FINDING OF NO SIGNIFICANT IMPACT

CAHILL GRAZING PERMIT RENEWAL FOR ROUND MOUNTAIN, RAHILLY GRAVELLY, BURRO SPRINGS, HILL CAMP, AND FRF CAHILL ALLOTMENTS

DOI-BLM-OR-L050-2013-0030-EA

The Bureau of Land Management, Lakeview Resource Area (BLM), has analyzed several alternative proposals related to renewing term grazing permit number 3600173 for a ten-year period. This permit addresses livestock grazing management for the Round Mountain (00211), Rahilly Gravelly (00212), Burro Springs (00213), Hill Camp (00215) and FRF Cahill (00219) Allotments.

An environmental assessment (EA) was prepared that analyzed the potential direct, indirect, and cumulative environmental impacts of four alternatives. The alternatives included No Action (continue current grazing management); 50% grazing reduction; grazing management changes and vegetation treatments; and not issuing the permit (see Chapter 2 of attached EA).

The Council on Environmental Quality (CEQ) regulations state that the significance of impacts must be determined in terms of both context and intensity (40 CFR 1508.27). The context of the proposed action is the total area contained within the five allotments. For this reason, the analysis of impacts in the attached Environmental Assessment (EA) is focused appropriately at this scale. The CEQ regulations also include the following ten considerations for evaluating the intensity of impacts:

1) Would any of the alternatives have significant beneficial or adverse impacts (40 CFR 1508.27(b)(1)?
( ) Yes (X) No

Rationale: Based on the analysis contained in the attached EA, none of the alternatives would have either significant beneficial or adverse impacts on the human environment. There are no prime or unique farmlands, forest or woodland habitat, wild horse management areas, significant caves, designated wilderness areas, wilderness study areas, threatened or endangered plants, hazardous waste sites, or low income or minority populations located in the allotments. No measureable impacts would occur to climate, air quality, floodplains, hydrology, land status, or mineral and energy resources (Table 14, Chapter 3).

The potential impacts to existing soils, biological soil crusts, water quality, aquatic habitat, special status aquatic species, riparian areas, wetlands, upland vegetation, noxious weeds, special status plants, wildlife, special status wildlife species, livestock grazing management, native American traditional practices, cultural resources, recreation, visual resources, ACEC/RNAs, wild and scenic rivers, lands with wilderness characteristics, and social and economic values anticipated by the various alternatives have been analyzed in detail within Chapter 3 of the attached EA and found not to be significant.

2) Would any of the alternatives have significant adverse impacts on public health and safety (40 CFR 1508.27(b)(2)? ( ) Yes (X) No

Rationale: None of the alternatives analyzed in detail in the attached EA would have significant impacts on public health or safety because the project area is not located near any populated rural or urban area. For this reason, there would also be no impacts to low income or minority populations. Further, there are no known hazardous waste sites in the project area. There are no surface drinking water sources located in the project area. There would be no measureable impacts to air quality within and surrounding the project area (Table 14). Impacts to water quality associated with the one perennial stream located in the area are described as minor (see Chapter 3).

3) Would any of the alternatives have significant adverse impacts on unique geographic characteristics (cultural or historic resources, park lands, prime and unique farmlands, wetlands, wild and scenic rivers, designated wilderness or wilderness study areas, or ecologically critical areas (*ACECs, RNAs, significant caves*)) (40 CFR

1508.27(b)(3)? ( ) Yes (X) No

Rationale: There are no park lands, prime or unique farmlands, significant caves, designated wilderness areas, or wilderness study areas located in the project area (Table 14). Potential impacts to riparian areas, wild and scenic rivers, ACEC/RNAs, and lands with wilderness character have been analyzed in Chapter 3 of the attached EA and found not to be significant.

4) Would any of the alternatives have highly controversial effects (40 CFR 1508.27(b)(4)? ( ) Yes (X) No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in the attached EA. The potential impacts of these range management actions on soils, biological soil crusts, water quality, riparian areas, wetlands, aquatic habitat, special status aquatic species, upland vegetation, noxious weeds, special status plants, wildlife, special status wildlife species, livestock grazing management, native American traditional practices, cultural resources, recreation, visual resources, ACEC/RNAs, wild and scenic rivers, lands with wilderness characteristics, and social and economic values can be reasonably predicted based on existing science and professional expertise. The attached EA analyzed these impacts (see Chapter 3) and found them not to be significant. The nature of these impacts is not highly controversial, nor is there substantial dispute within the scientific community regarding the nature of these effects.

Potentially interested public, agencies, tribes, and the permittee were provided notice of a 30-day review period on the EA. The BLM received two comment letters for consideration during that time. As a result of both external and internal comments, the EA was revised. In addition, each commenter received a written response to their comments. None of the comments received represented highly controversial effects, as defined under 40 CFR 1508.27(b)(4).

5) Would any of the alternatives have highly uncertain effects or involve unique or unknown risks (40 CFR 1508.27(b)(5)? ( ) Yes (X) No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in the attached EA. The potential impacts of these range management actions on soils, biological soil crusts, water quality, riparian areas, wetlands, aquatic habitat, special status aquatic species, upland vegetation, noxious weeds, special status plants, wildlife, special status wildlife species, livestock grazing management, native American traditional practices, cultural resources, recreation, visual resources, ACEC/RNAs, wild and scenic rivers, lands with wilderness characteristics, and social and economic values can be reasonably predicted based on existing science and professional expertise. The attached EA analyzed these impacts (see Chapter 3). The nature of these impacts is not highly uncertain, nor does it involve unique or unknown risks.

6) Would any of the alternatives establish a precedent for future actions with significant impacts (40 CFR 1508.27(b)(6)? ( ) Yes (X) No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in the attached EA. None of the alternative actions represents a new, precedent-setting range management technique or would establish a precedent for future similar actions with potentially significant effects.

7) Are any of the alternatives related to other actions with potentially significant cumulative impacts (40 CFR 1508.27(b)(7)? ( ) Yes (X) No

Rationale: Based on the analysis contained within the Cumulative Effects section of Chapter 3 of the attached EA, none of the alternatives would have significant cumulative effects within the project area, even when added to the effects of other past, present, and reasonably foreseeable future actions.

8) Would any of the alternatives have significant adverse impacts on scientific, cultural, or historic resources, including those listed or eligible for listing on the National Register of Historic Resources (40 CFR 1508.27(b)(8)? ( ) Yes (X) No

Rationale: The allotments are located within a broad area which was used historically by native Americans. However, there are no known native American religious or sacred sites, designated Traditional Cultural Properties, or important plant collecting sites known within the allotment. Potential impacts to cultural resources have been analyzed in Chapter 3 of the attached EA and found not to be significant.

9) Would any of the alternatives have significant adverse impacts on threatened or endangered species or their critical habitat (40 CFR 1508.27(b)(9)? ( ) Yes (X) No

Rationale: Warner sucker, a threatened species, and its designated critical habitat occurs within the Round Mountain and Rahilly Gravelly Allotments. Livestock are being managed to exclude grazing of riparian areas under Section 7 consultation and a biological opinion issued by the U.S. Fish and Wildlife Service. The Foskett speckled dace, a threatened species, is also found in the Rahilly Gravelly Allotment. Impacts to these species and their habitat were evaluated and found not to be significant (see Special Status Aquatic Species section of Chapter 3 of attached EA).

10) Would any of the alternatives have effects that threaten to violate Federal, State, or local law or requirements imposed for the protection of the environment (40 CFR 1508.27(b)(10)? ( ) Yes (X) No

Rationale: All of the alternatives analyzed in the attached EA comply with all Federal, State, and local environmental laws or other environmental requirements, including the National Environmental Policy Act, Clean Water Act, Clean Air Act, and Endangered Species Act.

The Federal Land Policy and Management Act requires that any action that BLM implements must also conform with the current land use plan and other applicable plans and policies. The purpose and need for the proposed action conforms with the management direction contained in the *Lakeview Resource Management Plan/Record of Decision* (BLM 2003b). The alternatives analyzed in the EA conform to the management direction requirements of this plan and the *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington* (BLM 1997), and the grazing regulations (43 CFR Part 4100) in varying degrees (see EA Chapters 1 and 3). Conformance with this direction is addressed in more detail within the proposed decision.

Finding

On the basis of the analysis contained in the attached EA, the consideration of intensity factors described above, and all other available information, my determination is that none grazing management activities contained in the alternatives analyzed would constitute a major federal action which would have significant adverse or beneficial impacts on the quality of the human environment.

In addition, the potential impacts associated with the use of herbicides to treat noxious weeds and other invasive species was previously evaluated in an existing *Vegetation Treatments Using Herbicides on BLM Land in Oregon Final Environmental Impact Statement* (EIS; BLM 2010a). That analysis has been summarized in the attached EA and was incorporated by reference in its entirety into the environmental analysis. The impacts of the weed/invasive species treatment alternatives would fall within the range of those previously analyzed in this Final EIS.

For these reasons, an EIS is unnecessary and will not be prepared.

Thomas E. Rasmussen, Field Manager
Lakeview Resource Area

5/2/2014
Date

Cahill Grazing Permit Renewal for Round Mountain (00211), Rahilly Gravelly (00212), Burro Springs (00213), Hill Camp (00215) and FRF Cahill (00219) Allotments

Environmental Assessment

DOI-BLM-L050-2013-0030-EA

Lakeview Resource Area
Lakeview District
Bureau of Land Management
1301 South G Street
Lakeview, Oregon 97630

February 2014

CHAPTER 1—PURPOSE AND NEED FOR ACTION

Introduction

The Lakeview District, Bureau of Land Management (BLM) has prepared this Environmental Assessment (EA) to analyze the potential effects of renewing term grazing Permit #3600173 for a ten-year period. This permit addresses livestock grazing management for the Round Mountain (00211), Rahilly Gravelly (00212), Burro Springs (00213), Hill Camp (00215) and FRF Cahill (00219) Allotments. This EA analyzes the potential direct, indirect, and cumulative impacts that may result with the implementation of the proposed alternatives. This EA also serves as the analytical basis for compliance with the National Environmental Policy Act of 1969 (NEPA), as well as making the determination as to whether any significant impacts to the human environment would result from the proposal.

The Round Mountain Allotment is located approximately 10 miles southwest of Adel, Oregon and contains about 17,092 acres of public land and 2,009 acres of private land. Rahilly Gravelly Allotment is located about 5 miles directly south of Adel, Oregon, and contains about 34,059 acres public land and 2,956 acres of private land. The Burro Springs Allotment is located approximately 6 miles southeast of Adel, Oregon, and contains about 7,004 acres of public land. The Hill Camp Allotment is located approximately 10 miles southeast of Adel, Oregon, and contains about 32,138 acres public land and 2,669 acres of private land. The FRF Cahill Allotment is located approximately 5 miles northeast of Adel, Oregon, and contains approximately 571 acres of public land and 725 acres of private land (Maps 1 and 3A-3D).

