hazard and slight water erosion hazard. These impacts would be minor.

A healthy, productive and diverse plant community is necessary to maintain and improve soil processes. This alternative would maintain and improve soil processes.

4.1.11 Special Status Species

The following species occur in the SMA:

Springsnails - The majority of the known populations of springsnails are associated with a series of spring sources that also provide critical habitat for the desert dace within the Hot Springs Use Area. The recently (2005) constructed Desert Dace Protective Fence excludes livestock grazing from this area therefore the Proposed Action would have no effect on these populations of springsnails or their habitat within the enclosure. There are a few populations of springsnails outside the enclosure within the Hot Springs Use Area. Spring or fall use by livestock would have few impacts on these populations due to lack of livestock concentration at spring sources during these seasons.

Soldier Meadows cinquefoil - The identified populations of cinquefoil occur within the Hot Springs Use Area and more specifically in relatively close proximity to a series of spring sources that provide critical habitat for desert dace. The recently (2005) constructed Desert Dace Protective Fence excludes livestock grazing from this area therefore the Proposed Action would have no effect on these populations.

Smooth stickleaf - Smooth stickleaf is known to occur on the almost barren, clay hillsides in the South Use Area of the SMA. Under the Proposed Action grazing is permitted within this portion of the allotment during the dormant season. These habitat sites are not known livestock forage sites, as they contain virtually no palatable livestock forage. Smooth stickleaf would be germinating and initiating growth during the period that livestock would not be present in this area. Even if livestock drift were to occur, it is unlikely that they would graze this plant species due to the steep almost barren hillsides where this species exists. The Proposed Action is not expected to impact smooth stickleaf.

Greater sage-grouse - Livestock and yearlong wild horse and burro grazing indirectly affects

sage-grouse through alterations of habitat components important to sage-grouse during the nesting and brood rearing periods (March through September). This period corresponds to the spring and hot grazing seasons.

Grazing of grasses and forbs in nesting habitat decreases the herbaceous cover that provides visual screening of sage-grouse nests occurring under sagebrush plants. Data collected on the Sheldon National Wildlife Refuge just north of the SMA indicate that nests without herbaceous vegetation greater than about seven inches are more subject to predation than nests with taller herbaceous cover. Sage-grouse hens require forbs in their diets prior to egg laying to be successful in raising chicks. Heavy grazing during the hot season on meadows and high elevation sites decrease the production of insects and forbs required by the rapidly growing sage-grouse chicks. Grazing is a cause of decreased herbaceous vegetation, including forbs, in nesting and brood rearing habitats. Some grazing has been shown to be effective in restoring forb production on meadows that have not been grazed for a number years.

Hot season grazing could also affect nesting sage-grouse within the Warm Springs and Idaho Canyon use areas in odd years and Hot Springs (South) use areas in even years. Much of the sage-grouse incubation period occurs prior to the rapid growth period of bunch grasses and tall forbs that provide nest screening. Standing, residual vegetation from the previous growing season provides screening during much of the nesting period. Removal of grasses in the previous season by grazers may indirectly increase sage-grouse nest predation.

Spring grazing would occur every other year in the Calico Use Area, where about 60 percent of the Use Area is potential nesting habitat. The sage-grouse nesting habitats are associated with the sagebrush zones at the top of the Calico Range while much of the livestock grazing occurs on the lower slopes of the range in the salt desert scrub zone where temperatures are warmer and slopes are gentler. Wild horse and burro populations graze the Calico Use Area year long and may impact sage-grouse nesting and brooding habitats.

Hot season use would be made in the Warm Springs and Idaho Canyon Use Areas, which includes over 70 percent of the nesting and brood rearing habitats in the SMA. There are small meadows of the type preferred by brooding sage-grouse within these use areas. Livestock grazing would be limited to 30 percent utilization on the uplands and three inches of remaining stubble would be required on meadows at the end of the livestock grazing period. Additionally, the Warm Springs Use Area would be rested every other year. The combination of livestock grazing during the hot season and yearlong wild horse use may result in some meadows not producing the quantity or quality of forbs or insects important to sage-grouse broods.

Hot season livestock use within the Warm Springs and Idaho Canyon Use Areas may reduce sage-grouse nest screening in uplands near water sources. The lack of many water sources in these use areas suggests that large areas exist with little or no livestock use therefore grazing would have minimal impacts on sage-grouse nest screening. However, the available meadows are important for sage-grouse and likely to be impacted by livestock and/or wild horses and burros.

Some of the most important sage-grouse habitat within the SMA is in the Stanley Camp Riparian Pasture and the Mahogany Exclosure. The Proposed Action would not allow livestock grazing in these areas therefore; there would be no impact to sage-grouse or their habitat. The Proposed Action also incorporates allotment specific objectives that manage, maintain, or improve sagebrush communities that provide habitat for sage-grouse. The allotment-wide SRH provide additional assurance that riparian/wetland systems are in properly functioning condition and

habitat conditions meet the life cycle requirements of this species.

The following species are likely to occur in the SMA:

Burrowing Owl - There is potential habitat in the lower elevations in the southern portion of the allotment. Livestock grazing during dormant season has been shown to maintain the vigor and production of both grasses and shrubs on these arid sites. It is anticipated that light levels of dormant season grazing would not have measurable impact on burrowing owls or their potential habitat within the allotment. The allotment objectives and SRH would provide the assurance that healthy native plant species would be maintained or improved thereby providing adequate potential habitat conditions to meet the life cycle of this species.

Loggerhead shrike - The proposed grazing regime would limit utilization, which falls into best management practices. This level of utilization should continue to allow the sagebrush habitats to function as healthy ecosystems. The proposed level of grazing may provide some open foraging areas required by these birds.

Vesper Sparrow - Limiting utilization should allow for the maintenance and possibly spread/re-establishment of native bunchgrasses. This would be especially beneficial to these birds since they need good ground cover for nesting and seeds for feed. It is impossible to meet all of the life cycle requirements for all species on every sagebrush stand. However, it is anticipated that healthy sagebrush stands with natural patchiness would provide the habitat requirements on the landscape scale.

Pygmy rabbit - There have been no inventories conducted or documented sightings of pygmy rabbits on the SMA, however there are areas of potential habitat. The Proposed Action incorporates periods of livestock rest or deferment during critical growth periods for perennial grasses, utilization limits and site specific vegetative objectives developed to guarantee that adequate forage is available to support potential populations of pygmy rabbits. Furthermore, the allotment-wide SRH provide additional assurance that native plant species are healthy, productive and diverse and habitat conditions meet the life cycle requirements of special status species. Moderate levels of livestock grazing can improve habitat values for pygmy rabbits on sites where more residual grasses would favor replacement of pygmy rabbits with cottontails (Larrucea 2007). No mechanical damage to burrows is expected due to the limited livestock stocking levels.

Pale Townsend's big-eared bat
Pacific Townsend's big-eared bat
Spotted bat
Small-footed myotis
Long-eared myotis
Fringed myotis
Long-legged myotis
Yuma myotis

The Proposed Action would have no impact on breeding or hibernation sites since all of these species use natural caves and cracks in rock outcrops or man-made cavities for breeding, rearing, and/or hibernating habitat.

Potentially, livestock grazing could impact riparian systems that are thought to provide a disproportionate share of the flying insects that bats depend upon as prey. The most important

riparian areas in the SMA are within the Stanley Camp Riparian Pasture and the Mahogany Exclosure. The Proposed Action would not allow grazing in these areas therefore there would be no impact to these riparian communities that provide insects for bats.

The allotment objectives and SRH would provide additional assurance that healthy riparian habitats would be maintained or improved thereby providing an adequate source of insects for bats. Specifically, the herbaceous and woody vegetative objectives limit livestock use throughout the allotment ensuring healthy riparian areas that would provide a food base for bats. Furthermore, the allotment-wide SRH provide additional assurance that riparian/wetland systems are in properly functioning condition and habitat conditions meet the life cycle requirements of sensitive species. Therefore it is anticipated that the Proposed Action would have minimal impact on these bat species.

Preble's shrew, Northern goshawk, Nevada viceroy - There have been no inventories conducted to determine if these species exist within the allotment although there is potential habitat in some of the riparian areas. These three species are riparian obligates specifically associated with woody sites or large semi-wet meadows in the case of the shrew. Potential livestock grazing impacts include the possibility of direct reduction of vegetation, compaction of meadow soils, and changes in vegetation structure within riparian systems that decrease the habitat quality.

The most important riparian areas and therefore potential habitat for these species in the SMA are within the Stanley Camp Riparian Pasture and the Mahogany Exclosure. The Proposed Action would not allow grazing in these areas therefore there would be no impact to these species that potentially inhabit these areas.

The Proposed Action allotment objectives and SRH would provide assurance that healthy riparian habitats would be maintained or improved thereby providing adequate potential habitat for these species. Specifically, the herbaceous and woody vegetative objectives limit livestock use throughout the allotment ensuring healthy riparian areas. Furthermore, the allotment-wide SRH provide additional assurance that riparian/wetland systems are in properly functioning condition and habitat conditions meet the life cycle requirements of special status species. Therefore the Proposed Action is not expected to impact potential habitat for these species.

The proposed fence is not expected to impact Special Status Species since construction will be outside of any known habitat.

4.1.12 Vegetation

Appropriate vegetative management should maintain or improve native plant communities to protect soil and water resources while providing habitat for native animal species. Adequate seedling establishment and young plant recruitment is essential to maintaining or increasing native species in a vegetative community. Development of sufficient seedling root growth is necessary for seedlings to develop vigor and produce viable seed. In order to maintain or improve healthy native vegetative communities, plants need to periodically complete their life cycle.

The following use areas are grazed outside the critical growth period: Idaho Canyon, Hot Springs North, and Coleman. This proposal allows key plant species to complete their life cycle increasing plant vigor, cover, productivity and diversity. Vegetation conditions processes should be improved.

The following use areas are grazed one year during the critical growth period and followed by rest during the next critical growth period: Calico Mountain, South, Hot Springs South, and Warm Springs. This proposal allows key plant species to complete their life cycle periodically increasing plant vigor, cover, productivity and diversity. Vegetation would be improved.

The proposed fence would create livestock and wild horse trails, trampling vegetation adjacent to the fence. These impacts would be minor.

Implementing this alternative would maintain and improve healthy native plant communities.

4.1.13 Visual Resource Management

The Proposed Action would result in achieving the allotment objectives and SRH thereby providing healthy native plant communities that protect soil and water resources and provide habitat for native animals. The allotment objectives and SRH would ensure the scenic landscapes, wilderness values and largely undeveloped nature of the area provides the desired range of recreational opportunities.

The Proposed Action would construct a small section of fence that would be constructed outside of the NCA in a VRM Class IV area therefore impacts to these resources would be minimal.

4.1.14 Wild Horses and Burros

Grazing System - Numerous studies identify high dietary overlap of preferred forage species and habitat preference between horses and cattle in the Great Basin ecosystems for all seasons (Ganskopp 1983; Ganskopp et al 1986, 1987; McInnis 1984; McInnis et al 1987; Smith 1986a, 1986b; Smith et al 1982; Vavra et al. 1978). A strong potential exists for exploitative competition between horses and cattle under conditions of limited forage (water, and space) availability (McInnis et al 1987). The potential for exploitative competition increases as livestock stocking rates and wild horse populations increase or as resource availability (forage, water, and space) are limited (production, access, drought, fire, fencing, etc). Water quantity and distribution is limited in much of the Calico Mountains, Warm Springs Canyon, and north Black Rock Range West HMAs.

The Proposed Action grazing system rotates a consistent number of livestock (800 head initially) in eight Use Areas. The rotation system and livestock use periods correspond directly with wild horse seasonal movements into summer and winter habitats. The potential for habitat competition is highest in the smaller Use Areas and where water is a known limiting factor. Competition would be expected to increase as animal densities increase (horses move toward high AML and cattle stocking rates increase). High numbers of concentrated livestock use in Hot Springs South Use Area during 4/15-7/15 (even years) may decrease forage availability for horses the following winter.

The Proposed Action grazing system rests the Calico and Warm Springs Use Areas from livestock grazing every other year. This system removes the potential for summer and winter habitat competition between cattle and horses during that time. Indirect impacts include a potential increase in wild horse/burro body condition and health in those areas. The livestock use period in the Warm Springs Use Area coincides with summer horse use and would have greater potential for water competition. Water availability is greater in the spring and early summer so the potential for water competition is lessened. Stubble height monitoring data

suggests riparian objectives may not be met when both cattle and horses are present. Cattle may exceed desired stubble height residuals before horses utilize riparian forage later in the year (after 7/15). However these areas will be rested from livestock in alternating years allowing vegetation to recover.

Indirect impacts to horses related to forage and/or water competition include a reduction in body condition, fecundity, lactation, and health of individual horses. Impacts would most affect lactating mares, foals, and horses in the younger and older age classes. Sustained competition would result in lower annual herd growth rates as reproductive success, foal survival, and animal health declines and mortality rates increase.

The Proposed Action grazing system requires gate closures in the Colman/County Road pasture fence during late fall (10/1-11/16) to keep cattle out of the Colman Use Area. This action would encumber horse movements off of summer habitat (Idaho Canyon and Warm Springs Use Areas) into historical winter habitat (Colman and Slumgullion Use Areas). Monitoring in February 2007 revealed breach of the fence has already occurred and horse trailing suggests free-roaming behaviors have been altered as horses trail south along the fence. Gates have been found closed when they should have been open and visa versa. Sufficient winter habitat should be available west of the pasture fence (Hot Springs North Use Area) once horses become accustomed to the new use patterns.

Indirect impacts to horses regarding gate closures include temporary exclusion of horses from traditional seasonal use areas, encumbrance of their free-roaming behavior, and a change in traditional seasonal use areas as a result of long-term exclusion and behavior adaptation.

Proposed Fence - The proposed fence segment north of Summit Lake would effect seasonal horse movement to and from summer habitat in the Idaho Canyon area. The fence would present an entrapment hazard to horses in the Idaho Canyon area attempting to move out of high elevations in the winter. This area is currently fenced on all sides except for the west side. Recent fence additions in the Mahogany Creek Exclosure area removed access to the Idaho Canyon area from Black Rock West horses. However, Warm Springs Canyon horses do access and use this area as evidenced by the August 2004 removal of twenty-five horses (some branded) from the Mahogany Creek Exclosure. It is expected that horses would circumvent fences to access the highly preferred summer habitat.

Indirect impacts to horses from the proposed fence include temporary exclusion from traditional seasonal use area, encumbrance of their free-roaming behavior, entrapment and/or entanglement and a change in traditional seasonal use areas as a result of long-term exclusion and behavior adaptation.

Maintenance of Existing Range Improvements - Indirect impacts to horses from maintenance of existing water developments include higher water quantity, quality, and better herd distribution across the landscape. If improvements fail or are turned off, especially if natural sources are excluded, water may not be available, forcing animals to find and potentially compete for water at fewer sites.

Indirect impacts to horses from the maintenance of existing allotment and pasture fences include exclusion from traditional seasonal use areas accessed through fence breaks, encumbrance of their free-roaming behavior, entrapment and/or entanglement, and a change in traditional seasonal use areas as a result of long-term exclusion and behavior adaptation. Less mixing of animals may reduce the genetic diversity among herds.