Purpose and Need for Action

The grazing permit for the allotments expired in 2004, at which time the permit renewal application was submitted for consideration by the permittee. At that time the BLM was unable to fully process the permit renewal; therefore, the permit was renewed <u>with the same terms and conditions as the expiring permit</u> under the authority of Section 325, Public Law 108-108, until such time as the permit could be fully processed. <u>The permit is up for renewal once again.</u> The primary purpose of this analysis is to respond to the permittee's permit renewal application and consider whether to reissue or modify the 10-year term livestock grazing permit #3600173 in accordance with 43 CFR Part 4130. When issued, grazing permits must also address appropriate terms and conditions designed to "achieve management and resource condition objectives for the public lands… and to ensure conformance with part 4180" (43 CFR Part 4130.3).

A second purpose of the analysis is to consider whether to implement several range improvement projects <u>to improve an ecologically</u> poor condition shrub-<u>steppe community</u> <u>by mowing</u> and reseeding about 500 acres in the Coleman Lake Pasture, <u>as well as</u> constructing about a mile of new fence to <u>keep livestock out of the treated area during vegetation re-establishment</u> and create a new pasture.

A third purpose of this analysis is to consider treating noxious weeds and invasive species within the allotments using both approved integrated weed management methods described in the existing weed treatment plan (BLM 2004b), as well as allowing the use of 6 additional herbicides for treatment consistent with the *Record of Decision (ROD) for the Vegetation Treatments using Herbicides on BLM Lands in Oregon* (BLM 2010b).
<u>The 6 additional herbicides would allow for more effective control of weeds and invasive species across the 5 allotments, as well as allow control of species which, at this time, are not controllable with the resources and methods currently available. These new herbicides would also allow for control before an infestation gets too large and costly to manage.</u>

Decisions to Be Made

The authorized officer will decide whether to renew or modify the 10-year Term Grazing Permit, and if so, under what terms and conditions. The authorized officer will decide whether or not to implement range improvement projects in the Coleman Lake Pasture of the Rahilly Gravelly Allotment. The authorized officer will also decide whether to treat weeds and invasive species throughout the five allotments, as well as determine which methods to use.

Decision Factors

Decision factors represent criteria used by the decision maker to choose the alternative that best meet the purpose and need for the proposal. These include, but are not limited to:

a) How well does the decision conform to laws, regulations, and policies related to grazing use and protecting other resource values?
b) How well does the decision conform to the resource management and allotment management plans?
c) How well does the decision promote maintenance of rangeland health standards?
d) How well does the decision conform with ODFW 2005 sage-grouse guidelines?
e) How well does the decision conform with IM 2012-043 regarding interim sage-grouse management?
f) How well does the proposal conform to the existing integrated weed management plan (BLM 2004) and *Record of Decision for Vegetation Treatment Using Herbicides on BLM Lands in Oregon* (BLM 2010b)?

Conformance with Laws and Regulations

This EA has been prepared in conformance with National Environmental Policy Act of 1969. Grazing permits are issued or renewed in accordance with the provisions of the Taylor Grazing Act (1934), Federal Land Policy and Management Act (FLPMA, 1976), Public Rangelands Improvement Act (1978), and applicable grazing regulations at 43 Code of Federal Regulations (CFR) Part 4100.

In order for an applicant to lawfully graze livestock on public land, the party must obtain a valid grazing permit or lease. The grazing regulations, 43 CFR 4130.2(a), state "grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans." As noted above, the Lakeview RMP/ROD has designated these allotments as available for livestock grazing (BLM 2003b). The permit renewal applicant (current permittee) controls the base property associated with the grazing preference on the allotment and has been determined to be a qualified applicant.

A performance review of the permittee's past use has been completed and BLM found the permittee to have a satisfactory record of performance pursuant to 43 CFR 4110.1(b). This conclusion was based on: grazing utilization at acceptable levels; bills paid on time; actual use turned in annually; permit terms and conditions were adhered to, base property requirements met, and no history of livestock trespass or unauthorized use. The record of performance review is hereby incorporated by reference.

Conformance with Land Use Plan

Approved management actions or project decisions must conform to the appropriate land use plan. The *Lakeview Resource Management Plan/Record of Decision* (BLM 2003b, as maintained) is the governing land use

plan for the area and provides the following goals and management direction related to livestock grazing use and vegetation treatments:

Livestock Grazing Management Goal - provide for a sustainable level of livestock grazing consistent with other resource objectives and public land-use allocations (page 52).

Management Direction:

"The current licensed grazing levels (Appendix E1) will be maintained until analysis or evaluation of monitoring data or rangeland health assessments identify a need for adjustments to meet objectives. Applicable activity plans (including existing allotment management plans, agreements, decisions and/or terms and conditions of grazing use authorizations) will be developed, revised where necessary, and implemented to ensure that resource objectives are met. The full permitted use level for each allotment has been and continues to be analyzed through individual allotment assessments, such as rangeland health and livestock grazing guidelines…." (Page 52).

The Round Mountain (00211), Rahilly Gravelly (00212), Burro Springs (00213), Hill Camp (00215) and FRF Cahill (00219) Allotments are currently open or allotted to grazing use and allocated for 674 AUMs, 1,781 AUMs, 179 AUMs, 1,719 AUMs, and 280 AUMs of livestock forage, respectively. There are 273 AUMs of wildlife forage on the Round Mountain Allotment (00211), 350 AUMs of wildlife forage on the Rahilly Gravelly Allotment (00212), 80 AUMs of wildlife forage on the Burro Springs Allotment (00213), 345 AUMs of wildlife forage on the Hill Camp Allotment (00215) and 20 AUMs of wildlife forage on the FRF Cahill Allotment (00219) (Page 46, Table 5, as maintained, Appendix E1, as maintained; Map G-3).

"Rangeland improvement projects will be implemented to meet resource objectives…" (Page 53).

Plant Communities – Shrub Steppe Management Goal – restore, protect, and enhance the diversity and distribution of desirable vegetation communities, including perennial native and desirable introduced plant species. Provide for their continued existence and normal function in nutrient, water, and energy cycles (page 28).

Management Direction:

Upland native shrub steppe communities will be managed to attain a trend toward the desired range of conditions based on management objectives and site potential (page 28).

Prescribed and wildland fire use will be implemented to rehabilitate or vegetate plant communities that do not meet desired conditions due to dominance by annual, weedy, or woody species… (page 29).

Seedings will be implemented with appropriate mixes of adapted native and nonnative perennial and annual plant species; although native species will be preferred for seedings. Species mixes will be determined on a site-specific basis dependent upon the probability of successful establishment and risks associated with seeding failure (page 29).

Noxious Weeds and Competing Undesirable Vegetation Management Goal – control the introduction and proliferation of noxious weeds and competing undesirable plant species, and reduce the extent and density of established populations to acceptable levels (page 37).

Management Direction:

Weeds will be controlled in an integrated weed management program that includes prevention education and cultural, physical, biological, and chemical treatments… Mechanical and manual control methods and burning treatments will (be used to) physically remove noxious weeds and unwanted vegetation; biological controls will introduce and cultivate agents such as insects and pathogens that naturally limit the spread of noxious weeds; and chemical treatments using approved herbicides will be applied where mechanical and/or biological controls are not feasible (page 37).

Selection of the appropriate control method will be based on such factors as the growth characteristics of the target species, size of the infestation, location of the infestation, accessibility of equipment, potential impacts to non-target species, use of the area by people, effectiveness of the treatment on target species, and cost… these methods may be used individually or in combination and may be utilized over several years… for a period of 10 or more years (page 37).

Operation and Maintenance Actions

Maintenance of existing and newly constructed facilities or projects will occur over time… Such activities could include, but are not limited to, routine maintenance of existing…water control structures…, reservoirs, wells, pipelines, waterholes, fences, cattle guards, seedings, … and other similar facilities/projects (Page 100).

Appendix E1 – Allotment Management Summaries – Round Mountain Allotment (Page A-22, as maintained)

Range Livestock Management – *Continue livestock management practices under the 1971 allotment management plan. Revise as needed.*

Livestock distribution/management - *Improve livestock management and distribution through improved management practices, installation of livestock management facilities (such as fences and water sources), and/or other actions as opportunities arise*.

Improve/maintain range condition - *Use management practices and/or better animal distribution; develop range improvements when appropriate: adjust permitted use as needed*.

Plant communities/vegetation – *Protect special status plant species/habitat from BLM authorized activities. Maintain the Grateola exclosure.*

Implement the current integrated noxious weed management plan.

Watershed/riparian/fisheries –*Where BLM –authorized activities are determined to be impacting water quality, modify management to improve surface water quality to meet/exceed state standards*.

Implement the conservation agreement for redband trout habitat.

Continue current grazing management strategies and maintenance of existing exclosures to comply with and implement biological opinion for Warner sucker.

Wildlife/Wildlife Habitat - *Follow the greater sage-grouse Livestock Grazing guidelines (pages 75-76 of ODFW 2005), where appropriate*

Monitor utilization of browse in (deer) winter range areas. Avoid livestock utilization levels that reduce the long-term viability of browse plants.

Monitor (elk) population to ensure sufficient forage and habitat are available.

Special Management Areas – (*Twelvemile Creek suitable WSR). Management will continue to emphasize fisheries as an outstanding remarkable value. Grazing will continue to be excluded from Twelvemile Creek corridor.*

Appendix E1 – Allotment Management Summaries – Rahilly Gravelly Allotment (page A-23, as maintained)

Range/livestock management – *Continue livestock management practices under the 1984 allotment management plan. Revise as needed.*

Livestock distribution/management - *Improve livestock management and distribution through improved management practices, installation of livestock management facilities (such as fences and water sources), and/or other actions as opportunities arise .*

Improve/maintain range condition - *Use management practices and/or better animal distribution; develop range improvements when appropriate: adjust permitted use as needed*.

Plant communities/vegetation – *Protect special status plant species/habitat from BLM authorized activities.*

Implement the current integrated noxious weed management plan

Watershed/riparian/fisheries - *Develop riparian and steam channel objectives.*

Maintain exclosures to improve riparian condition.

Where BLM –authorized activities are determined to be impacting water quality, modify management to improve surface water quality to meet/exceed state standards.

Implement the conservation agreement for redband trout habitat.

Continue current grazing management strategies and maintenance of existing exclosures to comply with and implement biological opinion for Warner sucker.

Continue maintenance of existing (Foskett Dace) exclosures. Implement recovery plan.

Wildlife/Wildlife Habitat - *Monitor utilization of browse in winter range areas. Avoid livestock utilization levels that reduce the long-term viability of browse plants.*

Monitor elk population expansion to ensure sufficient forage and habitat are available.

Special Status Species/Habitat – *Protect special status species/habitat from BLM authorized activities*

Follow the greater sage-grouse Livestock Grazing guidelines (pages 75-76 of ODFW 2005), where appropriate.

Special Management Areas- *Adjust allotment management including levels and areas of authorized use, seasons of use, and grazing systems, if needed to protect relevant and important (Rahilly–Gravelly and Spanish Lakes ACEC/RNAs) values.*

Appendix E1 – Allotment Management Summaries – Burro Springs Allotment (Page A-24, as maintained)

Livestock distribution/management - *Improve livestock management and distribution through improved management practices, installation of livestock management facilities (such as fences and water sources), and/or other actions as opportunities arise .*

Improve/maintain range condition - *Use management practices and/or better animal distribution; develop range improvements when appropriate: adjust permitted use as needed*.

Plant communities/vegetation – *Implement the objectives of the current Integrated Weed Management Plan.*

Protect special status plant species/habitat from BLM-authorized activities.

Wildlife/Wildlife Habitat - *Follow the greater sage-grouse Livestock Grazing guidelines (pages 75-76 of ODFW 2005), where appropriate*.

Monitor utilization of browse in winter range areas. Avoid livestock utilization levels that reduce the long-term viability of browse plants.

Monitor (bighorn sheep) population to ensure that sufficient forage and habitat are available.

Special Management Areas- *Adjust allotment management including levels and areas of authorized use, seasons of use, and grazing systems, if needed to protect relevant and important (Rahilly–Gravelly and Spanish Lakes ACEC/RNAs) values.*

Appendix E1 – Allotment Management Summaries – Hill Camp Allotment (Page A-26, as maintained)

Range/livestock management – *Manage allotment following the goals and objectives of the 1989 allotment management plan. Revise as needed.*

Livestock distribution/management - *Improve livestock management and distribution through improved management practices, installation of livestock management facilities (such as fences and water sources), and/or other actions as opportunities arise*.

Improve/maintain range condition - *Use management practices and/or better animal distribution; develop range improvements when appropriate: adjust permitted use as needed*.

Plant communities/vegetation – *Implement the current integrated noxious weed management plan.*

Treat crested wheatgrass seedings to improve forage production.

Riparian/fisheries – *Manage Hutton tui chub in accordance with the recovery plan.*

Wildlife/Wildlife Habitat – *Follow the greater sage-grouse Livestock Grazing guidelines (pages 75-76 of ODFW 2005), where appropriate.*

Monitor utilization of browse in (deer) winter range areas. Avoid livestock utilization levels that reduce the long-term viability of browse plants.

Monitor (bighorn sheep) population to ensure that sufficient forage and habitat are available.

Appendix E1 – Allotment Management Summaries – FRF Cahill Allotment (Page A-30, as maintained)

Livestock distribution/management - *Improve livestock management and distribution through improved management practices, installation of livestock management facilities (such as fences and water sources), and/or other actions as opportunities arise* .

Plant communities/vegetation – *Implement the current noxious weed management plan.*

Consistency with Other Plans and Policies

The final decision must also take into account the following plans and policies:

Conducting Wilderness Characteristics Inventory on BLM Lands (BLM 2012a) – Current manual that provides guidance on the process that BLM should use when updating its wilderness characteristics inventory.

Standards for Rangeland Health and Guidelines for Livestock Management for Public Lands Administered by the BLM in the States of Oregon and Washington (BLM 1997a)

Greater Sage-Grouse Conservation Assessment and Strategy for Oregon (ODFW 2005) - states "where livestock grazing management results in a level of forage use (use level) that is consistent with Resource Management Plans, Allotment Management Plans, Terms and Conditions of Grazing Permits or Leases, other allotment specific direction, and regulations, no changes to use or management are required if habitat quality meets Rangeland Health Standard and Guidelines" (Page 75). The plan also provides guidelines on how to construct or maintain range improvement projects to minimize impacts to sage-grouse habitat (Page 76).

Greater Sage-Grouse Interim Management Policies and Procedures (BLM 2011c) – This IM represents the current BLM Washington Office interim policy for sage-grouse habitat management until such time as plan amendments can be completed throughout the range of the species that address a comprehensive conservation strategy. This policy addresses proposed grazing permit renewals and proposed water developments as follows:

Interim Conservation Policies and Procedures for Preliminary Priority Habitat (PPH)

Generally, activities within PPH "should seek to maintain, enhance, or restore conditions for Greater Sage-Grouse and its habitat." This policy provides the following policies or procedures for activities proposed within PPH:

Integrated Vegetation Management in PPH

Evaluate land treatments (including Greater Sage-Grouse habitat treatments) in a landscape-scale context to address habitat fragmentation, effective patch size, invasive species presence, and protection of intact sagebrush communities.

When designing vegetation treatments, reference Ecological Site Descriptions (ESD), where available and the BLM Integrated Vegetation Management Handbook (H-1740-2).

Coordinate, plan, design, and implement vegetation treatments (e.g., pinyon/juniper removal, fuels treatments, green stripping) and associated effectiveness monitoring between Resources, Fuels Management, Emergency Stabilization, and Burned Area Rehabilitation programs to:

> Promote the maintenance of large intact sagebrush communities;
> Limit the expansion or dominance of invasive species, including cheatgrass;
> Maintain or improve soil site stability, hydrologic function, and biological integrity; and
> Enhance the native plant community, including the native shrub reference state in the State and Transition Model, with appropriate shrub, grass, and forb composition identified in the applicable ESD where available.

When conducting National Environment Policy Act (NEPA) analysis for vegetation treatments, document your analysis of (1) short- and long-term objectives and (2) direct, indirect, and cumulative effects of treatment types on Greater Sage-Grouse and its habitat.

Pursue short-term objectives that include maintaining soil stability and hydrologic function of the disturbed site so a resilient plant community can be established.

Pursue a long-term objective to maintain resilient native plant communities.

When treating invasive species, use the standard operating procedures and best management practices outlined in the 2007 *Vegetation Treatments Using Herbicides on BLM Lands in 17 States Environmental Impact Statement* and applicable practices found in its accompanying Biological Assessment.

Grazing Permit Renewals in PPH

Pursue opportunities to incorporate multiple allotments under a single management plan/strategy, where incorporation would result in enhancing Greater Sage-Grouse populations or its habitat, as determined in coordination with respective state wildlife agencies.

Evaluate progress towards meeting standards that may affect Greater Sage-Grouse or its habitat prior to authorizing grazing on an allotment that was not achieving land health standards in the last renewal cycle, and livestock was a significant causal factor. Where available, use current monitoring data to identify any trends (e.g., progress) toward meeting the standards. Where monitoring data are not available or inadequate to determine whether progress is being made toward achieving Land Health Standards, an interdisciplinary team should be deployed as practicable to conduct a new land health assessment.

The NEPA analysis for the permit/lease renewal must address a range of reasonable alternatives including alternatives that improve Greater Sage-Grouse habitat.

Plan and authorize livestock grazing and associated range improvement projects on BLM lands in a way that maintains and/or improves Greater Sage-Grouse and its habitat. Analyze through a reasonable range of alternatives any direct, indirect, and cumulative effects of grazing on Greater Sage-Grouse and its habitats through the NEPA process:

- Incorporate available site information collected using the *Sage-Grouse Habitat Assessment Framework* when evaluating existing resource condition and developing resource solutions,
- Incorporate management practices that will provide for adequate residual plant cover (e.g., residual grass height) and diversity in the understories of sagebrush plant communities as part of viable alternatives. When addressing residual cover and species diversity, refer to the ESD (ecological site data) and "*State and Transition Model*," where they are available, to guide the analysis.

- Evaluate and implement grazing practices that promote the growth and persistence of native shrubs, grasses, and forbs. Grazing practices include kind and numbers of livestock, distribution, seasons of use, and livestock management practices needed to meet both livestock management and Greater Sage-Grouse habitat objectives.
- Evaluate the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. Address those structural range improvements identified as posing a risk during the renewal process.
- Balance grazing between riparian habitats and upland habitats to promote the production and availability of beneficial forbs to Greater Sage-Grouse in meadows, mesic habitats, and riparian pastures for Greater Sage-Grouse use during nesting and brood-rearing while maintaining upland conditions and functions. Consider changes to season-of-use in riparian/wetland areas before or after the summer growing season.

To ensure that the NEPA analysis for permit/lease renewal has a range of reasonable alternatives:

- Include at least one alternative that would implement a deferred or rest-rotation grazing system, if one is not already in place and the size of the allotment warrants it.
- Include a reasonable range of alternatives (e.g., no grazing or a significantly reduced grazing alternative, current grazing alternative, increased grazing alternative, etc.) to compare the impacts of livestock grazing on Greater Sage-Grouse habitat and land health from the proposed action.
- If land treatments and/or range improvements are the primary action for achieving land health standards for Greater Sage-Grouse habitat maintenance or enhancement, clearly display the effects of such actions in the alternatives analyzed.

Range Improvements in PPH

Evaluate existing range improvements (e.g., fences, watering facilities) associated with grazing management operations for impacts on Greater Sage-Grouse and its habitat.

Evaluate the need for proposed fences, especially those within 1.25 miles of leks that have been active within the past 5 years and in movement corridors between leks and roost locations. Consider deferring fence construction unless the objective is to benefit Greater Sage-Grouse habitat, improve land health, promote successful reclamation, protect human health and safety, or provide resource protection. If the BLM authorizes a new fence, then, where appropriate, apply mitigation (e.g., proper siting, marking, post and pole construction) to minimize or eliminate potential impacts to Greater Sage-Grouse, as determined in cooperation with the respective state wildlife agency.

To improve visibility, mark existing fences that have been identified as a collision risk. Prioritizing fences within 1.25 miles of a lek, fences posing higher risks to Greater Sage-Grouse include those:

On flat topography;
Where spans exceed 12 feet between T-posts;
Without wooden posts; or
Where fence densities exceed 1.6 miles of fence per section (640 acres)

Interim Conservation Policies and Procedures for Preliminary General Habitat (PGH)

The intent of these interim conservation policies and procedures in PGH is to reduce and mitigate adverse effects on Greater Sage-Grouse and its habitat to the extent practical.

Management Activities in PGH

When approving uses and authorizations, consider and analyze management measures that would reduce direct, indirect, and cumulative adverse effects on Greater Sage-Grouse and its habitat.

Consider deferring authorizations in PGH where appropriate, depending on local characteristics, new science and/or data (e.g., migratory corridors or habitat between PPH), and relative habitat importance if authorizations could result in Greater Sage-Grouse population loss in PPH.

Consider offsite mitigation measures in collaboration with state wildlife agencies and project proponents when authorizing activities.

Evaluate and address anticipated fence collision risks within 1.25 miles of leks and other seasonal habitats. Where NEPA analysis suggests that a deviation from this distance is warranted, modifications of this distance are acceptable.

CHAPTER 2—ALTERNATIVES

A total of four alternatives were analyzed in detail within this EA. Table 1 includes a summary of these alternatives for each allotment. In addition, several other alternatives were considered, but were not analyzed in detail for various reasons. The alternatives are described in more detail in the following section.