4.1.15 Wildlife

The proposed fence action constructed to pronghorn antelope specifications is expected to be a minor impact to mule deer, pronghorn antelope, and bighorn sheep. Mule deer normally jump over the fence but may be slowed by the fence. Pronghorn antelope normally crawl under a fence as long as the lower wire is smooth and is at least 16 inches above the ground but would be slowed by the fence. Bighorn sheep habitat does not exist where the proposed fence is located so no impacts are expected.

Mule deer - Mule deer are primarily affected by livestock grazing during the hot and dormant seasons from mid June through March. Hot season grazing tends to be concentrated in riparian areas where green forage remains when upland grasses cure and dry, decreasing forage quality and palatability to livestock. Riparian grazing removes both herbaceous and woody vegetation that provides cover and forage for mule deer year-round. Dormant season grazing by cattle often includes a substantial amount of browse, particularly antelope bitterbrush, mountain mahogany and other palatable shrubs of the rose family. Mule deer depend on these shrubs as a source of protein and escape and thermal cover for the summer, fall and winter months.

Mule deer seasonal habitats within the SMA are not evenly distributed across the allotment. Mule deer winter habitat is widely distributed across the allotment, with substantial areas in every use area except Hot Springs. Mule deer summer habitat is associated with higher elevation areas in the Idaho Canyon, Warm Springs, Calico, Colman-Slumgullion, and Stanley Camp Use Areas.

In this alternative, hot season grazing would occur every other year in the Warm Springs and every year in the Idaho Canyon use areas. These areas include about half the mule deer habitat in the SMA. These areas include about 38% of the mule deer habitat in the SMA. Hot season browsing by livestock would be expected to harvest a small percentage of desirable upland shrub vegetation, including bitterbrush and mountain mahogany, available to the mule deer population. Water is limited in the two use areas and livestock do not travel far from water during the hot season. Shrub use by livestock would be concentrated in easily accessible areas. Except in areas near water, grazing the Warm Springs Use Area every other year would allow vigor and seed production in upland shrubs supporting the long-term maintenance of these communities. Hot season grazing would have some impact on woody riparian communities that are important for mule deer use yearlong.

The Proposed Action also includes dormant season grazing in the Colman-Slumgullion, South/Calico and Hot Springs Use Areas. The Colman-Slumgullion and Calico areas contain high value deer habitat. There is little mule deer habitat in either the South (outside the Calicos) or Hot Springs Use Areas. Few impacts to mule deer are anticipated from dormant season grazing in any of these use areas.

Pronghorn Antelope - Pronghorn antelope habitat often overlaps with areas preferred by livestock and wild horses during much of the year. Pronghorn prefer open terrain of moderate slopes with access to water. Although pronghorn consume little grass while livestock and wild horse diets are primarily grass, all of these species utilize forbs in the spring and browse shrubs in the dormant season. However, dietary overlap studies show that pronghorn and cattle rarely compete for forage. One place where cattle and wild horse grazing would be likely to affect pronghorn is the grazing of upland meadows. Meadows provide green, succulent forage during the hot season for livestock and antelope. Meadows grazed from light to moderate levels have

increased forb composition desired by antelope. Heavily grazed meadows have decreased productivity of grasses and forbs that reduce the quality of pronghorn forage within these areas.

Hot season grazing would occur every other year in the Warm Springs Use Area and every year in the Idaho Canyon Use Area. These pastures include about 70% of the pronghorn habitat in the SMA. Hot season livestock use in these three areas is limited to the vicinity of water sources, many of which are small spring meadows. Because almost all the upland forbs are desiccated during the hot season there would be no cattle use of upland forbs and this important class of spring pronghorn forage would be allowed full growth and reproduction.

Bighorn sheep - Bighorn sheep occupy a small portion (currently less than 10,000 acres) of the mountainous areas within the SMA. The potential, but currently unoccupied habitat covers about 25 percent of the allotment. Although bighorn and cattle are primarily grazers, bighorn habitat preference only slightly overlaps with cattle on mountain meadow habitats. Bighorn prefer rugged, rocky terrain and usually are found within a quarter mile of steep, rocky escape cover. Cattle are usually found grazing on more gentle terrain and avoid rocky areas if possible. Interaction would most likely occur at water sources in or near steep rocky areas. Cattle and wild horse grazing would remove high quality green forage from small spring meadows in the Warm Springs and Idaho Canyon Use Areas that are important for winter bighorn body condition. Bighorn sheep and cattle are not closely related, so the potential for disease transmission between these animals is considered negligible. Therefore it is anticipated that interaction between bighorn sheep and livestock would be minimal under the Proposed Action.

4.2 Alternative 1 – No Action Alternative (2004 FMUD)

4.2.1 Cultural Resources

Impacts of the No Action Alternative to cultural resources would be similar to the Proposed Action except that the livestock numbers are higher during the fall and winter under the existing system. The potential livestock impacts to subsurface cultural resources should be less during the winter months when soils may be frozen. Also livestock trailing to water sources should be less during the cooler months reducing soil disturbance and potential impact to cultural resources.

4.2.2 Invasive, Non-native Species

Impacts would be expected to be essentially the same as described for the Proposed Action.

4.2.3 Migratory Birds

Impacts would be expected to be essentially the same as described for the Proposed Action.

4.2.4 Threatened and Endangered Species

Desert Dace - The No Action Alternative includes the permanent closure of the desert dace habitat on public land within the Desert Dace Exclusion, including critical habitat, thereby eliminating: trampling of spawning sites, grazing of riparian vegetation, degradation of water quality, and loss of hiding cover for fry and subadult desert dace. The Exclusion would be excluded from livestock grazing, with the exception of prescriptive grazing only. Although trailing is permitted to and from the Use Areas through the Desert Dace Exclusion each year as

needed, it is only permitted under the following conditions identified in the 2004 Biological Opinion Amendment, to limit impacts:

- a. The permittee shall notify BLM no less than 24 hours prior to and after trailing through the Desert Dace Exclosure or as soon as possible.
- b. Any livestock that are trailed into the Desert Dace Exclosure shall be continuously herded until they reach the outside boundary of the exclosure within 4 hours.
- c. Livestock trailing through the Desert Dace Exclosure shall be restricted to the routes identified in the 2004 Biological Opinion Amendment.
- d. BLM shall monitor desert dace thermal spring outflow crossing along the route to ensure that livestock streambank alteration does not exceed a maximum of 25 linear feet from each side of the existing culverts.

Impacts of livestock trailing with the No Action Alternative on desert dace can include wallowing and wading in streams. Wading in streams by livestock can induce mortality, increase sedimentation, and reduce streambank vegetation. Desert dace spawn nearly year-round (March-November), so eggs and/or larvae are at risk from wading impacts whenever livestock trail through the Desert Dace Exclosure.

Lahontan Cutthroat Trout - Livestock can directly and indirectly affect stream conditions and fisheries habitat through soil compaction, bank shearing, severing roots of riparian vegetation (USDOI 2006), alteration of streambanks, reduction of shade, increased sedimentation, decrease in cover, and subsequent changes in stream temperature (Platts 1990).

Mahogany, Summer Camp and Snow Creeks are entirely within the Stanley Camp Riparian Pasture and/or inside the Mahogany Creek Exclosure. These areas would be excluded from livestock grazing (prescriptive grazing only) therefore the existing grazing system alternative would not impact these populations or their habitat.

Colman Creek lies entirely within the Colman Use Area which would, under the existing grazing system alternative, allow livestock grazing only during the winter from November 16th to December 15th. This is consistent with the existing Biological Opinion issued by USFWS (2004). Livestock would not be dependent upon water during this cool season and therefore would have little potential to impact Colman Creek and the LCT habitat under the Proposed Action. The No Action Alternative includes the following measures that would lessen the impacts to the LCT recovery habitat: (1) riparian herbaceous utilization would ensure a 6-inch stubble height remains when livestock are removed from Colman Creek, (2) utilization of willow greater than 5 feet in height shall not exceed 30%, 20% on willows less than 5 feet in height, and 10% on any height of aspen and (3) Streambank alteration from livestock trampling would not exceed 10%.

4.2.5 Water Quality

Impacts to water resources (including quality) under this alternative would be similar to the Proposed Action, with the exceptions of the Idaho Canyon and Warm Springs Pastures. Under the No Action Alternative, the previously described impacts to the isolated springs in the Idaho Canyon pasture would be lessened because the intensity of grazing would be less (300 cows vs. 800 cows) and due to the fact that the hot season use would be spread over a much larger area by splitting the hot season use between Idaho Canyon and the Warm Springs pastures. But the impacts (albeit lessened) would be spread to additional isolated springs in the Warm Springs

pasture. As with the Proposed Action, hard barriers to access (ie: exclosures) could mitigate the impacts.

4.2.6 Wetland/Riparian Zones

The riparian areas associated with Pole, Mahogany, Summer Camp and Snow Creeks occur within either the Mahogany Creek Exclosure or the Stanley Camp Riparian Pasture. Additionally, meadows associated with the desert dace habitat are fenced. Livestock grazing would have no affect on these wetland/riparian zones. Livestock are excluded from these areas.

The South Use Area allows livestock to graze January 16 to April 30. This season of use would maintain or improve riparian conditions due to short duration, cool-season grazing.

In the Idaho Canyon and Warm Springs Use Areas, livestock are grazed one year from May 1 to July 31 and the following year from August 1 to September 30. Hot season livestock grazing would occur. When combined with wild horse use, these riparian areas may not improve and could decline in condition. However, the implementation of monitoring and mitigation measures would result in the attainment of allotment objectives and SRH.

In the Hot Springs Use Area, livestock graze from October 1 to December 15. The desert dace habitat has been fenced. Livestock grazing would have no effect on the desert dace habitat. Riparian areas outside of the Desert Dace Exclosure should be maintained or improved with the elimination of hot season use.

In the Coleman Use Area, livestock graze from November 16 to December 15. Riparian conditions should be maintained and improved. Considering the winter season of use and the limited time livestock would graze this area, it is unlikely that livestock would impact these riparian zones.

4.2.7 Wilderness

Impacts would be similar to those described for the Proposed Action.

4.2.8 Recreation

A large portion of seasonal recreational activities occurs in the vicinity of thermal springs within the Hot Springs Use Area and along creeks in the Stanley Camp Riparian Pasture. Since these areas have been fenced, excluding livestock grazing, interactions between recreationists and livestock have been eliminated in these areas. The rest of the allotment would be subject to seasonal grazing activities resulting in potential interactions between livestock and the public, primarily near sources of water where the much of the recreational activities are concentrated. Impacts to the primitive recreation experience would be similar to those described for the Proposed Action.

The No Action Alternative authorizes specific grazing seasons within defined use areas throughout the allotment. Livestock would be dispersed throughout these use areas and managed in accordance with allotment specific objectives and SRH. Therefore it is anticipated that the No Action Alternative would result in minimal interactions between livestock and the public.

4.2.9 Social Values and Economics

The existing grazing system maintains or improves rangeland resources sustaining the existing ranching operation. The No Action Alternative allows activation of the non scheduled AUMs resulting in a beneficial economic impact. There would be some economic impact to the ranch operations related to the costs associated with fence construction and the maintenance of range improvement projects. Other economic impacts of the No Action Alternative are the labor costs required to herd livestock within and between designated use areas throughout the allotment. Since the herd size fluctuates throughout the grazing year, additional costs would be associated with handling and processing cattle as they enter and leave the allotment.

4.2.10 Soils

The No Action Alternative allows livestock to graze during the critical growth period in the Idaho Canyon and the Warm Springs Use Areas in alternate years providing a full year of critical growth rest every other year. This system allows upland plant species to increase cover and establish seedlings resulting in the reduction of bare soil and the consequential reduction of potential impacts from erosion. Livestock grazing in the Hot Springs, Colman and South Use Areas occurs after the critical growth period allowing rest every year. Implementation of the No Action Alternative would maintain or improve soil conditions.

4.2.11 Special Status Species

Impacts would be expected to be similar to those described in the Proposed Action for the following species that occur in the SMA:

Springsnails (*Hydrobiidae*)
Soldier Meadows cinquefoil
Smooth stickleaf
Greater sage-grouse

Impacts would be expected to be similar to those described in the Proposed Action for the following species that are likely to occur in the SMA:

Burrowing Owl	Long-eared myotis
Loggerhead Shrike	Fringed myotis
Vesper Sparrow	Long-legged myotis
Pygmy Rabbit	Yuma myotis
Pale Townsend's big-eared bat	Preble's shrew
Pacific Townsend's big-eared bat	Northern goshawk
Spotted bat	Nevada viceroy
Small-footed myotis	

4.2.12 Vegetation

The No Action Alternative provides alternate yearly critical growth season rest in the Warm Springs and Idaho Canyon Use Areas. The remaining use areas are grazed before or after the critical growth period. Under the No Action Alternative, vegetation conditions would improve by increasing vigor, productivity, cover, and establishment of seedlings. The implementation of the No Action Alternative would maintain or improve vegetation conditions.

4.2.13 Visual Resource Management

The No Action Alternative would result in achieving the allotment objectives and SRH thereby providing healthy native plant communities that protect soil and water resources and provide habitat for native animals. The allotment objectives and SRH would ensure the scenic landscapes, wilderness values and largely undeveloped nature of the area provides the desired range of recreational opportunities.

The No Action Alternative required construction of the Desert Dace Exclosure, Colman/County Road and Idaho Canyon Fences. The visual impacts of these projects were analyzed individually in project specific Environmental Assessments. Construction of these projects has been completed.

4.2.14 Wild Horses and Burros

The potential for exploitative competition between livestock and wild horses/burros regarding habitat (forage, water, space) would be less than the Proposed Action, but the impacts would be the same.

The No Action Alternative grazing system rotates fewer livestock (300 head initially) numbers in two summer Use Areas and more livestock (1,037 initially) in three winter use areas. The rotation system and livestock use periods correspond directly with wild horse seasonal movements into summer and winter habitats. However, the potential for forage and water competition in summer habitat is much less than in the Proposed Action due to much lower livestock numbers and shorter periods of use. Use in winter habitat is more dispersed (larger use areas) and less limited by water availability, thus the potential for habitat competition is less than the Proposed Action even though livestock numbers are higher.

The no action grazing system rests the Warm Springs and Idaho Canyon Use Areas from livestock grazing during the critical growth period every other year. This system removes the potential for summer and winter habitat competition between cattle and horses during that time. Indirect impacts include a potential increase in wild horse/burro body condition and health in those areas.

Impacts of the No Action Alternative on the Colman/County Road gate closure and maintenance of existing range improvements would be the same as the Proposed Action.

There would be no new fence developments or associated impacts to wild horses/burros in the No Action Alternative.

4.2.15 Wildlife

Mule deer - Impacts would be expected to be similar to those described for the Proposed Action. In this alternative the primary difference would be that hot season grazing would occur every year in the Warm Springs Use Area.

Pronghorn Antelope - Impacts would be expected to be similar to those described for the Proposed Action.

Bighorn Sheep - Impacts would be expected to be similar to those described for the Proposed Action. In this alternative the primary difference would be that hot season grazing would occur every year in the Warm Springs Use Area.

4.3 Alternative 2 – No Livestock Grazing

4.3.1 Cultural Resources

The No Livestock Grazing Alternative would eliminate a source of potential impacts to cultural resources.