Table 1. Grazing Management Alternative Summary for each Allotment

Allotment	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Round Mountain (00211)	250 cows 4/10-7/8 673 AUMs	Reduce AUMs by 50%	Extend grazing season 7 Days; 4/10-7/15 233 cows 673 AUMs	No Grazing Permit Issued
Rahilly Gravelly (00212) **Pederson Pasture**	279 cows 3/10-9/16 1,647 AUMs 14 Horses 4/15-8/20 55 AUMs 17 cows 10/1-2/28 79 AUMs	Reduce AUMs by 50%	In the Coleman Lake Pasture treat and seed 500 acres of poor condition rangeland. Construct 1 mile of new fence to separate treated area into new pasture. Convert the Pederson Pasture into a FFR Allotment	No Grazing Permit Issued
Burro Springs (00213)	165 cows 2/1-3/5 179 AUMs	Reduce AUMs by 50%	Extend grazing season; 2/1-5/31 45 cows 179 AUMs	No Grazing Permit Issued
Hill Camp (00215)	249 cows 3/8-10/3 1,719 AUMs	Reduce AUMs by 50%	Same as Alternative 1	No Grazing Permit Issued
Cahill FRF (00219)	55 cows 9/27-2/28 280 AUMs	Reduce AUMs by 50%	Same as Alternative 1	No Grazing Permit Issued

Alternative 1: No Action

The No Action Alternative would renew the existing livestock grazing permit (#3601200) in the Round Mountain (00211), Rahilly Gravelly (00212), Burro Springs (00213), Hill Camp (00215) and FRF Cahill (00219) Allotments for the current grazing permittee with the same terms and conditions. A 10-year term livestock grazing permit would be issued that continues current grazing management during the permitted season with the current specified grazing use (Table 1). This definition for the No Action Alternative is consistent with BLM (2000) guidance.

Grazing Management System for Round Mountain Allotment (00211)

The current rest rotation grazing system would continue. There are 3 pastures in the Round Mountain Allotment grazed as part of the grazing system. Two of the three pastures would be grazed each year and the third pasture rested. Each pasture would be grazed two years and rested the third year. Due to differences in elevation and their position on the landscape, the East Pasture would only be used early in the season and the West Pasture only used late. Therefore, as seen in Table 2, the East Pasture is grazed in April and early May for two years and then completely rested for one year. The West Pasture is grazed later (May-June) for two years and then rested for one year. The North Pasture rotates being grazed early (April-May) one year, late (May-June) the next year and then rested one year. This system fits the topography as the East Pasture is lower in elevation and West Pasture is the highest elevation, with North Pasture in between. This system also fits the natural rotation of the livestock as they travel from the east to west on the way to the Forest Service pastures in the summer.

Table 2. Rest Rotation Grazing System for Round Mountain Allotment (00211)

Pasture	Year 1 in Rotation	Year 2 in Rotation	Year 3 in Rotation	Year 4 in Rotation	Year 5 in Rotation	Year 6 in rotation
East	Graze 4/10-5/20	Graze 4/10-5/20	REST	Graze 4/10-5/20	Graze 4/10-5/20	REST
North	Graze 5/21-7/8	REST	Graze 4/10-5/20	Graze 5/21-7/8	REST	Graze 4/10-5/20
West	REST	Graze 5/21-7/8	Graze 5/21-7/8	REST	Graze 5/21-7/8	Graze 5/20-7/8

Grazing management System for Rahilly Gravelly Allotment (00212)

The current grazing system for the Rahilly Gravelly Allotment is a modified rest rotation system that provides growing season rest for three pastures and complete rest for all pastures at least once of every four years (Table 3). The reasons for the modification of the rest rotation system include water availability, type of forage, and elevation. The Coleman Lake Pasture is used early three out of four years and rested the fourth year. The reason for the exclusive early use is the lack of water after Soda Lake and Coleman Lake dry up in the summer and the dominance of cheatgrass in much of the pasture. The cheatgrass provides an adequate forage source in the March –May, but after that is dries up there is limited perennial grass available for summer grazing.

The two middle elevation pastures, Sucker Creek and Rahilly Pastures, are grazed during the growing season every other year and are completely rested every other year. This rest every other year allows grass plants to complete their life cycle and promotes root recovery, seed production and litter accumulation.

The Nevada Pasture is the highest elevation pasture and better suited for late summer grazing as grass plants begin growth in late spring after snow melt and mature later in the summer than the other pastures and there

are more reliable water sources. Therefore, Nevada Pasture is grazed late summer (Mid-July-Sept) two of four years with one out of four years being grazed mid-June to September. The year following that use, the Nevada Pasture would be completely rested.

Table 3. Deferred Grazing System Rahilly Gravelly Allotment (00212)

Pasture	Year 1 in Rotation	Year 2 in Rotation	Year 3 in Rotation	Year 4 in Rotation
Coleman Lake	3/10-5/15	3/10-5/15	REST	3/10-5/15
Sucker Creek	REST	5/16-7/15	REST	5/16-7/15
Rahilly	5/16-7/15	REST	4/1-6/15	REST
Horse Creek	REST	REST	4/1-6/15	REST
Nevada	7/16-9/16	7/16-9/16	6/16-9/6	REST
Pederson*	14 Horses 4/15-8/20 55 AUMs 17 Cows 10/1-2/28 79 AUMs	14 Horses 4/15-8/20 55 AUMs 17 Cows 10/1-2/28 79 AUMs	14 Horses 4/15-8/20 55 AUMs 17 Cows 10/1-2/28 79 AUMs	14 Horses 4/15-8/20 55 AUMs 17 Cows 10/1-2/28 79 AUMs

*The Pederson pasture is under the same permit as the other pastures but is not part of the pasture rotation and is grazed as a separate pasture.

The Horse Creek Pasture is a small riparian pasture that is currently grazed only one of four years and that would be in the year that the Rahilly Pasture is used earlier (April 1 - June 15). This early use in the Horse Creek Pasture would allow the riparian vegetation to recover during the summer. During the other three years the Horse Creek Pasture would be rested.

The Pederson Pasture is fenced in with over 480 acres of private land and is used in conjunction with a private fenced pasture where the major water source is located. Therefore the permit has authorized horse use during the summer months and cattle use in the winter. Most of the use is located on private land where the water sources are located and the private meadow land is located.

Grazing Management System for Burro Springs Allotment (00213)

The current grazing system for Burro Spring is winter every year with rest one year out of five years (Table 4). The allotment is also grazed by another permittee and that use occurs in the spring (April-May). The winter use relies on early cheatgrass growth and dormant perennial grasses mostly on the lower slopes of Coleman Rim.

Table 4. Grazing System for Burro Springs Allotment (00213)

Pasture	Year 1 in Rotation	Year 2 in Rotation	Year 3 in Rotation	Year 4 in Rotation	Year 5 in Rotation
Burro Springs	Graze 2/1-3/5	Graze 2/1-3/5	Graze 2/1-3/5	Graze 2/1-3/5	REST

Grazing Management System for Hill Camp Allotment (00215)

The grazing system for the Hill Camp Allotment is a modified rest rotation system providing growing season deferment one out of four years and complete rest one of four years for three of the five pastures (Table 5). The modification is in the Coleman Seeding and West Pasture. The Coleman seeding is a crested wheatgrass seeding and, therefore, is grazed three out of 4 years early (3/8-5/31) and rested the fourth year. The grazing period for the Coleman Seeding is 3 months, but the actual use period is 6-8 weeks within that 3 month window. This allows flexibility depending on growing conditions each year. The West Pasture is deferred and used only in August and September because the higher elevation and cooler temperatures would prohibit proper grazing management in the spring or early summer.

Table 5. Rest Rotation Grazing System for Hill Camp Allotment

Pasture	Year 1 in Rotation (2014)	Year 2 in Rotation (2015)	Year 3 in Rotation (2016)	Year 4 in Rotation (2017)
North East	Graze April -June 15	Defer, Graze June 15-August	Rest	Graze April-June 15
South East	Defer, Graze June15-August	Rest	Graze April-June 15	Defer Graze August-Oct 1
West	Defer Graze August –Oct 1	Defer Graze August- Oct 1	Defer, Graze August-October	REST
Basin	Rest	Graze April-June 15	Defer Graze June15-August	Defer Graze June 15- August
Coleman Seeding	Graze March 8-1 June	Graze March 8-1 June	Graze March 8-1 June	REST

Grazing Management System for FRF Cahill Allotment (00219)

The FRF Cahill Allotment utilizes a fall-winter use permit (Table 6). An FRF allotment means some public land is fenced in with large amounts of private land. The BLM charges a fee for the forage on public land, but does not invest in range improvements or management strategies for public land.

Table 6. Grazing System for FRF Cahill Allotment (00219)

Pasture	Year 1	Year 2	Year 3	Year 4
FRF Cahill	Graze 9/27-2/28 280 AUMs	Graze 9/27-2/28 280 AUMs	Graze 9/27-2/28 280 AUMs	Graze 9/27-2/28 280 AUMs

Alternative 2: 50% Reduction in Grazing

Under this alternative, permitted AUMs in the livestock grazing permit (#3601200) would be reduced from 4,352 AUMs to 2,176 AUMs, but the grazing period and the grazing schedule would remain the same. This reduction would occur in four allotments, but not in the FRF Cahill Allotment for the reasons explained in the "Alternatives Considered but Eliminated from Further Analysis" section. A 10-year term livestock grazing permit would be issued that continues current grazing management during the permitted season with the reduced specified grazing use and grazing systems (Table 7).

Alternative 3: Change Livestock Management/Vegetation Treatments

A 10-year term livestock grazing permit would be issued that adjusts the grazing season in the Round Mountain Allotment and Burro Springs Allotment, and converts the Pederson Pasture (in Rahilly Gravelly Allotment) into a

new FRF allotment. In the Hill Camp and FRF Cahill Allotments, the 10- year term livestock grazing permit would continue the current grazing management outlined in the No Action Alternative (see Tables 1 and 8).

Table 7. Specified Grazing Use for Alternative 2 for each Allotment

	Livestock		Grazing Period		Type of Use	% Public Land	AUMs
Allotment	Number	Kind	Begin Date	End Date			
Round Mountain (00211)	125	CATTLE	4/10	7/08	Active	91	337
Rahilly Gravelly (00212)	140	CATTLE	3/10	9/16	Active	94	824
	7	HORSES	4/15	8/20	Active	94	27
	9	CATTLE	10/1	2/28	Active	94	39
Burro Springs (00213)	82	CATTLE	2/1	3/5	Active	100	89
Hill Camp (00215)	125	CATTLE	3/8	10/3	Active	100	860
FRF Cahill (00219)	65	CATTLE	4/20	5/19	Active	100	64

Table 8. Specified Grazing Use for Alternative 3

	LIVESTOCK		GRAZING PERIOD		TYPE USE	% Public Land	AUMs
Alternative by Allotment	Number	Kind	Begin Date	End Date			
Round Mountain (00211)	234	CATTLE	4/10-7/15	7/15	Active	91	673
Rahilly Gravelly (00212)	279	CATTLE	3/10	9/16	Active	94	1647
Burro Springs (00214)	45	CATTLE	2/1	5/31	Active	100	179
Hill Camp (00215)	249	CATTLE	3/8	10/3	Active	100	1719
FRF Cahill (00219)	55	CATTLE	9/27	2/28	Active	100	280
Pederson FRF	14 17	HORSES CATTLE	3/10 10/1	9/16 2/28	Active Active	100 100	55 79

The 10-year livestock permit would adjust the season of use in the Round Mountain Allotment by extending the end of the grazing season 7 days from July 8th to July 15th. The number of AUMs permitted will remain the same, but the extra week would allow the permittee more time to locate and remove cows that were missed in the initial gather on July 1st. The permittee is not allowed to move onto the Forest Service until July 1st, but would still be required to gather and remove the majority the cows on July 1st. This extension of the grazing season by one week recognizes that it usually takes 3-4 sweeps of the allotment to locate and remove 100% of the cows.