4.3.2 Invasive, Non-native Species

Under the No Livestock Grazing Alternative, elimination of livestock grazing would not necessarily reduce the occurrence of noxious weeds in the allotment. Other uses would continue to contribute to the distribution of weeds. Roads are identified as a major source of distributing noxious weeds and the Humboldt County Road dissects the allotment.

4.3.3 Migratory Birds

Elimination of livestock grazing under the No Livestock Grazing Alternative may result in improving ecological condition, resulting in an increase of grasses, forbs and shrubs. These vegetative components provide the diversity and structure that are important components of migratory bird habitat.

4.3.4 Threatened and Endangered Species

Desert Dace - Elimination of livestock grazing under the No Livestock Grazing Alternative would have little effect on the desert dace critical habitat, since livestock grazing has already been eliminated by the Desert Dace Exclosure fence, except for prescriptive grazing, which would also be eliminated by the No Livestock Grazing Alternative.

Lahontan Cutthroat Trout - Elimination of livestock grazing under the No Livestock Grazing Alternative would have little effect on Mahogany, Summer Camp and Snow Creeks since livestock grazing has already been excluded, except for prescriptive grazing, which would also be eliminated by the No Livestock Grazing Alternative.

Colman Creek, which is within the Colman Use Area, currently allows one month of grazing which would be eliminated under the No Livestock Grazing Alternative. With this alternative, only beneficial impacts would be expected for Colman Creek. Stuber (1985) found that trout populations often increased in response to the reduction or elimination of grazing. Platts and Rinne (1985) found that 16 out of 16 studies demonstrated benefits to the riparian zone from the elimination of grazing and trout populations had also increased in 12 of the 16 study sites.

4.3.5 Water Quality

Elimination of livestock grazing under the No Livestock Grazing Alternative would remove potential impacts to riparian areas resulting in water quality approaching its natural potential. There could potentially be a reduced effect on the physical (sediment and temperature), biologic (bacteria and pathogens) and chemical (mainly via nutrient enrichment) components of water

quality.

4.3.6 Wetland/Riparian Zones

Elimination of livestock grazing under the No Livestock Grazing Alternative would prevent periodic disturbances and removal of vegetation by grazing activities. As a result, the riparian areas of the allotment should approach their natural potential.

4.3.7 Wilderness

Elimination of livestock grazing under the No Livestock Grazing Alternative would enhance the naturalness, solitude and primitive recreation opportunities provided by the Wilderness Areas. Vegetative communities would not be subject to livestock grazing, although wild horses/burros would continue to graze some areas within HMAs. Impacts associated with the sights and sounds of the livestock operations would be eliminated, potentially enhancing visitors' wilderness experience.

4.3.8 Recreation

Elimination of livestock grazing under the No Livestock Grazing Alternative would result in discontinuing livestock operations, including herding, trailing, and maintaining or repairing fences and water projects. Without livestock grazing there would be no sights or sounds associated with the livestock operation or potential interactions between recreationists and livestock or the resource impacts created by livestock grazing. Since wild horse and burro use would continue in the SMA, the impacts described for the Proposed Action and No Action Alternative would persist, but to a slightly lesser degree.

4.3.9 Social Values and Economics

The No Livestock Grazing Alternative would have a considerable impact on the SMA permit holder. There could be an impact to the local economies of Gerlach and Humboldt County since these communities are somewhat dependent upon ranching and agriculture.

4.3.10 Soils

Under the No Livestock Grazing Alternative the potential for soil erosion would be reduced thereby improving soil processes. Reduction in grazing should eventually result in establishing more perennial native grasses thereby reducing non-native annual species. This may reduce the potential for wildfires and subsequent soil erosion potential. Soil biological crusts should increase with improvements in the vegetation conditions.

4.3.11 Special Status Species

The following species occur in the SMA:

Springsnails
Soldier Meadows cinquefoil
Smooth stickleaf
Greater sage-grouse
Soldier Meadows EA

The following species are likely to occur in the SMA:

Burrowing Owl	Long-eared myotis
Loggerhead Shrike	Fringed myotis
Vesper Sparrow	Long-legged myotis
Pygmy Rabbit	Yuma myotis
Pale Townsend's big-eared bat	Preble's shrew
Pacific Townsend's big-eared bat	Northern goshawk
Spotted bat	Nevada viceroy
Small-footed myotis	

Implementing the No Livestock Grazing Alternative would eliminate potential livestock grazing-related impacts to any special status species or their habitats. Elimination of livestock should result in maintaining or improving vegetative ecological condition. This would be especially true in riparian areas. As ecological condition improves, the health, vigor and abundance of native grasses, forbs and shrubs should increase. The probable increase in ecological condition should enhance habitat quality for all special status species.

4.3.12 Vegetation

Under the No Livestock Grazing Alternative, the native perennial plant diversity, cover, vigor and production should eventually increase. In the short term, annual species would increase and then decrease in the long term as the health, diversity, vigor, and production of the perennial vegetation increases to late ecological status.

4.3.13 Visual Resource Management

The No Livestock Grazing Alternative would eliminate the need to maintain, repair or construct range improvement projects such as fences, cattle guards and water troughs that could detract from the primitive environment and natural setting. As these facilities deteriorate the visual quality would locally decline.

4.3.14 Wild Horses and Burros

Implementing the No Livestock Grazing Alternative would eliminate any potential livestock competition with horses/burros for forage or water. Indirect impacts include a potential increase in wild horse/burro body conditions and health throughout the year. The elimination of livestock grazing would result in the discontinued maintenance of water projects by the permittee. These projects would eventually fall into disrepair and become non-functional unless some other party assumed the maintenance responsibilities. Indirect impacts due to the potential loss of water projects may result in the redistribution and concentration of wild horses/burros on available water at riparian areas. Lack of fence maintenance may decrease the restriction of horse movement but could also increase the risk of animal injuries due to entanglement hazards unless the fencing was removed.

4.3.15 Wildlife

Implementing the No Livestock Grazing Alternative would eliminate any potential livestock competition with wildlife for forage or water. Elimination of livestock grazing would also result

in the discontinued maintenance of water projects by the permittee. These projects would eventually fall into disrepair and become non-functional and would not be available to big game and other wildlife species.

Mule deer - Elimination of livestock grazing may result in improved ecological condition. As ecological condition improves, the health, vigor and abundance of forage species would increase. Mule deer can use a variety of grasses, forbs, and shrubs in the winter. The probable increase in grass and forb availability would enhance habitat quality.

Pronghorn antelope - Elimination of livestock grazing may result in improved ecological condition. As ecological condition improves, the health, vigor and abundance of forage species would increase. The probable increase in grass and forb availability would enhance habitat quality.

Bighorn sheep - Elimination of livestock grazing may result in improved ecological condition. As ecological condition improves, the health, vigor, and abundance of forage species would increase. Bighorn sheep can use a variety of grasses, forbs, and shrubs throughout the year. The probable increase in the availability of grasses, forbs, and shrubs would enhance habitat quality.

5.0 Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations that implement NEPA, defines a cumulative impact as: “The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

For the purposes of this analysis the cumulative impact assessment area, with the exception of cultural resources and wild horses/burros, includes the Upper Craine Creek, Virgin Creek, High Rock Canyon Creek, Mud Meadows Creek and Lower Quinn River watersheds (USDA 2006; refer to Map 15). The cumulative assessment area for cultural resources and wild horses/burros is the SMA.

The cumulative assessment area for Social Values and Economics is Humboldt County. No cumulative impacts are expected to Social Values and Economics; these elements of the human environment will not be analyzed in this chapter.

5.1 Past and Present Actions

On the basis of aerial photographic data and current agency GIS records and analysis, the following past and present actions, which have impacted the assessment area to varying degrees, have been identified: livestock grazing, recreation, transportation and access, wildfire, wild horses/burros, and wildlife. The majority of public lands in the allotment are within the NCA. The NCA Act which was designated by Congress in 2000 excluded mineral exploration.

Livestock Grazing – Livestock grazing has a long history in the region dating back to the late 1800s. Today it remains the dominant use of the cumulative impact assessment area. Throughout its history, ranching has remained a dispersed activity characterized by localized areas of more intensive use.

The grazed acreage on private lands is not subject to administration by the Federal Government.

Portions of five federally administered grazing allotments are represented within the assessment area; these allotments are: Knott Creek, Pine Forest, Wall Canyon East, Leadville and Buffalo Hills. The assessment area also includes parts of the Sheldon Antelope Refuge and portions of the Black Rock Desert (BLM 2006a).

Past livestock grazing decisions have resulted in adjustments of livestock numbers and seasons of use for the SMA and other allotments. While these adjustments were not associated with the SRH, they were implemented to improve rangeland conditions, habitat for sensitive or threatened species and to balance livestock and wild horse and burro use.

In order to support livestock management in the allotment, a variety of range improvement projects have been implemented through the years dating back to the 1930s. Throughout the allotment numerous springs have been developed, windmills constructed and troughs installed to provide livestock water. Fences and corrals have also been built to assist in proper livestock management.

Recreational Activities – Dispersed recreation occurs within the assessment area and includes wildlife viewing, hiking, hunting, off-highway vehicle use and camping. Since the designation of the NCA and associated wilderness in 2000, visitation has increased in the allotment. History enthusiasts from across the nation visit this area to experience the primitive conditions similar to those found during the emigrant passage. A large percentage of use at the hot springs can be attributed to people exploring the Applegate-Lassen Emigrant Trail.

The Soldier Meadows, Double Hot and Black Rock hot springs are among the highest use areas in the allotment. These springs are a desirable camping location and their proximity to the Applegate-Lassen Trail makes them a well know attraction area. An abandoned line-shack near the Soldier Meadows hot springs, which is free for public use, also attracts users to the area. The highest use times are in the fall during the hunting season, at which time large groups of campers have been observed. These areas are important recreation resources that receive increased visitation yearly.

The Lahontan Cutthroat Trout area in the Stanley Camp Riparian Pasture is a popular location for various reasons. The extensive aspen groves, perennial streams and abundant wildlife provide excellent recreation opportunities. Most of the use is thought to occur during the hunting season but the shade and water found in the area make it desirable throughout the year. Two private in-holdings are also located in the area, accounting for some of the use.

Transportation and Access – Past and present actions within the assessment area are supported by a transportation system which includes a network of roads. The county road is graveled and transects the allotment from the Sheldon Antelope Refuge in the north, approximately through the center of the allotment, to highway 34 west of Gerlach. Many of the roads in the area are either private, unimproved roads or dirt roads and two-tracks on public lands. Most of these roads have their origin in mining exploration and ranching access and few are regularly maintained.

Wildfire – Two wildfires, one in 1997 and another in 2000 burned portions of the Summit Lake Reservation, Stanley Camp Riparian Pasture and the Idaho Canyon Use Area. These burned areas were not reseeded and the rehabilitation process consisted of natural revegetation. The burned areas were temporarily closed to livestock grazing and monitoring was conducted to determine if rehabilitation was successful. The areas have recovered and livestock grazing has been authorized.

Wild Horses and Burros - Prior to the Wild Horses and Burros Act of 1971, horses and burros were unprotected and populations were managed by local ranchers. The 1994 Final Multiple Use Decision established current AMLs within the SMA. BLM management since 1971 includes periodic aerial counts and removal of wild horses and/or burros in order to maintain AMLs. Annual herd recruitment rates range between 14 and 28%. Herd populations could double within three years, although recent fertility control treatments have slightly decreased annual recruitment rates. Removals are largely dependent on factors such as: adoption success (short-term holding capacities), capture success, litigation orders, and annual funding. Past removals have not been effective in maintaining population numbers within established AML ranges.

Wildlife - Bighorn sheep were reintroduced into the Black Rock Range in the early 1990s and LCT were reintroduced into Colman Creek in 1999. Bighorn sheep and LCT populations were augmented within the analysis area in 2003 and 2001, respectively.

5.2 Reasonably Foreseeable Future Actions

Since the life of the Proposed Action is six years, this 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, although the relative intensity of these actions could vary depending on a variety of factors.

Recreational use is expected to increase, approximately five percent annually, as a result of population growth and family oriented activities. Some activities such as hunting and off-road vehicle use will likely continue and/or increase over time (Winnemucca RMP AMS, 2005).

5.3 Cumulative Impacts to Affected Resources

Impacts associated with past, present, and reasonably foreseeable future actions are generally created by ground or vegetation-disturbing activities that effect natural and cultural resources in various ways. Of particular concern is the *accumulation* of these impacts over time. This section of the EA considers the nature of the cumulative effect and analyzes the degree to which the Proposed Action and Alternatives contribute to the collective impact.

Inter-related resources with similar impacts have been grouped together for the cumulative impact analysis.

5.3.1 Cultural Resources

5.3.1.1 Impacts from 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 site function. Datable organic features are either destroyed or contaminated. Previous localized grazing, range improvements, road construction/maintenance and accompanying gravel pits have caused these types of impacts to cultural resources. Looting of cultural resources has also impacted sites by removing artifacts and destroying the context of the sites. The construction of the Desert Dace and Idaho Canyon fences have eliminated livestock and wild horse/burro grazing from the areas thereby eliminating potential impacts to cultural resources.

5.3.1.2 Impacts from Reasonably Foreseeable Future Actions

A number of actions, including road maintenance, use of existing gravel pits, grazing, and recreation could impact cultural resources. Improved access may cause increased looting of cultural resources. Wildfire is also a threat to historic resources and the effects of heat on obsidian artifacts is detrimental to certain dating processes. Wildfire suppression activities could also impact cultural resources by displacing artifacts and disturbing the distribution of artifacts and features across the site.

5.3.1.3 Cumulative Impact

Proposed Action

The Proposed Action should result in an incremental improvement in ecological condition over an extended period of time. Improving ecological condition implies cultural resources would not be subject to further impacts from grazing in riparian zones.

No Action Alternative

The status quo would be maintained for the upland sites and riparian areas that are not within the Stanley Camp Riparian Pasture and the Desert Dace Exclosure. In the rest of the allotment ecological status quo would continue and cultural resources would continue to be impacted in sensitive locations such as riparian areas. Past and present impacts would still exist and future actions may incrementally impact cultural resources.

No Livestock Grazing Alternative

This alternative should result in an incremental improvement in ecological condition and eliminate one source of potential impacts to cultural resources.

5.3.2 Invasive, Non-native Species

5.3.2.1 Impacts from Past and Present Actions

Invasive, non-native species were of little consideration in the past and no comprehensive weed management programs were developed. Historic grazing, road maintenance, and wildfires created disturbed areas that provided an opportunity for the introduction and spread of invasive, non-native species. Within the analysis area no inventories have been completed, although the presence of invasive, non-native species is known to occur. Wildfires and ground disturbances associated with past and present actions have resulted in the expansion of invasive, non-native species. Management actions associated with these species have resulted in better control in some areas.

5.3.2.2 Impacts from Reasonably Foreseeable Future Actions

Increases in invasive, non-native species within the analysis area could occur if allotment objectives and SRH are not achieved. The rate of such an increase would depend on the number of disturbed areas. Declines in native plant vigor from other causal elements, such as recreation and road maintenance, could also lead to invasive, non-native species infestation. Since the designation of the NCA visitation has increased and it is anticipated that the occurrences of human caused wildfires would increase.

5.3.2.3 Cumulative Impact

Increases in the proliferation of invasive, non-native species would occur if inventories are not completed and identified infestations promptly treated. Currently the cumulative impact is considered moderate.

Proposed Action

There would be an incremental improvement in ecological condition over an extended period of time.