The permit would adjust the season of use in the Burro Spring Allotment by extending the end of the grazing season from March 5th to May 31st. The number of AUMs permitted will remain the same, but the number of cattle would have to be adjusted on the permit from 165 currently to 45. This extension of the grazing period would allow the permittee more flexibility and bring the permit in line with the grazing period for the other permittee using Burro Springs.

Proposed Vegetation Treatments and Fence Project

Mowing, Seeding, and Fence

Under this alternative, approximately 500 acres (4%) of early seral condition sagebrush in the Coleman Lake Pasture of the Rahilly Gravelly Allotment would be treated by mowing (revised Map 2) in a mosaic pattern to reduce the shrub cover and reseeding to establish perennial grass-forb communities and improve ecological conditions. The area may also have to be treated with a chemical to control cheatgrass germination the first year, prior to reseeding. The seed mixture would include a mixture of nonnative and native grasses, such as crested wheatgrass (2 lb. pure live seed (PLS)/acre), basin wildrye (4 lb. PLS/acre), and a (1-2 lb. PLS/acre) mix of native forbs available at the time of the seeding.

About a mile of new fence would be built to separate the treated area from the rest of the Coleman Lake Pasture. The proposed fence would be constructed to BLM wildlife specifications for big game passage (BLM 1989b). Based on field reconnaissance completed after the EA was published in December 2013, the proposed fence has been relocated about 0.75 miles north of the original position (see revised Map 2). The construction of this fence would result in the creation of 2 permanent pastures (north and south) out of the current Coleman Lake Pasture and allow for greater flexibility and rotation and rest between the two pastures in the spring and early summer. Grazing would not be authorized in the treated area (new north pasture) for a minimum of two growing seasons, but would continue in the new south pasture. Grazing would be re-authorized in the new north pasture once an ID-team has determined that the seeded area has re-established successfully.

Weed and Invasive Species Treatments

In addition, a total of 9 herbicide active ingredients would be made available to treat weeds and invasive species throughout all five allotments: chlorsulfuron, clopyralid, diflufenzopyr (formulated with dicamba in the product Overdrive®), imazapic, metsulfuron methyl, and sulfometuron methyl. These 6 herbicide active ingredients, along with the four existing herbicide active ingredients currently used by the BLM (2,4-D, dicamba, glyphosate, and picloram), would be used to treat invasive plants species, including those legally designated as noxious weeds (see Tables 31-35). Herbicide uses and applications would be constrained by the Standard Operating Procedures (SOPs) and other mitigation measures adopted in the17-States PEIS ROD and Oregon FEIS ROD (BLM 2007, 2010b) and any additional measures adopted by the Decision Record for this EA. Herbicides would be applied using ground-based methods such as wicks and wipers, backpack sprayers, ATV, UTV, truck-mounted, and aerial (helicopters or fixed-wing aircraft) sprayers, as described in the Oregon FEIS (USDI BLM 2010a: p. 68-73). The BLM would use authorized herbicides, along with manual, mechanical, and biological control methods, prescribed fire, as part of an integrated vegetation management approach (BLM 2004b).

Cultural and Botanical Surveys

Cultural surveys in the proposed vegetation treatment and fence project areas have been completed and no National Register quality sites were found. Botanical surveys would be completed prior to implementing these projects and any special status plant sites located would be avoided or otherwise mitigated during project implementation.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, the current grazing permit would not be renewed and livestock grazing under this permit would not be authorized on public lands within the five allotments. However, in three of the allotments, (Round Mountain (00211), Burro Springs (00213) and Hill Camp (00215)), grazing would still continue under other existing grazing permits issued to other permittees which are not currently subject to renewal. This alternative is being considered to provide a full range of alternatives and comply with current grazing management permit renewal guidance (BLM 2000, 2008b).

Under this alternative no noxious weed or invasive species control would be done using any herbicide or manual control methods. The Canada thistle biological control agents *(Ceutorhynchus litura and Urophora cardui)* would continue to assist in suppressing the infestations where they already exist, however no new agents would be released.

Actions Common to All Grazing Alternatives

Monitoring

Monitoring would continue, as specified in the *Lakeview RMP/ROD*, incorporated herein by reference, (BLM 2003b, pages 53-55). In summary, trend monitoring studies include nested frequency and 180° step-toe and photo station and observed apparent trend methodologies are used to measure cover, species composition and frequency. Utilization studies would be conducted using the key forage plant method. Utilization is a measure of the amount of the current year's forage that is consumed by livestock. Monitoring methodology would follow the latest protocol, such as Technical Reference 1734-3 and 1734-4 (BLM 1996a, 1996b) incorporated by reference. Tables 9-13 describe the key species and utilization targets identified for each allotment.

Table 9. Key Species and Target Utilization Levels for the Round Mountain Allotment (00211)

Pasture	BLM Acres	Trend Plot[1]	Key Species	Utilization Target %
East	6,281	RM-02	Thurbers Needlegrass (*Achnatherum thurberianum*), Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)*	50
North	5,060	RM-01	Idaho Fescue (*Festuca idahoensis*) Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)*	50
West	5,751	RM-03 RM-04 RM-05 RM-06 RM-07 RM-08*	Idaho Fescue (*Festuca idahoensis*) Thurbers Needlegrass (*Achnatherum thurberianum*), Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)*	50

[1]Riparain transects established on Fifteenmile Creek to determine stubble height and willow use.

Table 10. Key Species and Target Utilization Levels for the Rahilly Gravelly Allotment (00212)

Pasture	BLM Acres	Trend Plot[1]	Key Species	Utilization Target %
Coleman Lake	8,909		Basin Wildrye (*Elymus cinereus)* Inland Saltgrass *(Distichlis stricta)* Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)*	50
Sucker Creek	10,466	RG-01 RG-02	Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)*	50
Rahilly	5,815	RG-03	Thurbers Needlegrass (*Achnatherum thurberianum*), Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)*	50
Nevada	4,750	RG-04	Thurbers Needlegrass (*Achnatherum thurberianum*), Squirreltail (*Elymus elymoides*) Sandberg's bluegrass (*Poa sandbergii)* Idaho Fescue (*Festuca idahoensis*)	50
Horse Creek	1,677		Riparian area	50
Pederson	2,442			

Table 11. Key Species and Target Utilization Levels for the Burro Springs Allotment (00213)

Pasture	BLM Acres	Trend Plot[1]	Key Species	Utilization Target %
Burro Springs	7,004	BS-01 BS-02	Basin Wildrye (*Elymus cinereus)* Inland Saltgrass *(Distichlis stricta)* Squirreltail (*Elymus elymoides*)	50

Table 12. Key Species and Target Utilization Levels for the Hill Camp Allotment (00215)

Pasture	Acres	Trend Plot[1]	Key Species	Utilization Target %
Northeast	4,768	HC-02 HC-03 HC-04 HC-16 HC-442	Idaho Fescue (*Festuca idahoensis*) Squirreltail (*Elymus elymoides*) Thurbers Needlegrass (*Achnatherum thurberianum*)	50
Southeast	4,740	HC-05 HC-14 HC-15 HC-10A&B HC-171A&B HC-172A&B HC-173A&B HC-444	Idaho Fescue (*Festuca idahoensis*) Squirreltail (*Elymus elymoides*) Thurbers Needlegrass (*Achnatherum thurberianum*)	50
West	11,508	HC-01 HC-06 HC-07 HC-08 HC-09 HC-11 HC-425 HC-437	Bluebunch Wheatgrass (*Pseudoroegneria spicata)* Idaho Fescue (*Festuca idahoensis*) Squirreltail (*Elymus elymoides*) Thurbers Needlegrass (*Achnatherum thurberianum*)	50
Basin	7,181	HC-12 HC-13	Bluebunch Wheatgrass (*Pseudoroegneria spicata)* Idaho Fescue (*Festuca idahoensis*) Squirreltail (*Elymus elymoides*) Thurbers Needlegrass (*Achnatherum thurberianum*)	50
Coleman Seeding	3,941	HC-18 HC-19 HC-20	Crested wheatgrass *(Agropyron cristatum)* Basin Wildrye (*Elymus cinereus)* Inland Saltgrass *(Distichlis stricta)*	50%

Table 13. Key Species and Target Utilization Levels for the FRF Cahill Allotment (00219)

Pasture	BLM Acres	Trend Plot	Key Species	Utilization Target %
FRF	571	NA	Basin Wildrye (*Elymus cinereus)* Inland Saltgrass *(Distichlis stricta)*	NA

Four species of BLM sensitive plant species occur within the allotments. The population of *Hymenoxys cooperi* var. *canescens* on the Nevada pasture of the Rahilly Gravelly Allotment requires additional monitoring to assess population status, reproductive viability, and potential effects of grazing. Periodic monitoring of all special status plant populations would continue to be conducted to determine population trend. Results of the monitoring would be used to ensure management is compliance with BLM special status species policy as addressed in BLM Manual 6840 (BLM 2008c).

Terms and Conditions Applicable to All Grazing Alternatives (1-3) for All Allotments

Terms and conditions that comply with Federal and State policies will be included within any grazing permit issued under any grazing alternative. This includes requirements such as: timely payment of fees, submission of actual use reports, providing administrative access across private land, continued compliance with Rangeland Health Standards, and maintenance of range improvements.

Management Flexibility Applicable to All Grazing Alternatives (1-3) for All Allotments

Knowing that uncertainties exist in managing for sustainable ecosystems, changes to the annual grazing use may be authorized within the limits of the grazing permit for reasons such as, but not limited to:

- Adjust the rotation/timing of grazing based on previous year's monitoring and current year's climatic conditions. An example of this would be; to turn livestock out later in the season on a year with a wet cold spring; or to bring livestock off the allotment early, as conditions warrant.

- Dry years with limited water availability; An example would be resting a pasture that had insufficient water to support livestock and shifting livestock use to the pasture that had water. Conversely on wet years, when water sources are abundant, more emphasis would be placed on putting livestock into under-utilized areas where water is typically less reliable.

- Change in use periods to balance utilization levels in each pasture. An example of this would be to shorten the time period or number of livestock in a pasture that had 65% average utilization and/or increase the time period and number of livestock in another pasture that had 30% average utilization, if the target utilization in both pastures is 50%.