No Action Alternative

The status quo would be maintained for the upland sites and riparian areas.

No Livestock Grazing Alternative

There should be an incremental improvement in ecological condition over an extended period of time which would allow for a decrease in the rate of spread of invasive, non-native species.

5.3.3 Migratory Birds

5.3.3.1 Impacts from Past and Present Actions

Historical loss of understory plants and altered habitat may have affected migratory bird species composition and numbers. There may be an incremental increase in species composition and numbers as ecological condition improves resulting from implementing appropriate grazing practices. Wildfires have eliminated areas of native habitat that were once available to migratory birds. The elimination of livestock grazing in the Stanley Camp Riparian Pasture would result in maintaining or improving appropriate habitat based upon site potential.

5.3.3.2 Impacts from Reasonably Foreseeable Future Actions

Future grazing practices should result in improved ecological condition which would be beneficial to migratory birds. Other actions, such as recreation, road maintenance, etc., would have a minimal, temporary localized affect on these species or their habitat. Further loss of native habitat due to wildfires may cause the greatest impact to habitat.

5.3.3.3 Cumulative Impact

Proposed Action

There should be an incremental impact from the improvement in ecological condition over an extended period of time. Improving ecological condition implies improving habitat condition.

No Action Alternative The status quo would be maintained for the upland sites and riparian areas that are not within the Stanley Camp Riparian Pasture and the Desert Dace Exclosure.

No Livestock Grazing Alternative

There should be an incremental improvement in ecological condition over an extended period of time at a rate faster than the Proposed Action. Improving ecological condition implies improving habitat condition.

5.3.4 Soils, Vegetation and Wetland/Riparian Zones

5.3.4.1 Impacts from Past and Present Actions

Prior to the Taylor Grazing Act grazing practices contributed to significantly impacting the soil resource. The soil tolerance was exceeded and the soil medium for plant growth was not maintained. The present grazing system has reduced past soil impacts and improved current soil resource conditions.

Prior to the Taylor Grazing Act livestock grazing activities had significant impacts to the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants. Cheatgrass was introduced into the area in the early 1900s. The present actions of implementing livestock grazing systems has reduced past impacts and improved vegetation understory conditions. The primary successional understory plants species are slowly returning and vegetation conditions are improving, but may never be able to return to their potential.

Prior to the Taylor Grazing Act grazing practices significantly impacted wetland and riparian zones. Wetland and riparian zones declined, riparian vegetation was insufficient to dissipate energy and filter sediment increasing erosion and destabilizing streambanks and meadows. Destabilization of streams and meadows resulted in incised channels and gullies resulting in lowered water table. This degradation of riparian zones resulted in the implementation of Mahogany Creek Exclosure and the Stanley Camp Riparian Pasture. The present action of implementing a livestock grazing system, maintaining exclosures, and creating Stanley Camp Riparian Pasture have reduced past impacts and improved wetland and riparian zones.

5.3.4.2 Impacts from Reasonably Foreseeable Future Actions

Future activities from livestock grazing, recreation, road construction and maintenance, and vegetation projects would continue to slightly impact the soils within the impact assessment area. Impacts from grazing are likely to change and continue to improve from present conditions. Impacts from recreation and road construction or maintenance would slightly increase from the past and present conditions. Impacts from recreation would moderately increase from the past and present conditions. Man-made fires have increased and impacted the soil resources and are anticipated to increase in the future.

Future vegetation projects are anticipated to have a low effect on the vegetation resources within the impact assessment area. Impacts from grazing are likely to improve slowly from present conditions. Vegetation projects, and road construction/maintenance may increase and cause low impacts to vegetation resources in the foreseeable future. Mining activities have decreased and are not anticipated in the future. Impacts from recreation would moderately increase from the past and present conditions. Man-made fires have increased and impacted the vegetation resources and are anticipated to increase in the future. Fires adjacent to the Soldier Meadows Ranch are anticipated to increase and convert portions of the Hot Springs Use Area to a cheatgrass dominated vegetation community

Future activities from livestock grazing, road construction and maintenance, and vegetation projects would continue to slightly impact the wetland and riparian zones within the impact assessment area. Mining activities have decreased and are not anticipated in the future. Impacts from grazing are likely to change and continue to improve from present conditions. Impacts from road construction or maintenance would slightly increase from the past and present conditions. Impacts from recreation would moderately increase from the past and present conditions. Man-made fires have increased and impacted the wetland riparian zones and are anticipated to increase in the future. With improved riparian conditions riparian zones should

naturally recover after fires.

5.3.4.3 Cumulative Impact

Proposed Action

There should be an incremental impact from the improvement in ecological condition over an extended period of time.

No Action Alternative There should be an incremental impact from the improvement in ecological condition over an extended period of time.

No Livestock Grazing Alternative

There should be an incremental improvement in ecological condition over an extended period of time at a faster rate than the Proposed Action.

5.3.5 Special Status Species

5.3.5.1 Impacts from Past and Present Actions

Historical loss of understory plants and altered habitat may have affected special status species composition, distribution and numbers. There may be an incremental increase in species composition and numbers as ecological conditions have improved by implementing appropriate grazing practices. Wildfires have destroyed areas of native habitat that were once available to special status species.

5.3.5.2 Impacts from Reasonably Foreseeable Future Actions

Future grazing practices should result in improved ecological condition which would be beneficial to special status species. Other actions such as recreation, road maintenance, etc., would have a minimal, temporary, localized affect on these species or their habitat. Further loss of native habitat to wildfires may cause the greatest impact.

5.3.5.3 Cumulative Impact

Proposed Action

There should be an incremental improvement in ecological condition over an extended period of time. Improving ecological condition implies improving habitat condition.

No Action Alternative

The status quo would be maintained for the upland sites and riparian areas that are not within the Stanley Camp Riparian Pasture and the Desert Dace Exclosure.

No Livestock Grazing Alternative

There should be an incremental improvement in ecological condition over an extended period of time at a faster rate than the Proposed Action. Improving ecological condition implies improving habitat condition.

5.3.6 Threatened and Endangered Species

5.3.6.1 Impacts from Past and Present Actions

Historical livestock grazing contributed to the gradual deterioration of watershed health until the passage of the Taylor Grazing Act in 1934. Until the passage of the Endangered Species Act (ESA) of 1973, few livestock management actions addressed special status species, which subsequently led to the imperilment of numerous species. Although conditions have improved since the 1930s, portions of the analysis area continue to have cumulative impacts to water resources and watersheds. These impacts are due primarily to concentrated livestock use in riparian areas, which reduces habitat diversity and quality needed to sustain aquatic organisms by altering stream channel morphology, increasing sediment loads, and altering the natural water quality characteristics within riparian areas. Other impacts are associated with recreational bathing, which have impacted the aquatic biota of hot springs within the analysis area. The NCA RMP and other grazing management actions within the analysis area will ensure the attainment of the SRH, thereby allowing for the gradual improvement of overall watershed conditions. The construction of the Desert Dace Exclosure, Colman/County Road and Idaho Canyon Fences eliminated livestock and wild horse/burro impacts to LCT and Desert Dace habitats. These fenced areas also protect habitat for other special status species.

5.3.6.2 Impacts from Reasonably Foreseeable Future Actions

The impacts to the fisheries habitat from future livestock grazing are expected to continue to decrease, due to the elimination of livestock grazing (by fencing) from certain streams and improved grazing management. Other future activities from recreation and road construction/maintenance would continue to slightly impact the fisheries habitat, depending on how close to the stream corridors the activities persist. If road construction/maintenance activity increases, then impacts to fisheries habitat may increase slightly due to sedimentation and loss of streamside vegetation, depending upon the number of road/stream crossings.

5.3.6.3 Cumulative Impact

Proposed Action

There should be an incremental improvement in the aquatic habitat condition over an extended period of time.

No Action Alternative

There should be an incremental improvement in the aquatic habitat condition over an extended period of time.

No Livestock Grazing Alternative

There should be an incremental improvement in the aquatic habitat condition over an extended period of time at a faster rate than the Proposed Action.

5.3.7 Water Quality (Surface and Ground)

5.3.7.1 Impacts from Past and Present Actions

Past grazing activity has impacted springs and creeks from livestock and wild horse/burro trampling, punching and defecation. Short term impacts to water quality have resulted from wildfires. Past impacts from mining and transportation activities include alteration of drainage patterns and increased sediment production.

5.3.7.2 Impacts from Reasonably Foreseeable Future Actions

Impacts to water quality would be similar to those previously described under section 4.1.9, but at differing rates of intensities. Impacts resulting from future Off Highway Vehicle (OHV) use, transportation and wildfire activities would be primarily in the form of sedimentation and the alteration of stream channel morphology. The rate at which this occurs is expected to decrease through the application of best management practices. Impacts to water quality from an anticipated increase in wildfires would result in a decrease in watershed stability leading to additional erosion and sedimentation. Impacts to water quality (similar to those described under section 4.1.9) would also occur but may be reduced as grazing systems are re-evaluated and improved.

5.3.7.3 Cumulative Impact

Proposed Action

There should be an incremental improvement to water quality (of the major streams) from the Proposed Action over time, as a direct result of the improvement in riparian areas, with the noted exception of the isolated springs.

No Action Alternative

As stated in section 4, impacts to water quality from the No Action Alternative should result in a slight improvement as compared to the Proposed Action (when considered in combination with all other past, present and reasonably foreseeable actions).

No Livestock Grazing Alternative

There should be an incremental improvement in the aquatic habitat condition over an extended period of time at a faster rate than the Proposed Action.

5.3.8 Wild Horses and Burros

5.3.8.1 Impacts from Past and Present Actions

Competition between herds and/or with cattle when resources are limited due to environmental conditions (drought, severe winter) or over-stocking (number of livestock, Use Area, period of use, above AML) has periodically occurred with associated temporal impacts to animal/herd health and sustainability. Alterations in habitat use and movement patterns have occurred with the implementation of fences (allotment and pasture boundaries) and to a lesser degree with wildlife habitat exclosures. However, animals are highly adaptable and adjust to new use patterns within available habitat. Water developments have increased water quality and distribution.

Recreation activities, especially motorized travel and human encounters, disrupt and/or displace wild horses/burros. Vehicle use occurs throughout the Warm Springs Canyon and north Black Rock Range West. Most of the remaining area is designated wilderness and impacts to herds are minor. Wild horse and burro management actions (gather and removal/release) affect herd structures and animal health. Past gather and removal/release criteria did not allow for the release of any animals, while more recent criteria favored older animals. Currently, criteria allow more flexibility when selecting animals for removal or release in order to maintain normal sex ratios and age structures.

5.3.8.2 Impacts from Reasonably Foreseeable Future Actions

Fencing of private lands in the SMA further restricts movements and increases hazards. Minor increases in recreational use are expected with little increase in impacts. Selective removal

actions should occur less frequently (every 4-5 years versus every 3 years) and result in healthy, self-sustaining herds with appropriate sex ratios, age structures, and populations within established AMLs. Removal actions are dependent on numerous factors as mentioned in section 5.1 Wild Horses and Burros.

5.3.8.3 Cumulative Impact

Proposed Action

Exploitative competition with cattle for limited habitat components may occur, especially during periods of severe winters or drought. Wild horse movement in the Idaho Canyon Use Area would be restricted on all four sides (currently three) by the addition of the proposed fence north of Summit Lake. Winter entrapment of wild horses at high elevations may occur. Minor increase of hazards/restrictions impacts would be expected due to increase in fencing. Other impacts would be the same as stated in sections 5.3.8.1&2.

No Action Alternative (Past + Present + RFFA + No Action Alternative)

Less exploitative competition for limited habitat components would occur under this alternative. Impacts from hazards/restrictions would be slightly less than with the Proposed Action. Other impacts would be the same as those stated in sections 5.3.8.1&2.

No Livestock Grazing Alternative

No exploitative competition with cattle for limited habitat would occur under this alternative. Improving ecological conditions increase wild horse/burro individual and herd health. Water availability may decrease with lack of improvement maintenance. Hazard impacts may increase while restriction impacts may decrease with lack of fence maintenance (unless fences are removed). Impacts related to recreation and fence removals would be the same as those stated in sections 5.3.8.1&2.

5.3.9 Wildlife

5.3.9.1 Impacts from Past and Present Actions

Unregulated grazing by livestock and wild horses and burros combined with the introduction of invasive and exotic species have impacted wildlife habitat prior to the passage of the Taylor Grazing Act of 1934. The loss of native, perennial plants altered habitat which may have impacted native wildlife species. Current conditions within the assessment area include some areas where concentrated livestock and wild horses and burros have caused degradation of wildlife habitat. Wildfires have also eliminated native habitat in some areas within the assessment area that were once available. This impact has temporarily displaced wildlife and forced them to seek other suitable habitat within the assessment areas. This displacement creates more competition between species occupying similar habitat niches.

5.3.9.2 Impacts from Reasonably Foreseeable Future Actions

Future grazing practices should result in improved ecological condition which would be beneficial to wildlife species. Other actions such as recreation, road maintenance, etc., would have a minimal, temporary, localized affect on these species or their habitat. Further loss of native habitat due to wildfires may cause the greatest impact to habitat.

5.3.9.3 Cumulative Impact

Proposed Action

There should be an incremental impact from the improvement in ecological condition over an extended period of time. Improving ecological condition implies improving habitat condition for numerous wildlife species.

No Action Alternative

The status quo would be maintained for the upland sites and riparian areas that are not within the Stanley Camp Riparian Pasture and the Desert Dace Exclosure.

No Livestock Grazing Alternative

There should be an incremental improvement in ecological condition over an extended period of time at a faster rate than the Proposed Action. Improving ecological condition implies improving habitat condition.

6.0 Monitoring and Mitigation Measures

6.1 Monitoring

Rangeland monitoring would be conducted by BLM Specialists based on Winnemucca District priorities. Specific rangeland monitoring may include vegetative cover, ecological condition, key forage plant method utilization, Cole browse, use pattern mapping, frequency trend, or observed apparent trend. The permittee and other interested publics would be encouraged to participate in allotment monitoring. Noxious weed detection would be incorporated into monitoring activities.

Appropriate monitoring has been included in the Proposed Action. No additional monitoring has been proposed as a result of the analysis of the potential impacts.

6.2 Recommended Mitigations

- Construct a series of small drift fences along the Slumgullion Canyon Road if livestock drift into the Colman Use Area prior to the scheduled season of use (11/16-12/15, Proposed Action).
- Strategically place gates where horse trails intersect the proposed fence line; flag new fencing so wild horses can see the new barrier (Proposed Action).
- Maintain approved water improvements and keep water available to wild horses seasonally (outside of livestock use periods, Proposed Action, No Action Alternative).
- Lock and administer access (to permittee and BLM staff) to water development valves to ensure water remains available to wild horses/burros (Proposed Action, No Action Alternative).
- Tie back (open) allotment and/or pasture gates when livestock are not present (or present in adjoining allotments) to minimize impacts on the free-roaming nature of wild horses and burros (Proposed Action, No Action Alternative).
- Consider constructing barriers at dispersed springs if unacceptable impacts occur (Proposed Action, No Action Alternative).
- Project sites would be inventoried for two years after construction of the project. If noxious weeds are observed at the project site they would be treated by the permittee following approval by the BLM.
- There is a range improvement project proposed for the SMA which would require an archaeological survey. If the project does encounter cultural resources vulnerable to the

effects of livestock grazing, these impacts would be considered by BLM under the protocol agreement with the State Historic Preservation Office. Effects from range improvements on National Register eligible archaeological sites would be mitigated by using any one or a combination of the following measures: avoidance, protection measures (e.g., fencing), testing, or data recovery.

7.0 List of Preparers

Ron Pearson	Rangeland Resources/Project Lead
Roger Farschon	Special Status Species /Migratory Birds/Wilderness/WSA
Mandy DeForest.....	Supervisory Rangeland Management Specialist
Lynn Ricci.....	Environmental Coordinator
Mike Zielinski.....	Vegetation/Soils/Wetland-Riparian Zones
Craig Drake.....	Water Resources
Greg Lynch.....	Fisheries/T&E Species
Derek Messmer.....	Noxious Weeds/Invasive Species
Dave Valentine.....	Cultural Resources/Native American Religious Concerns
Dave Leferve.....	Recreation
Heidi Hopkins.....	Wild Horses and Burros
Clarence Covert.....	Wildlife
Glenna Eckel.....	Wild Horses and Burros

8.0 Consultation and Coordination

The Winnemucca Field Office mails an annual Consultation, Cooperation, and Coordination (CCC) Letter to individuals and organizations that have expressed an interest in rangeland management related actions. Those receiving the annual CCC letter have the opportunity to request from the Field Office more information regarding specific actions. The following individuals/organizations have requested information on all actions regarding rangeland management in the Soldier Meadows Allotment and are thus considered “interested publics.”

Kudrna Nevada LLC	John Falen	Cindy MacDonald
RCI	Humboldt Co. Commissioners	Reed Martinez
NRCS	NDOW-Fallon	Nv. Dept. of Administration
Nevada Wool Growers	Alan Schroeder	Estill Ranches, LLC
Greg Foster	Nevada Cattlemen's Assoc.	Western Watersheds Project
NDOW-Winnemucca	Summit Lake Paiute Tribe	

The Winnemucca Field Office also coordinates with individuals and organizations that have an interest in Proposed Actions within wilderness areas. The following have requested information on all Proposed Actions related to rangeland management in the wilderness areas within the SMA.

Great Old Broads Wilderness	Ft. Bidwell Tribal Council	Paul C. Clifford Jr.
Friends of Nv. Wilderness	Northern Nv. Native Plant	Mary Conelly
Ca. Wilderness Coalition	Walker River Bowmen	John Davis
Wilderness Watch	Pyramid Lake Paiute Tribe	Robert P. Davison
Nv. Bow Hunters Assoc.	Ralph Albright	Tony Diebold
Canvasback Gun Club	Greg Aplet	Gale G. Dupree

Or. Natural Desert Assoc.
Karen Boeger
Leah Brashear
Judi Caron
Terry Williams
Bryan Lamont
Marjorie Sill
Kody Menghini
Steve Tabor
Brian Murdock
John Walker

Sarah Barth
Clint Garrett
Mike Harper
Vicky Hoover
James Jurad
Debbie Sease
Susan Lynn
Donna Potter Stammers
James D. Morefield
Johanna Wald

Silver Arrow Bowmen
NW Great Basin Assoc.
Az. Wilderness Coalition
Dave Pulliam
Terry Reed
Ken Longballe
Stephen Smith
Willie Molini
Ed & Anita Wagner
Marisha Noneo

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2006e Legacy Rehost (LR) 2000 database
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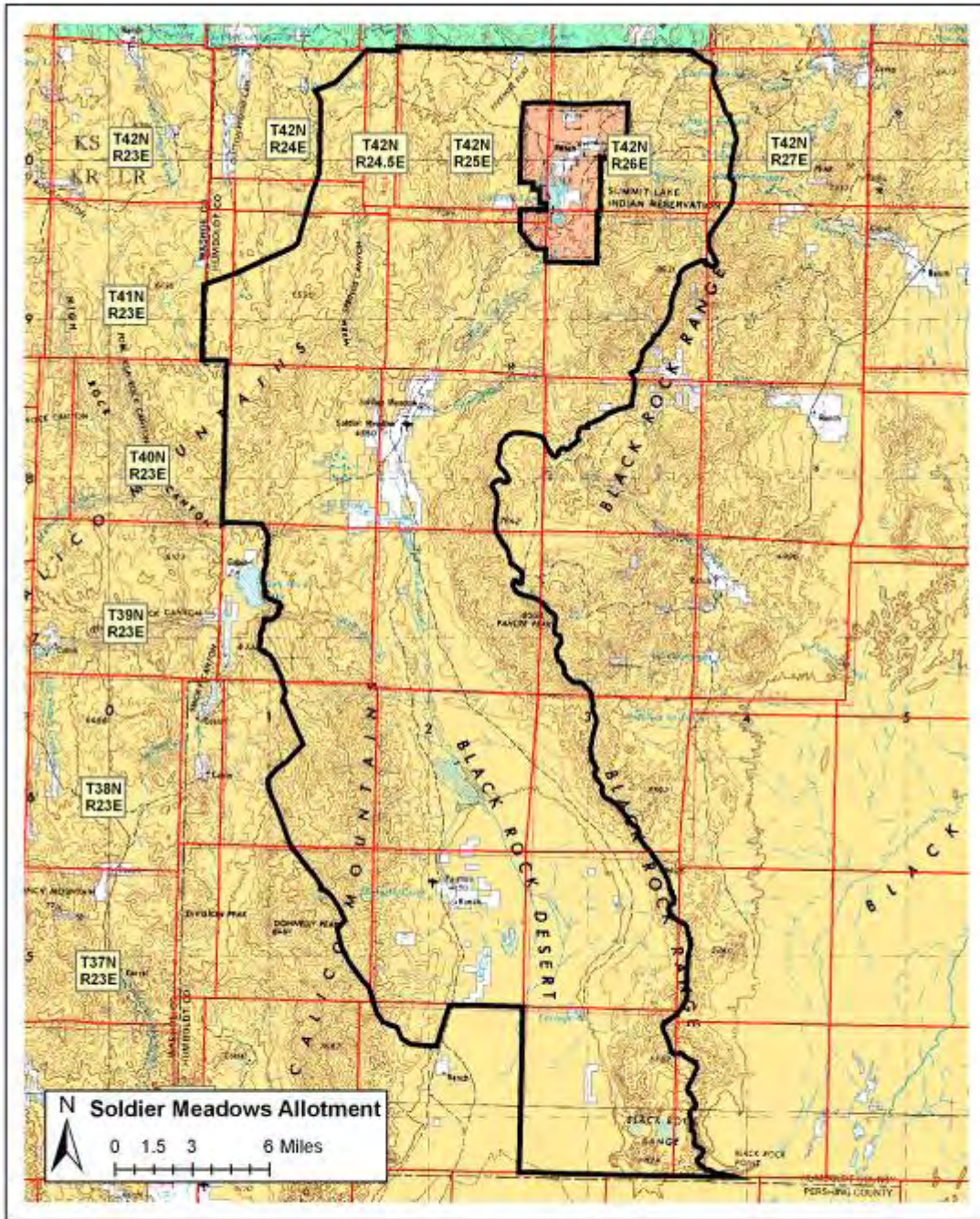
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10.0 Appendices

Map 1. SMA Base Map



Allotment Map



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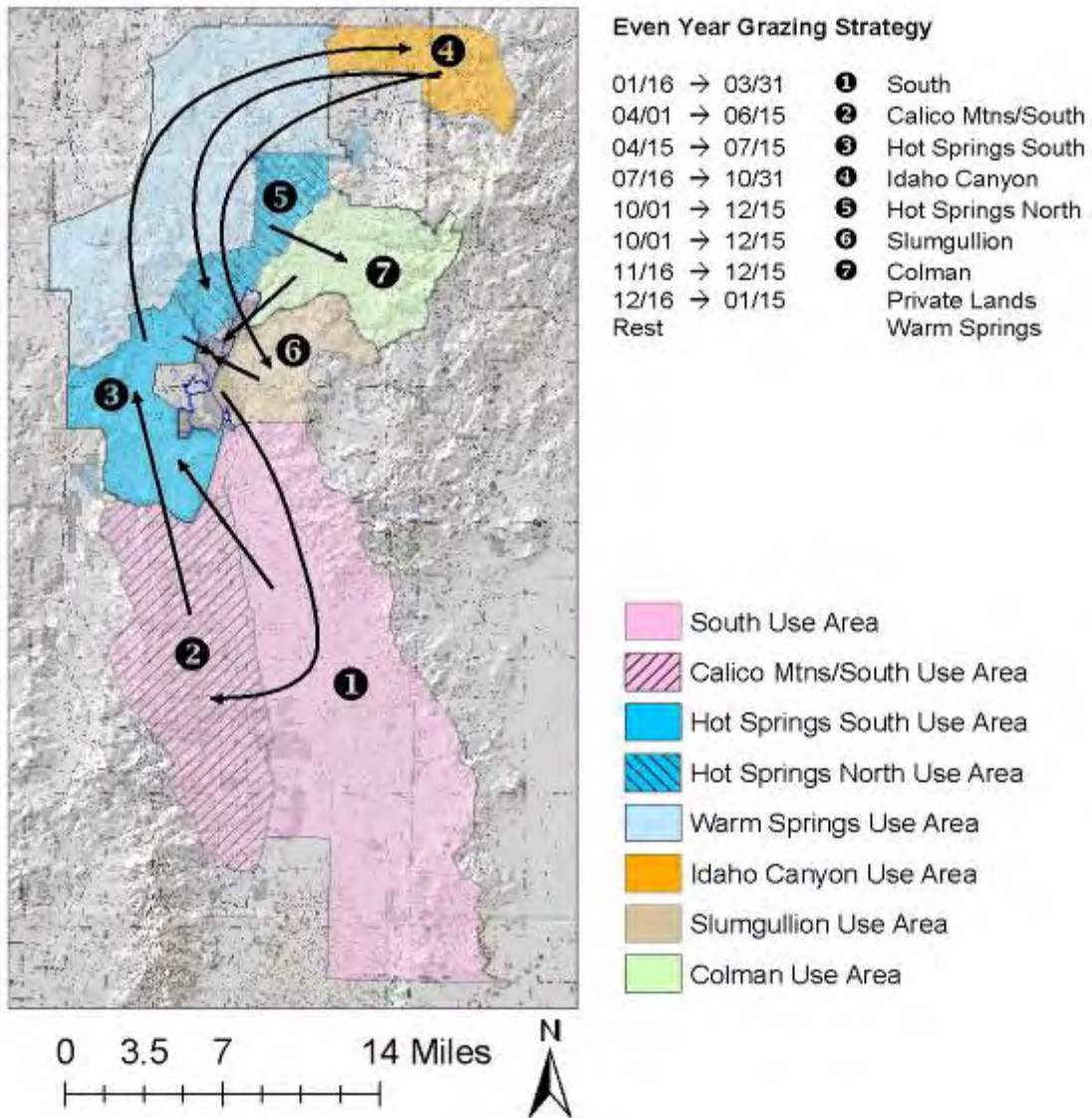


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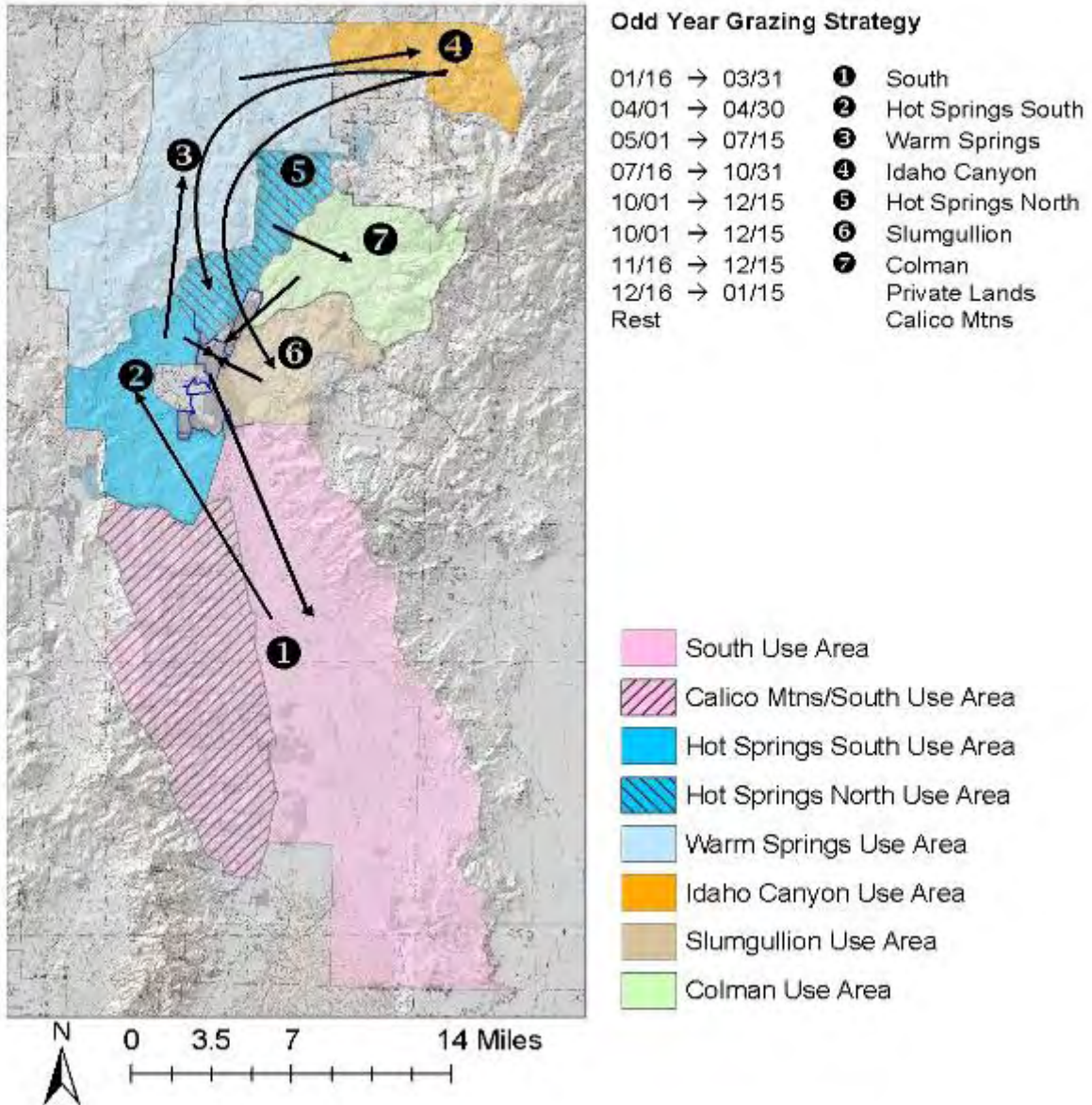
Map 2. SMA Grazing System Even Years