Flexibility in grazing management would be authorized within the active permitted AUMs and outside permit dates (but still within the authorized season of use), some of the more common adjustments are:

- Increasing livestock numbers while shortening the season of grazing use

- Adjustments to the length of time and AUMs of grazing use to meet resource objectives including, but not limited to, utilization targets.

- Temporary (1 year) adjustments to pasture use usually dependent on water availability or climate related issues. Sometimes adjustments would be made to reduce conflicts with other resources; such as one time recreational or other activities where livestock or the other resource would benefit from adjusting the livestock use.

Maintenance of Existing Range Improvements (Alternatives 1-4)

Maintenance of existing water troughs, wells, pipelines, waterholes, and fences would be included under Alternatives 1-3. Maintenance may not be needed on all existing developments; however, it would likely be needed sometime in the next 10 years. Waterhole maintenance would include the cleaning (within the original area of disturbance) of the waterhole to ensure continued function. Trough maintenance would include fixing and/or replacing leaking troughs, or fixing and/or replacing fittings, etc. Pipeline maintenance would include replacing and/or repairing broken, damaged, or leaking sections of pipe, and replacing fittings, etc.

Under Alternative 4, range improvement inside Rahilly-Gravelly and BLM-portions of Cahill FRF Allotment boundaries would not be maintained. However, allotment boundary fences would still be maintained to prevent unauthorized livestock use (trespass) from adjacent allotments that continue to be grazed. However, range improvements within Hill Camp, Round Mountain, and Burrow Springs Allotments would continue to be maintained, as grazing would continue to be authorized in those allotments under other grazing permits.

Alternatives Considered but not Analyzed in Detail

During the public review period, one commenter suggested analyzing a broader range of alternatives and provided the following four examples:

1) *Removing existing water developments within the allotments that have caused resource damage or*

promoted mosquito habitat

This alternative was considered, but was not analyzed in detail for several reasons. First, livestock grazing would continue in 3 of the 5 (Round Mountain, Burro Springs, and Hill Camp) Allotments under other existing grazing permits regardless of whether or not the Cahill permit #3600173 was renewed, so existing water developments would still be needed to carry out other livestock grazing management activities beyond those associated with the Cahill permit. Further, BLM is not aware of any existing water developments in any of the 5 allotments that have caused or are currently causing resource damage, nor did the commenter specifically identify any for consideration. Finally, this EA has addressed the potential impacts of existing water developments on mosquito habitat and west nile virus risk on sage-grouse and found them to be low under all alternatives (see Wildlife Section).

2) *Reseeding the 500-acre vegetation treatment area using different plant species*

This alternative was considered, but was not analyzed in detail because the commenter did not specify what different plant species he felt should be addressed. BLM presumes (though it is not clear) that the commenter would prefer consideration of an alternative that only planted native species. Seed for many of the native species that would be expected to grow in this location are not always commercially available in sufficient quantities. Further, Alternative 3 provides adequate flexibility to include native species, if available. Based on professional experience, sage-brush species were not included in the seed mix because it already exists in the area and a sufficient seed source is expected to allow natural re-establishment from seed in the soil or from invasion from sage-brush in the untreated mosaic and adjacent lands.

3) *Fixing existing fences that negatively affect wildlife*

This alternative was considered, but was not analyzed in detail for several reasons. First, it was not clear to the BLM exactly what fences in the area the commenter believed were negatively affecting wildlife. Further, the analysis in the wildlife section of this EA has already addressed the potential collision impacts of "high-risk" fences specifically on sage-grouse and stated that such fences have already been identified and fixed by installing anti-strike markers in accordance with IM 2012-043 (see Wildlife section of Chapter 3). Therefore, BLM does not believe there are any remaining fences that need to be addressed.

4) *Removing the proposed new fence after the treatment area has recovered*

This alternative was considered, but was not analyzed in detail for several reasons. First, the impacts of fence construction in the Rahilly-Gravelly Allotment have already been addressed in this EA under Alternative 3. The impacts of constructing a temporary fence in the same location generally would be similar to those already addressed under Alternative 3 in Chapter 3.

CHAPTER 3— AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Introduction

This section presents a description of the current environment within the allotment and a discussion of the potential changes resulting from implementation of the alternative management actions. An inter-disciplinary (ID) team has reviewed and identified the resources values and uses that could potentially be affected by the

alternative actions. Those resources or resource uses identified as "not affected" or "not present" are listed in Table 14 and will not be discussed or further analyzed in this EA. The remainder of this chapter describes the potential direct, indirect, and cumulative effects on resources and resource uses that may result from each alternative.

Table 14. Resources or Resource Uses that Would not be Affected

Critical Elements of Human Environment		Rationale
Air Quality (Clean Air Act)	Not Affected	None of the alternatives would have measureable impacts to air quality or significant discharges of regulated air pollutants.
Environmental Justice (Executive Order 12898)	Not Affected	None of alternatives would have disproportionately high or adverse effects on minority or low-income populations as such populations do not exist within the allotments.
Prime or Unique Farmlands	Not Present	No such lands have been identified in the allotments.
Flood Plains (Executive Order 13112)	Not Affected	No proposed construction within or other modification of flood plains would occur. Therefore, there would be no floodplain impacts.
Paleontology	Not Present	There are no known paleontological resources within the allotments.
Wilderness Study Areas (WSAs)	Not Present	There are no WSAs present in any of the allotments.
Lands	Not Affected	None of the alternatives analyzed would have any effects on current land status or land tenure.
Minerals and Energy	Not Affected	None of the alternatives analyzed would have any effects on mineral or energy resources or uses.
Hazardous or Solid Waste	Not Present	No such sites or issues are known within the allotments.
Significant Caves	Not Present	No caves are known within the allotments.
Wild Horses (Wild Horse and Burro Act)	Not Present	The allotments are located outside of designated wild horse herd management areas.

Analytical Assumptions

For purposes of the analysis in this EA, the Inter-Disciplinary (ID) team assumed that the permittee would use his full preference (full authorized level of AUMs) each year of the 10-year permit and the 50% utilization standard would not be exceeded. However, the livestock grazing section also acknowledges that the permittee may actually use less AUMs in a given year than the full permitted number for a variety of reasons and, for this reason, the actual utilization levels may be less than 50%.

It is important to understand that, in order to use the full permitted forage allocation, the permittee must also be able to utilize all of the existing water sources on a given allotment. For this reason, the ID team assumed that under full permitted use levels, most livestock forage use would be concentrated around water sources. For the purposes of quantifying many resource impacts, the total acres of ground disturbance was used as an indicator of potential impacts. Total acres impacted by concentrated grazing use can be estimated by multiplying the impacted acres around a water source by the total number of water sources. It was assumed, based on professional experience, that the average disturbed area around a given point water source (spring, trough, waterhole, small reservoir) occurs within about 0.25 miles around the water source and this equals about 125 acres per water source.

Climate

***Affected Environment*:**

Climate patterns of this region are typical of the Intermountain West precipitation zone, with winters and early springs cold and constituting the majority of the precipitation, while summers are typically warm and dry. Average precipitation for Round Mountain (00211), Rahilly Gravelly (00212), Burro Springs (00213), Hill Camp (00215) and FRF Cahill (00219) Allotments are based upon the Parameter-elevation Regressions on Independent Slopes Model (PRISM system, is estimated to average 7-12 inches/year, with extreme lows (<6 in) and highs (>13in) occasionally occurring. Average yearly temperatures range from 30-59º F, with average lows in December ~18º F, and average highs in July ~82º F; the coldest and warmest months, respectively (PRISM Climate Group, 2012). The soil regime within Round Mountain, Rahilly Gravelly, Burro Springs, Hill Camp and FRF Cahill Allotments is listed as frigid, with the frost-free time period ranging from 50 to 80 days (NRCS 2010). Peak plant growth typically occurs from April through June.

Changes in greenhouse gas levels may affect global climate (Forster *et al*. 2007). However, the U.S. Geological Survey (USGS) has summarized the latest science on greenhouse gas emissions and concluded it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions and designate it as the cause of specific climate impacts at a specific location (USGS 2008). For this reason, the analysis focuses on quantifying the potential changes in greenhouse gas emissions and carbon sequestration associated with the alternatives.

***Environmental Consequences*:**

Effects Common to Alternatives 1-4

Livestock grazing results in methane emissions as a result of ruminant digestion. Methane emission rates from cattle vary widely and depend on many variables (Johnson and Johnson 1995; DeRamus *et al*. 2003). Estimates for grazing cattle typically range from 80 to 101 kilograms of methane per year per animal (Environmental Protection Agency (EPA), 2009) or 6.7-9.2 kilograms of methane per month. This analysis assumes a methane emission rate of 8 kilograms of methane per AUM. Assuming that methane has a global warming potential 21 times that of carbon dioxide (EPA 2009, p. ES-3), each AUM results in 0.168 metric tons of carbon dioxide equivalent.

Current U.S. emissions of methane from livestock production total approximately 139 million metric tons of carbon dioxide equivalent per year (EPA 2009, p. 6-2); current U.S. emissions of all greenhouse gases total approximately 7 billion metric tons of carbon dioxide equivalent (EPA 2009, p. 2-4); current global emissions of all greenhouse gases total about 25 billion metric tons of carbon dioxide equivalent (Denman *et al*. 2007, p. 513).

The alternatives would permit grazing use between 0 and 4,633 AUMs per year within the Round Mountain, Rahilly Gravelly, Burro Springs, Hill Camp and Cahill FRF Allotments which would result in methane emissions estimated between 0 (Alternative 4) and 778.34 metric tons (Alternatives 1 and 3) of carbon dioxide equivalent per year. This emission represents less than 0.00056 percent of the estimated annual U.S. methane emissions from livestock production, 0.00001 percent of the annual U.S. emissions of all greenhouse gases, and 0.000003 percent of the global emissions of all greenhouse gases.

The estimated amount of greenhouse gas emissions from any the alternatives analyzed would represent an extremely small incremental contribution to total national and global emissions. In addition, the level of emissions would be so small that it would not even merit reporting under current EPA rules related to

mandatory annual reporting of greenhouse gases from industrial and commercial agricultural sectors (reporting threshold is 25,000 metric tons of carbon dioxide equivalent; 40 CFR 98.2). However, this threshold does not apply to federal lands.

Livestock grazing can affect rangeland carbon levels, through changes in plant community and changes in ecosystem processes, but the effects have been variable and inconsistent among the ecosystems studied (Schuman *et al*. 2009). Some studies have found that grazing can result in increased carbon storage compared to no grazing, because of increased plant turnover and changes in plant species composition (Follett *et al*. 2001). Many changes in rangeland carbon from different grazing practices do not result in substantial changes in total ecosystem carbon, but rather simply redistribute carbon, for example, from aboveground vegetation to root biomass (Derner and Schuman 2007).

Overall, the changes in rangeland carbon storage that are likely to result from the minor changes in grazing practices described in the alternatives would be small and difficult to predict, especially where a RHA has determined that the Standards for Rangeland Health Standards and Guidelines for Livestock Grazing Management are being met. Therefore, this analysis assumes that the minor changes in proposed grazing practices on these allotments would not result in any measurable change in total carbon storage under any of the alternatives analyzed.