Soldier Meadows Allotment Grazing System Even Years

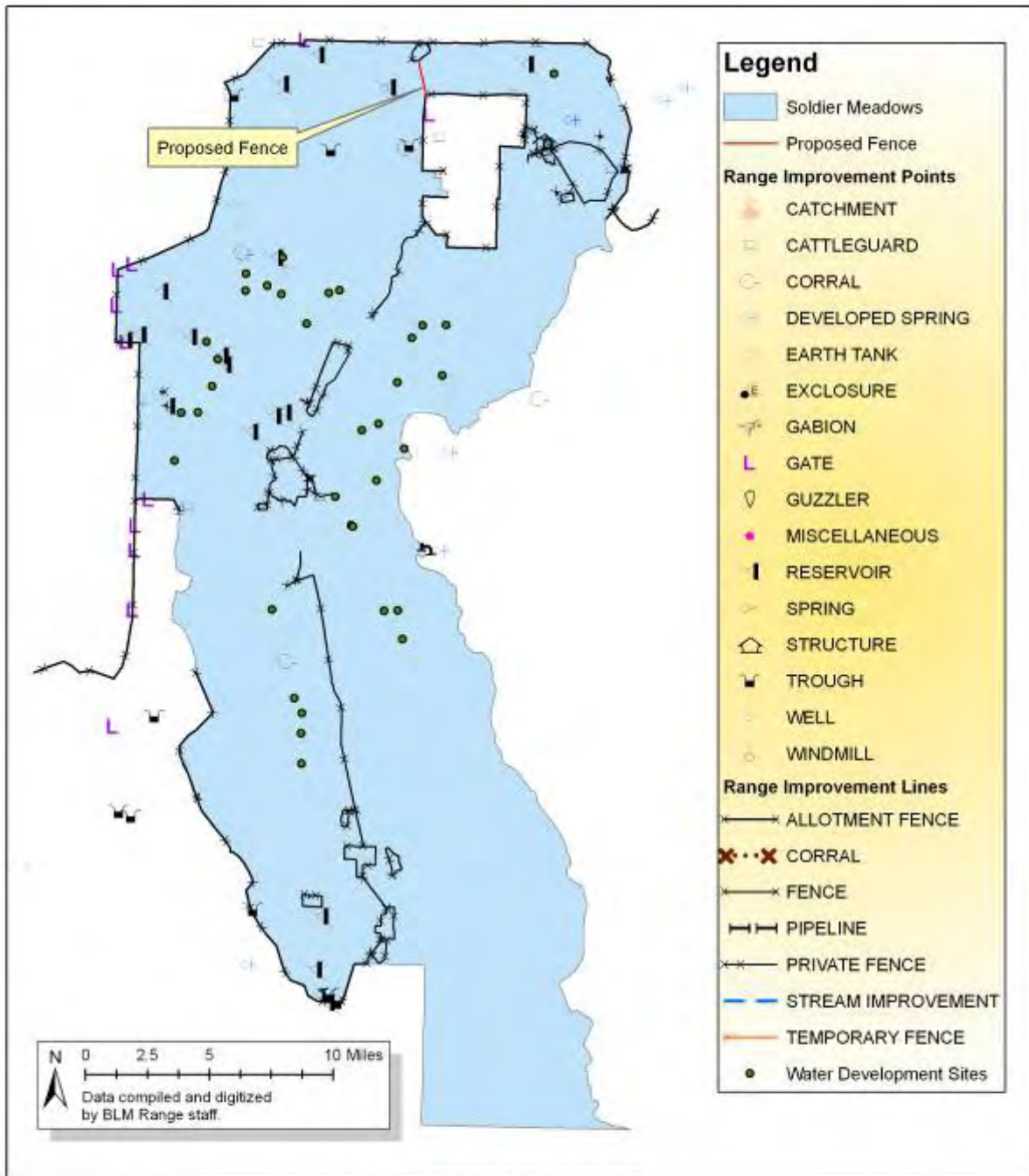


Map 3. SMA Grazing System Odd Years

Soldier Meadows Allotment Grazing System Odd Years



Map 4. Range Improvements



Range Improvements



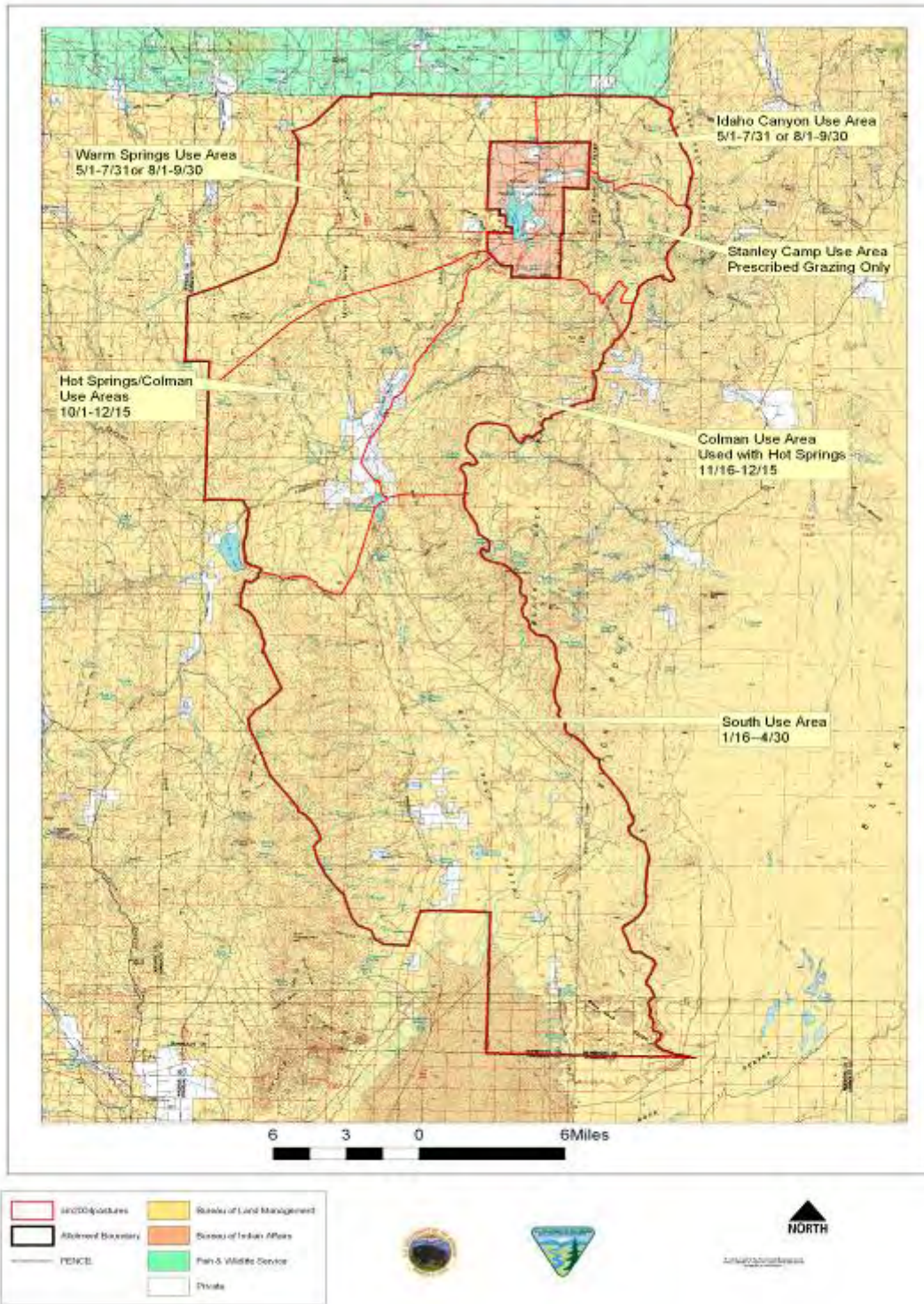
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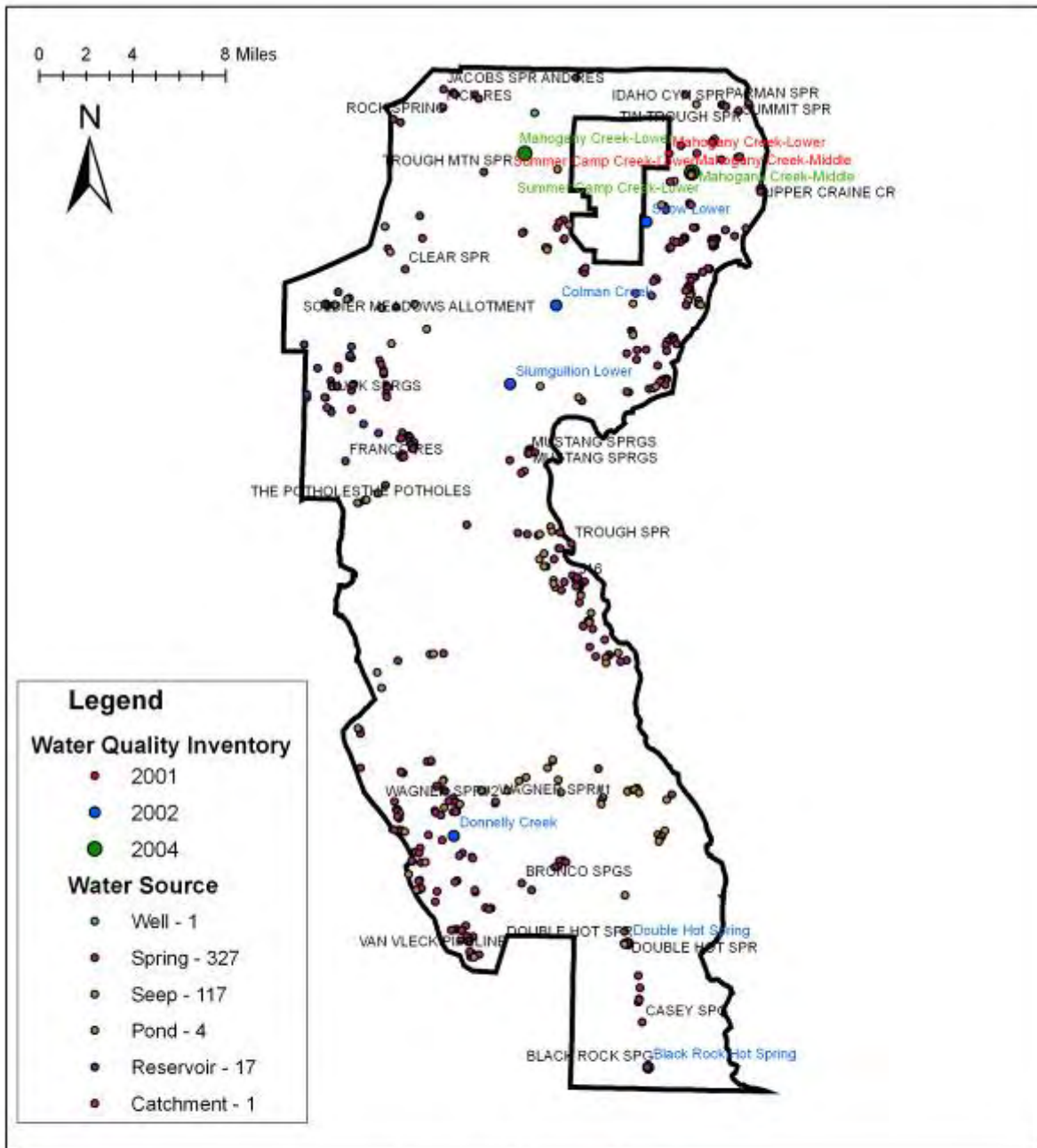
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Map 5. Alternative 1 (2004 FMUD)



Map 6. Water Quality Inventory



Water Inventory



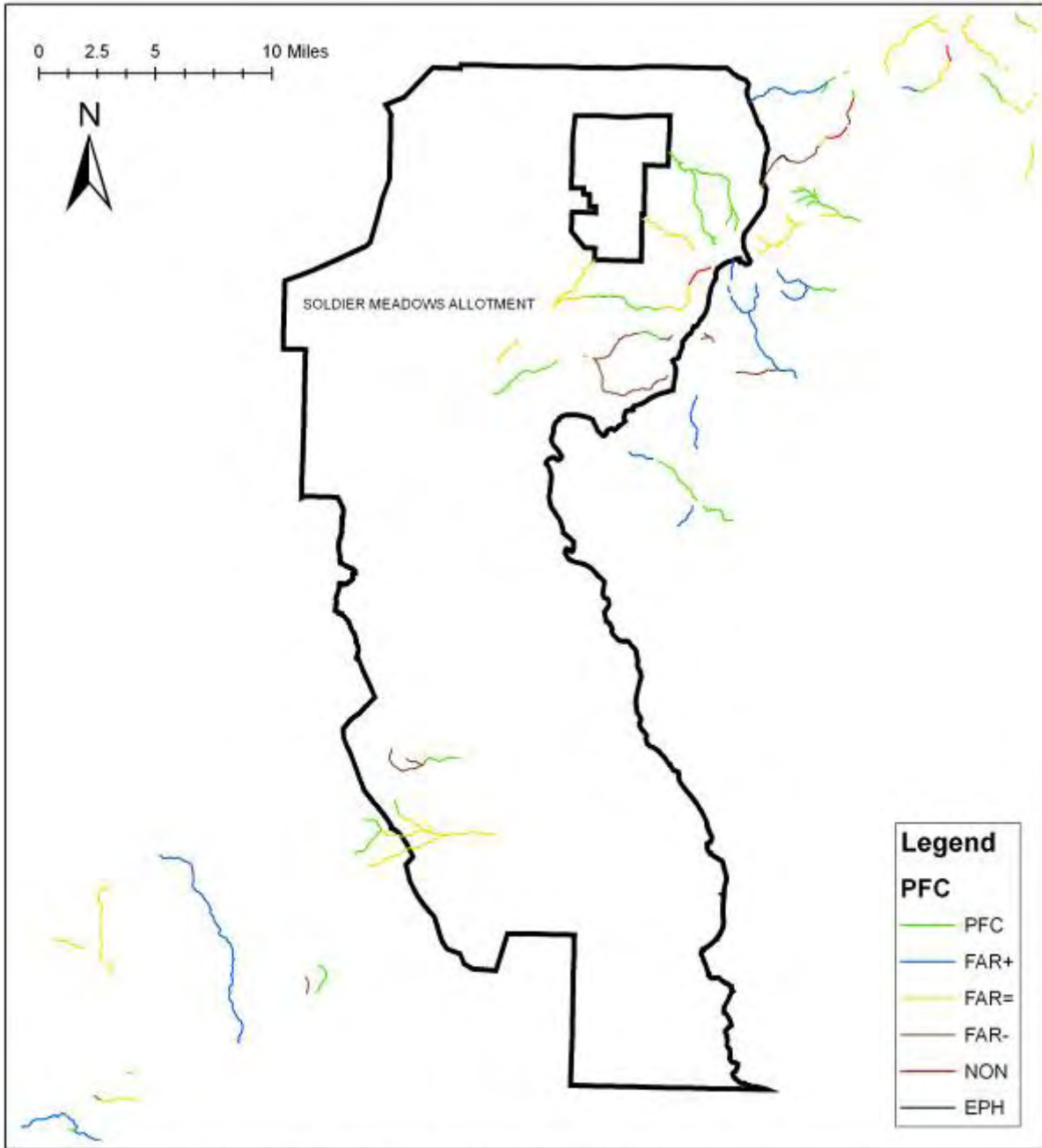
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Map 7. Riparian Functionality Assessment