Soils and Biological Soil Crusts

Affected Environment: Soils

Soil information was collected from the Soil Survey of Lake County, Southern Part, Natural Resource Conservation Service (NRCS 2010) as well as soil data on file at the Lakeview District BLM Office. This data is herein incorporated by reference in its entirety and is summarized in the following section.

There are 66 soil map units in the allotments (Maps 4A-4D). They vary in soil texture from the Playa and Lakebed silty clay soils (21%) to Rockcrop (2%). The most common soils types are cobbly, gravelly or stony loams found in 4 of the allotments and comprise about 63% of the total area. About 9% of the total acreage in all the allotments is occupied by fine sandy loam soils and about 5% is loam soils. The Freznik very stony loam, 2-15 percent slopes, (18% of the total area) is the most common soil series.

The Rangeland Health Assessments found that soils in the in all five allotments exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate, and therefore, Standard 1 was being met (BLM 1999a, BLM 1999b, 2004a, 2004b, 2004c). These assessments examined soil surface factor (SSF) data for the allotments collected during the ecological site inventory (ESI) effort in 1987. SSF ratings are used to assign an erosion class rating and the potential susceptibility of soil to accelerated erosion.

There was no transects done during the 1987 ESI for the Cahill FRF Allotment, so in 2013 an assessment of the most common soil type (Crump-Pit Complex 0-1%) on the public land in the allotment was completed. The summary of that data including SSF and OAT ratings are included in Tables 15-16.

About 6 percent of the acreage in the 5 allotments was rated stable and about 69% percent was rated in the slight erosion condition class with 21 percent in the unknown class. The breakdown of the SSF rating by allotment is seen in Table 15.

Table 15. Erosion Condition Classes by Allotment

	Erosion Condition Classes*				
Allotment	Stable	Slight	Moderate	Water/Playa or Rockland	Unknown**
Round Mountain 00211					
Acres	2,255	16,375	0	0	471
Percent of Allotment	12%	86%	0	0	2%
Rahilly Gravelly 00212					
Acres	89	26,709	0	2,103	8,114
Percent of Allotment	1%	72%	0	6%	22%
Pederson Pasture FRF					
Acres	0	1,666	0	0	1,214
Percent of Pasture	0	58%	0	0	42%
Burro Springs 00213					
Acres	0	4,316	0	1,169	1,519
Percent of Allotment	0	62%	0	17%	22%
Hill Camp 00215					
Acres	2,938	20,745	0	980	10,144
Percent of Allotment	8%	60%	0	3%	29%
Cahill FRF 00219					
Acres	689	0	0	33	574
Percent of Allotment	53%	0	0	3%	44%

** The erosion condition classes are based on numeric scoring system which considers soil movement, surface litter, surface rock, pedestalling, flow patterns, rills and gullies. Appendix A is an example of the scoring sheet that is used.*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities. The transect data for the SWA may not apply to these inclusion, therefore the acres in these inclusions are considered unknown.*

Observed apparent trend (OAT) data was used to determine trend indicators correlated to soil stability. These indicators are: surface litter, pedestals, and gullies. OAT data collected indicates stable soils across about 74% of the Cahill Allotments; i.e. the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes. About 21% of the acres in the Cahill allotments are rated as unknown. The breakdown by OAT category by allotment in the Cahill permit is seen in Table 16.

The Rangeland Health Assessment Updates of the five allotments (BLM 2013a, 2013b, 2013c, 2013d, 2013e) also examined the recent trend photos and the vegetation transect data and concluded that the soil indicators in those locations are either stable or in an upward trend in all five allotments.

Affected Environment: Biological Soil Crusts

Biological soil crusts (BSCs) such as mosses, lichens, micro fungi, cyanobacteria and algae play a role in a functioning ecosystem. In addition to providing biological diversity, BSCs contribute to soil stability through increased resistance to erosion and nutrient cycling (Belnap *et al.* 2001). Lichen species diversity is poorly known in the Pacific Northwest (Root *et al*. 2011). Further, identification of BSCs at the species level is not practical for fieldwork, as it is very difficult and may require laboratory culturing (Belnap *et al.* 2001).

Table 16. Observed Apparent Trend by Allotment

	Observed Apparent Trend*				
Allotment	Upward	Static	Downward	Water/Playa or Rockland	Unknown**
Round Mountain 00211					
Acres	4,730	13,900	0	0	471
Percent of Allotment	25%	73%	0	0	2%
Rahilly Gravelly 00212					
Acres	696	25,410	692	2,103	8,114
Percent of Allotment	2%	69%	2%	6%	22%
Pederson Pasture FRF					
Acres	572	1,094	0	0	1,214
Percent of Pasture	20%	38%	0	0	42%
Burro Springs 00213					
Acres	732	3,584	0	1,169	1,519
Percent of Allotment	10%	51%	0	17%	22%
Hill Camp 00215					
Acres	1,405	22,278	0	980	10,144
Percent of Allotment	4%	64%	0	3%	29%
Cahill FRF 00219					
Acres	689	0	0	33	574
Percent of Allotment	53%	0	0	3%	44%

** The Observed Apparent Trend (OAT) is a numerical rating which considers vigor, seedlings, surface litter, pedestals and gullies to estimate the trend of a particular site and SWA.*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities. The transect data for the SWA may not apply to these inclusion, therefore the acres in these inclusions are considered unknown.*

The 2 long-term transects in the Round Mountain Allotment that measure ground cover have not recorded any BSC cover. A new vegetation transect was established in 2012 and did not record any BSC cover. The 3 long-term transects established in the Rahilly Gravelly Allotment in 1985 that measured ground cover were read 9 separate years on one transect and 6 years on the other two. During two years on one transect and one year on each of the other two transects cryptogram cover (Moss) was recorded, but never more than 3% ground cover. The ground cover of perennial vegetation as measured at the same monitoring transects has been stable, averaging about 37% over the last 12 years

In the Burro Springs Allotment, one vegetation transect was done in 2012 and did not record any BSCs. BLM assumes the condition of the BSCs would be similar to the condition of the soils, litter, and vegetation with which they exist. There are 2 long-term trend plots in the allotment and photos were taken 7 separate times since 1981. The condition of the ground cover in these photos shows the vegetation, litter and soils to be stable.

In the Hill Camp Allotment, there is a long-term vegetation transect that collected data in 4 different years since 1990, but never recorded any BSCs. The 16 new vegetation transects done in 2012 also did not record any BSCs.

BSC cover data was not collected during the South Lake Ecological Site Inventory (ESI). Though data is lacking, BLM staff note (based on professional field knowledge) that BSCs are present in the allotments, but occupy a very small percentage of the total ground cover. BLM assumes the condition of existing BSCs would be similar to the condition of the soils, litter, and vegetation with which they co-exist. The conditions of the perennial vegetation, litter and soils seen in the trend photos and recorded on the vegetation transects appear to be stable or improving.

Environmental Consequences:

Effects Common to Alternatives 1 - 4

The impacts of livestock grazing on soils within the Lakeview Resource Area were analyzed in the *Lakeview Proposed RMP/Final EIS* (BLM 2003a) and that analysis is incorporated herein by reference. In summary, livestock use would continue to negatively impact area soils due to compaction at waterholes and along trails (pages 4-35 to 4-36). However the rest rotation grazing system in 3 of the Allotments (Tables 2,3,5) and growing season rest in the other 2 allotments (Tables 4,6) does allow time for plant growth and micro biological activity in the soil to mitigate the impacts of trampling to some degree.

Soils and BSCs would continue to be negatively impacted in livestock concentration areas near water sources and cattle trails under Alternatives 1-4. Using the use pattern maps, size and volume of the water sources (springs and dirt tanks) it is estimated that cattle tend to concentrate within about a quarter mile around the existing major water sources (a quarter of a mile buffer around a water source represents approximately 125 acres). There are smaller waterholes and less productive springs that with less water available that receive less grazing pressure and the concentrated area of use is 0.1 mile around the source or approximately 25 acres. These estimates of the disturbed areas for both major and minor water sources are for the purpose of calculation and comparison and will vary depending on topography, yearly precipitation and location in the pasture.

The Pederson Pasture within the Rahilly Gravelly Allotment is not included in these calculations because the use is only 55 AUMs in the summer by horses and 79 AUMs in the winter by cows. During both seasons the water sources are on private land and the concentrated use (0.25 mile from water) is on private land. Therefore there is no concentrated impact from grazing on BLM land in the Pederson Pasture.

The estimated use along creeks and shorelines will vary by location and the methodology will be explained for each allotment. However in general an estimated strip of disturbance in feet is multiplied by number of miles x 5,280 ft. per mi./ 43,560 $ft.^2$ per acre to estimate an area of potential disturbance in acres.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. The miles of fence located within an allotment where cattle are known to trail were estimated and using the formula (# mi. x 5 ft. x 5,280 ft. per mi./ 43,560 $ft.^2$ per acre) the area of potential disturbance associated with past fence construction and livestock trailing was calculated. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment. It is assumed that the acres impacted by trailing along fences will be similar in alternatives where grazing is occurring. The breakdown of the estimated acreage impacted by concentrated livestock use in each allotment by alternative is summarized in Table 17.

Round Mountain Allotment (00211)

Effects Alternatives 1 and 3

There are 2,169 acres (11%) in the Round Mountain allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. However with the rest rotation grazing system approximately one third of this area is rested every year so only about 8% of the allotment is impacted by livestock concentration each year. Most of this estimated use is around the 15 major water sources, which includes 8 major constructed waterholes, with 4 in North Pasture and 2 each in West and East pastures and 7 major springs with 5 being in East Pasture and 2 in West Pasture (Map 3A). There are 5 additional water sources that receive less grazing pressure and cattle concentration impacts are within about one-tenth of a mile around these water sources. Therefore approximately 125 acres around minor water sources would be impacted by concentrated grazing (Table 17). The amount of concentrated use on creek banks includes Twentymile Creek, Long Canyon, and Fifteenmile Creek. The area of heaviest impact would be a 100 yard buffer along the 0.25 mile of Twentymile Creek, 1.5 miles of Long Canyon and 1 mile of Fifteenmile Creek that are accessible to grazing. Therefore, the total 2.75 miles with a 300 foot buffer estimates 100 acres are impacted by concentrated livestock use along these water sources. Over 3 miles of Fifteenmile Creek and 0.75 miles of Twentymile Creek are either excluded with fences or are inaccessible. Therefore, the impacts of livestock trampling on soils along about 60% of the riparian areas in this allotment is prevented or otherwise mitigated by existing exclosure fences and topography.

There is additional livestock concentration around a finger of Big Lake and Lucky Reservoir and both extend into the north edge of North Pasture. This is an additional 60 acres that receives concentrated livestock use because of the close proximity to water.

Cattle trails located along the 15 miles of fence within the allotment where cattle are known to trail account for about another 9 acres of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

However, the grazing permit addressed in this EA authorizes only 61% of the total livestock grazing use allowed on this allotment. Therefore, only 61% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 886 acres or 5% of the allotment.