Riparian Functionality Assessment



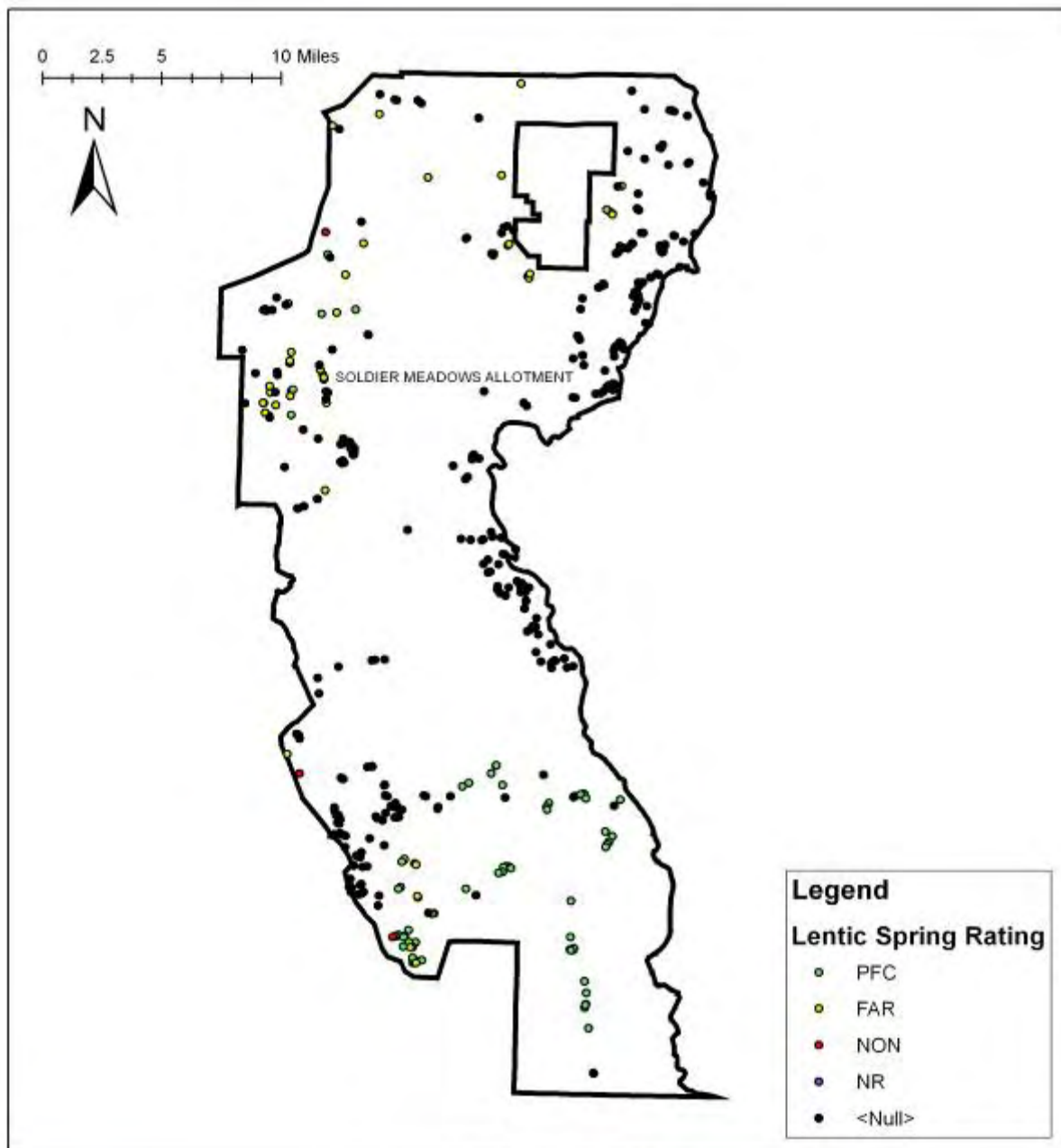
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Map 8. Lentic Spring Survey



Lentic Spring Survey



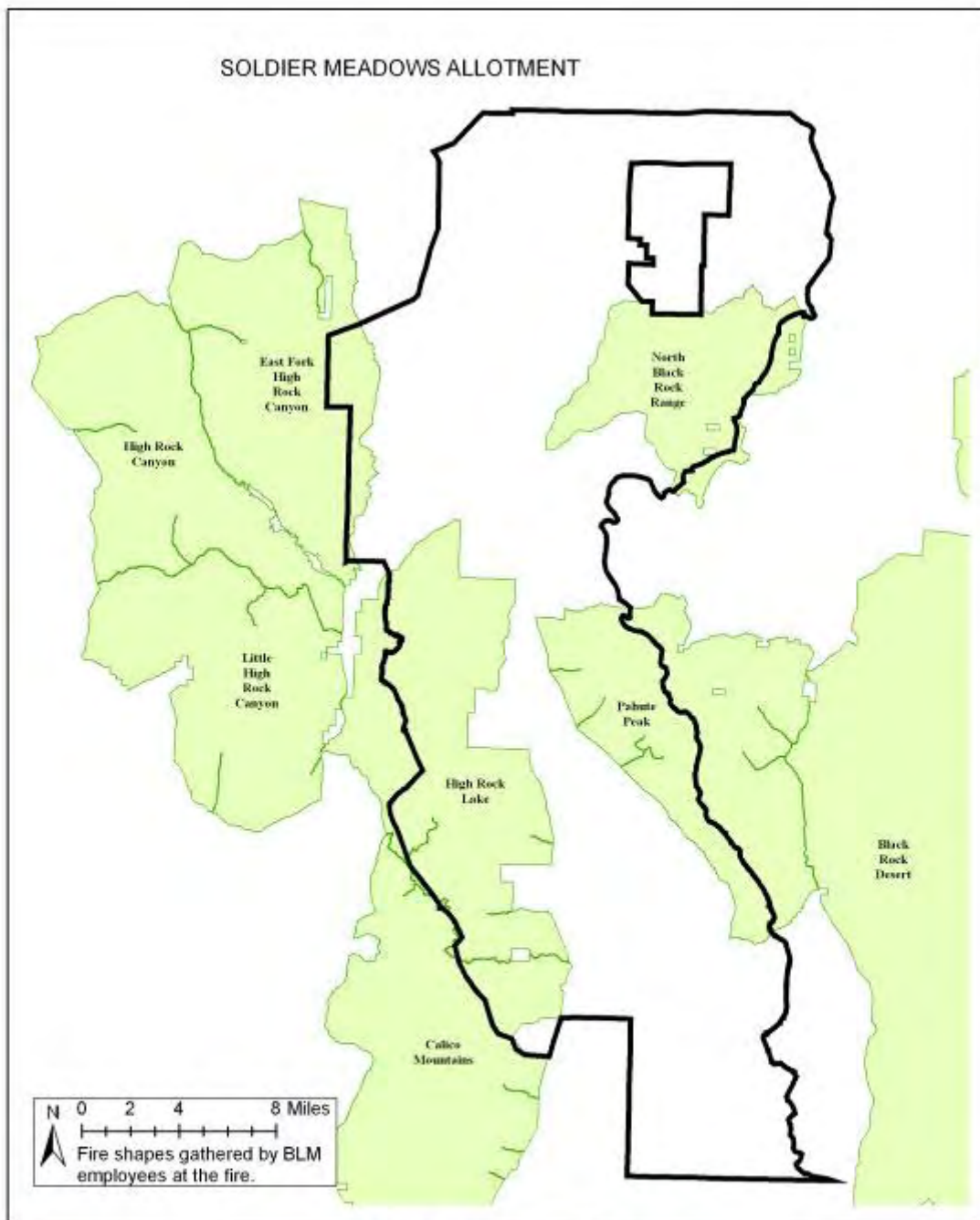
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Map 9. Wilderness Areas



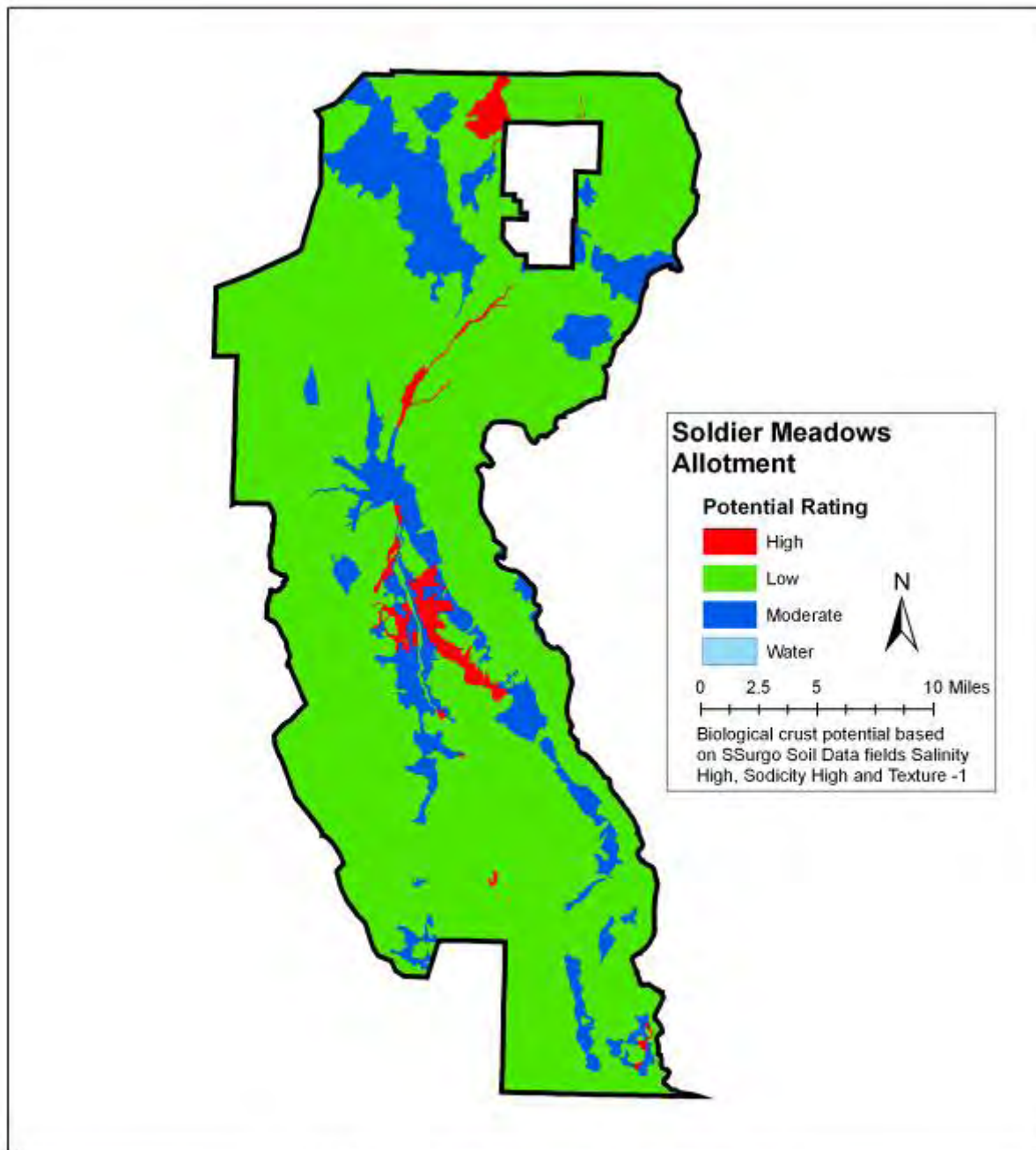
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Map 10. Biological Crust Potential



Biological Crust Potential



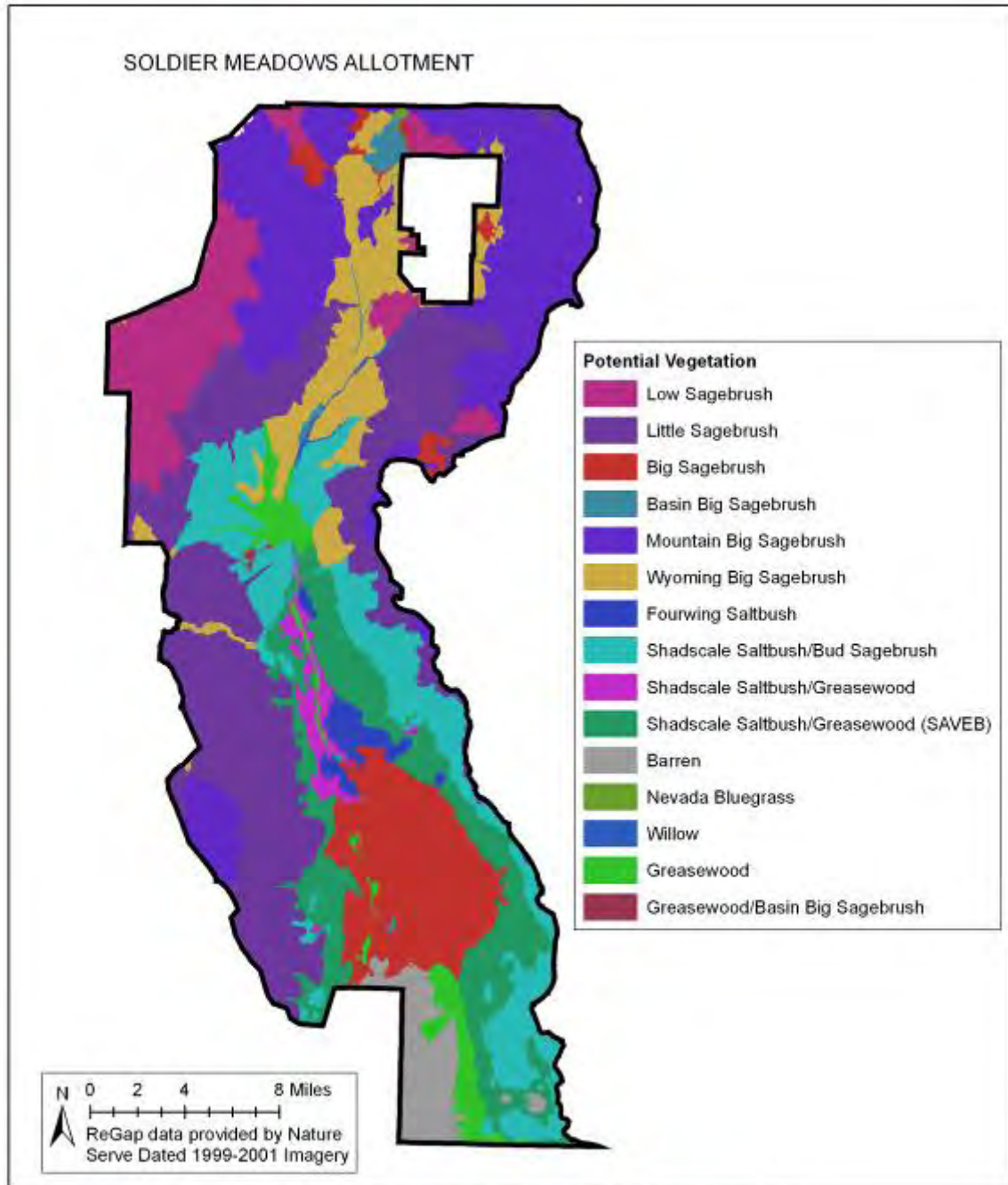
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Map 11. Dominant Potential Vegetation



Dominant Potential Vegetation



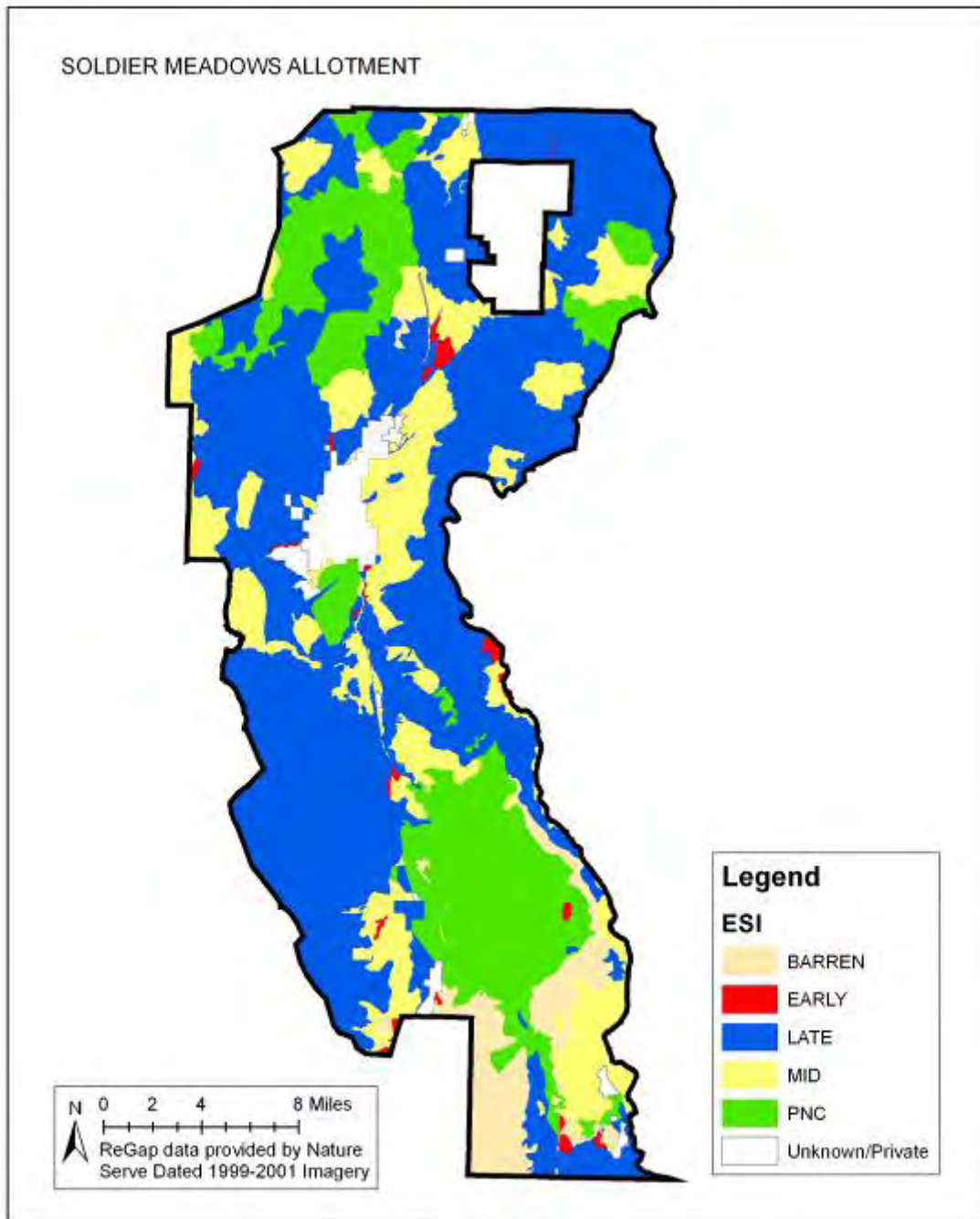
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Map 12. ESI Data



ESI Data



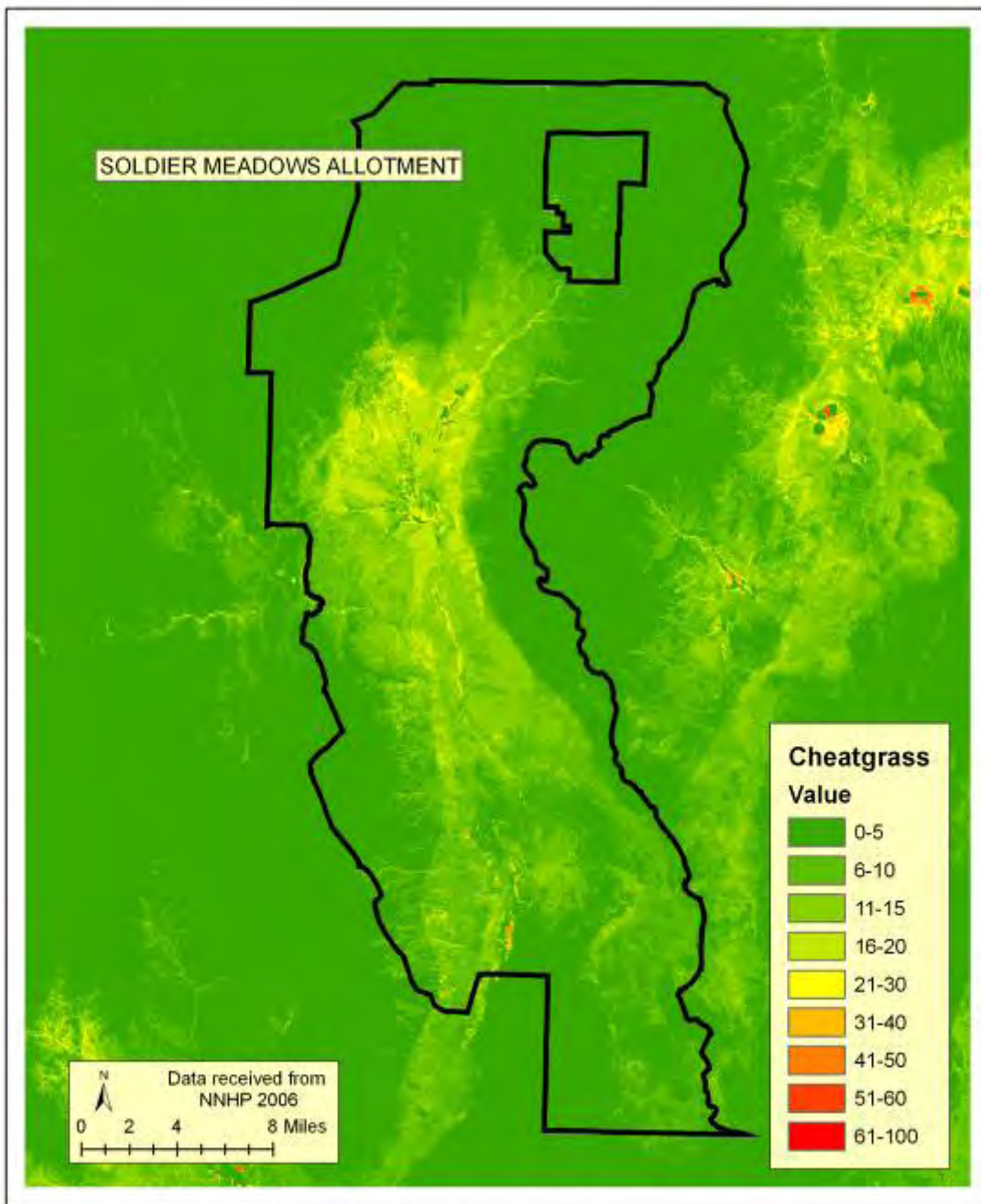
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Map 13. Cheatgrass Cover



Cheatgrass Cover



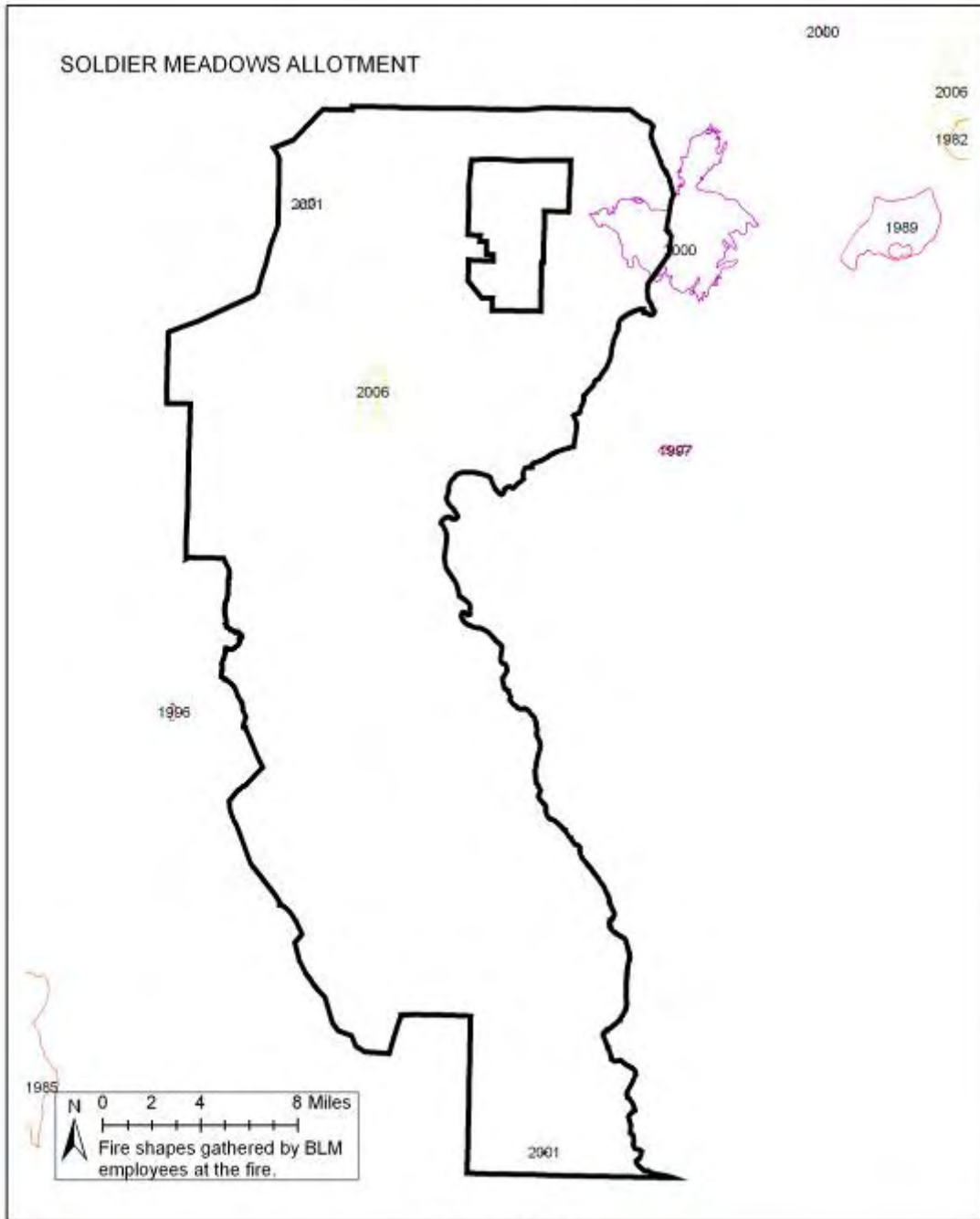
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Map 14. Fire History



Fire History



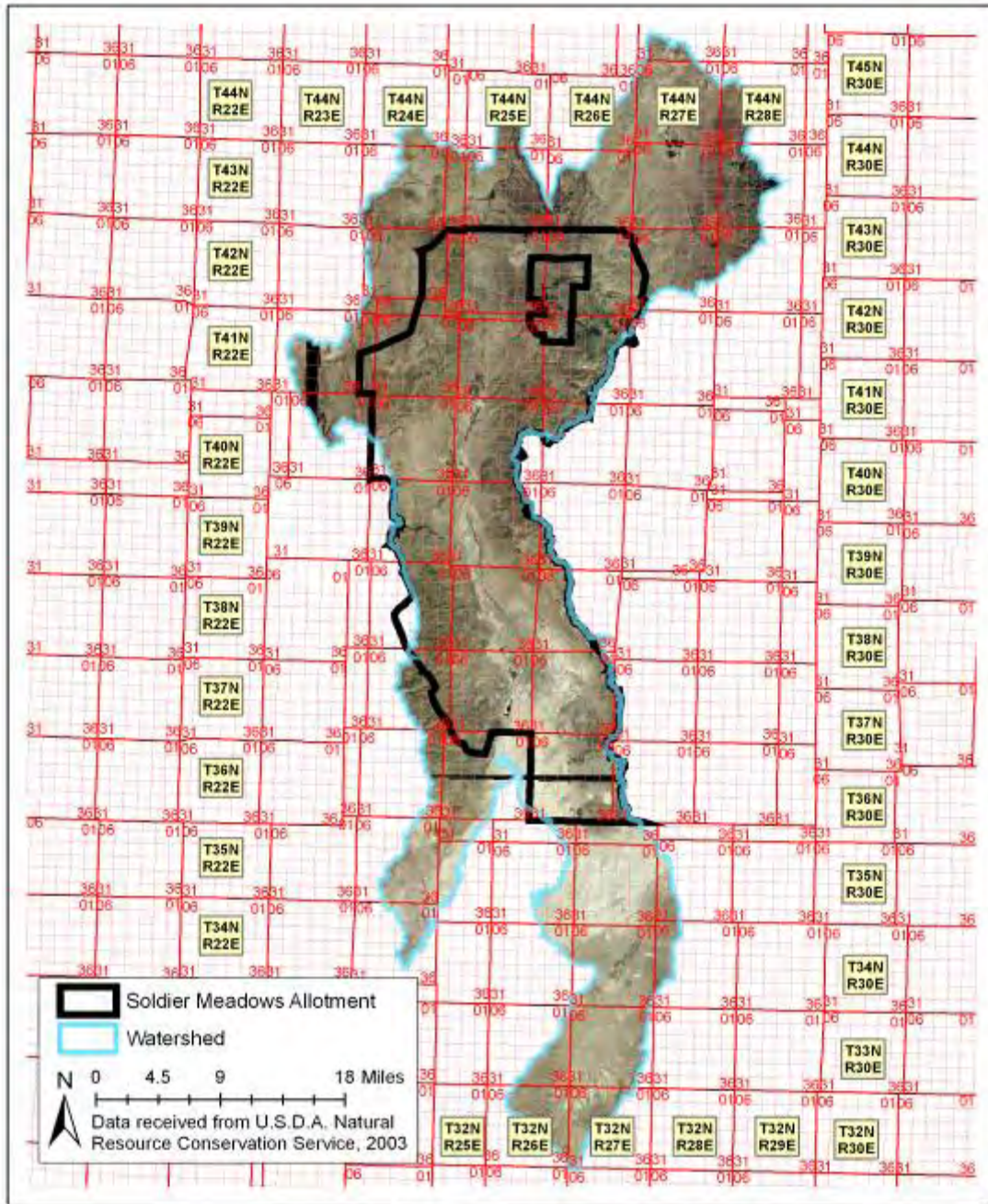
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Map 15. Cumulative Impact Assessment Areas



Cumulative Assessment Areas



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