The use pattern mapping of the allotment over the last 10 years showed even lower percentages of the allotment were heavily used. The percent of heavy use was between 2% in the North Pasture (2008) and 8% in the West Pasture (2009). The 10 year average of acres mapped as heavy use for the East Pasture was 5%, the North Pasture, 5% and the West Pasture, 6%. This average percentage was only for years the pastures were grazed and does not include the rest years. Therefore with 1/3 of the allotment being rested every year, the percent of the total allotment being mapped as heavy use would be 3-5%. This data and the maps are on file in the Lakeview Resource Area Field Office.

These alternatives would maintain slight to moderate forage utilization on over 92% of the allotment being grazed each year and 33% of the allotment is being completely rested each year. This level of use continues to provide for some BSC retention and litter accumulation, resulting in the maintenance of existing organic matter, soil structure and productivity. While wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs, based on professional judgment, the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Table 17. Estimated Acreage Disturbed by Concentrated Livestock Use by Alternative

	Alternative 1 (No Action)		**Alternative 2** (50% reduction in AUMs)		**Alternative 3** (Management changes and vegetation treatments)		**Alternative 4** (No Permit Issued and No Weed Treatment)	
	Acres	**% Allot**	**Acres**	**% Allot**	**Acres**	**% Allot**	**Acres**	**% Allot**
Round Mountain Allotment								
Water Developments								
Major springs & Waterholes (15)	1,875 acres	9.8%	1,313 acres	6.8%	Same as Alternative 1.		582 acres	3%
Minor Springs & Waterholes (5)	125 acres	0.6%%	88 acres	0.5%			39 acres	0.2%
Total for Water Developments	**2,000 acres**	**10%**	**1,401**	**7%**			**621 acres**	**3%**
Creek Banks (2.75 mi.)(300 feet)	100 acres	0.5%	70 acres	0.4%			39 acres	0.2%
Shorelines of Lakes, Playas & Reservoirs	60 acres	0.3%	42 acres	0.2%			23 acres	0.1%
Trails along fences (15 mi.)(5 Feet)	9 acres	0.04%	9 acres	0.04%			9 acres	0.04%
Gross Total	2,169 acres	11%	1,522 acres	8%			692 acres	4%
Grand Total (note only 2/3 of allotment is grazed each year)	**1,453 acres**	**8%**	**1,020 acres**	**5%**			**464 acres**	**2%**
Rahilly Gravelly Allotment								
Water Developments								
Major springs & Waterholes (21)	2,625 acres	7.7%	1,313 acres	3.5 %	2,625 acres	7.7%	Less than 1,313 acres Wildlife use	Less than 3.5% Wildlife use
Minor Springs & Waterholes (12)	300 acres	0.9%	150 acres	0.4%	300 acres	0.9%	Less than 150 acres Wildlife use	Less than 0.9% Wildlife use
Total for Water Developments	**2,925 acres**	**9%**	**1,463 acres**	**4%**	**2,925 acres**	**9%**	**Less than 1,463 Wildlife use**	**Less Than 4% Wildlife use**
Horse Creek (2 mi. rested 3 of 4 years)	Negligible Wildlife use	Wildlife use	Wildlife use	Wildlife use	Negligible Wildlife use	Wildlife use	Wildlife use	Wildlife use
Shorelines of Lakes, Playas & Reservoirs (9 mi.)(600 feet)	655 acres	1.9%	328 acres	0.9%	655 acres	1.9%	Less than 328 acres Wildlife use	Less than 0.9% Wildlife use
Trails along fences (25 mi.)(5 Feet)	15 acres	0.04%	15 acres	0.04 %	15 acres	0.04%	Less than 9 acres Wildlife use	Less than 0.04% Wildlife use

Gross Total	3,595 acres	11%	1,806 acres	5%	4,095 acres	11%	Less than 1,806 acres Wildlife use	Less than 5% Wildlife use
Grand Total (note: only 3/4 of allotment is grazed each year)	**2,696 acres**	**8%**	**1,355 acres**	**4%**	**3,196 acres**	**8.6%**	**Less than 1,806 acres Wildlife use**	**Less than 5% Wildlife use**
Burro Springs Allotment								
Water Developments								
Major springs & Waterholes (2)	250 acres	3.5 %	168 acres	2.3 %	Same as Alternative 1.		90 acres	1.3%
Minor Springs & Waterholes (1)	25 acres	0.4%	17 acres	0.2%			9 acres	0.13%
Total for Water Developments	**275 acres**	**4%**	**185 acres**	**2.5%**			**99 acres**	**1.4%**
Shorelines of Lakes, Playas & Reservoirs (2 mi.)(200 feet)	50 acres	0.8%	34 acres	0.5%			18 acres	0.2%
Trails along fences (6 mi.)(5 Feet)	4 acres	0.06%	4 acres	0.06%			4 acres	0.06%
Grand Total	**329 acres**	**5%**	**223 acres**	**3%**			**121 acres**	**1.7 %**
Hill Camp Allotment								
Water Developments								
Major springs & Waterholes (29)	3,625 acres	10.4%	2,828 acres	8%	Same as Alternative 1.		2,030 acres	5.8%
Minor Springs & Waterholes (17)	425 acres	1.2%	332 acres	1%			238 acres	0.7%
Total for Water Developments	**4,050 acres**	**11.6%**	**3,160 acres**	**9%**			**2,268 acres**	**6.5%**
Shorelines of Lakes, Playas & Reservoirs	54 acres	0.2%	42 acres	0.1%			30 acres	0.09%
Trails along fences (45 mi.)(5 Feet)	27 acres	0.08%	27 acres	0.08%			27 acres	0.08%
Gross Total	4,131 acres	12%	3,229 acres	9%			2,325 acres	6.7%
Grand Total (note: only 3/4 of allotment is grazed each year)	**3,098**	**9%**	**2,422 acres**	**7%**			**1,744 acres**	**5%**
Cahill FRF Allotment								
Minor Springs & Waterholes (1)	**25 acres**	**2%**	**25 acres**	**2%**	Same as Alternative 1.		Less than 25 acres Wildlife use	Less than 2% Wildlife use
Shorelines of Lakes, Playas & Reservoirs (1.5 mi.)(150 feet)	**27 acres**	**2%**	**27 acres**	**2%**			Less than 27 acres Wildlife use	Less than 2% Wildlife use
Trails along fences (4.25 mi.)(5 Feet)	**2.5 acres**	**0.2%**	**2.5 acres**	**0.2%**			Less than 2.5 acres Wildlife use	Less than 0.2% Wildlife use
Grand Total (note: all of allotment used each year)	**54.5**	**4.2 %**	**54.5 acre**	**4.2%**			Less than 54.5 acres Wildlife use	Less than 4.2% Wildlife use

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 337 AUMs would result in some change in the impacts to soils by reducing the stock density around the water sources. However a 50% reduction in the AUMs on this permit only reduces the AUMs on the allotment by 30% because another permittee on a separate permit has 39% of the AUMs. The reduction in acres impacted is about 30% less than Alternatives 1 and 3, as the lower stock density around water sources would shrink the area impacted. Therefore, the impacted area around waterholes and along fences may go down to 1,020 acres or 5% of the allotment (Table 17). The soil acreage impacted under alternative 2 (5%) would not be significantly different from soil acreage impacted in alternative 1 (8%). The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 3: Changes in Grazing Management/Vegetation Treatments

Under Alternative 3 the impacts of grazing use on soils and biological crusts would generally be the same as Alternative 1, as extending the grazing season by 7 days would not increase the number of AUMs in the allotment. Extra week to retrieve cattle would not significantly change the utilization or the grazing pattern in anyway.

Under Alternative 3, there are 6 new herbicides proposed for use to control noxious weeds and invasive species; 4 of these are proposed specifically for use in this allotment to control infestations of known noxious weeds (Table 31). The potential impacts to soils of these new herbicides are addressed in Tables 39-44. Control of weeds by these herbicides would benefit the soil resources long-term as the spread of noxious weeds and invasive species can reduce or eliminate native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Alternative 4: No Permit Issued/No Weed Treatments

Under this alternative, little change to soils would occur on the allotment as a whole in the short-term (up to 5 years). The elimination of grazing under this alternative would only reduce total AUMs of use in the allotment by 61%. The other permittee would continue to graze with 39% of the current number of AUMs. Therefore the 61% reduction in AUMs would reduce the number of acres impacted by livestock concentration down to about 464 acres or 2% of the allotment (Table 17). The soils and BSCs in the 989 acres (1,453 -464=989 acres) subject to lower livestock would benefit from lighter grazing use levels over the long-term (5-10 years). While wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs, the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

No use of herbicides or manual control methods would result in the spread of noxious weeds and invasive species that are currently controlled to some degree under Alternative 1. The spread of noxious weeds and invasive species would negatively impact soils in the long-term by reducing perennial native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Environmental Consequences: Rahilly Gravelly Allotment (00212)

Alternative 1: No Action

There are 3,595 acres (11%) in the Rahilly Gravelly allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. However with the rest rotation grazing system approximately one fourth of this area is rested every year so only about 8% of the allotment is impacted by livestock concentration each year. Most of this estimated use (2,625 acres) occurs around the 21 major water sources, which includes 13 major constructed waterholes, 7 major springs, and one well (Map 3B). There are 12 additional minor water sources that receive less grazing pressure and cattle concentration impacts are within about one-tenth of a mile around these water sources. Therefore approximately 300 acres around minor water sources would be impacted by concentrated grazing (Table 17). The total acreage impacted around all water sources is about 2,925 acres. However one of four pastures is rested every year so the actual heavy each is only about 2,200 acres around existing water sources.

In addition, there is concentration within about a 0.1 mile around Coleman Lake, Soda Lake, and May Lake. The concentrated use around Coleman Lake, Soda Lake, and May Lake is estimated to be about a 200 yard wide zone along the edge of these playas and impact area would be about 650 acres (Table 17). Horse Creek is a riparian area with over 2 miles of steambank, but under Alternative 1 there is almost no use on Horse Creek, so impacts to these soils are negligible.

Cattle trails located along the 25 miles of fence within the Rahilly Gravelly allotment where cattle are known to trail, account for about another 15 acres (Table 17) of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

The use pattern mapping of the allotment over the last 10 years showed even lower percentages of the allotment were used heavy. The percent of heavy use was between 1% in the Coleman Lake and Sucker Creek Pastures (2002) and 13% in the Coleman Lake Pasture (2007). The 10 year average of acres mapped as heavy use for the Coleman Lake Pasture was 6%, the Sucker Creek Pasture, 4% and the Rahilly Pasture, 6.5%. This average percentage was only for years the pastures were grazed and does not include the rest years. Therefore with 1/4 of the allotment being rested every year, the percent of the total allotment being mapped as heavy use would be 4-5%. This data and the maps are on file in the Lakeview Resource Area Field Office.

Under the worst case scenario, the annual impact by concentrated use is about 2,696 acres or 8% of the allotment (Table 17). This alternative would maintain slight to moderate forage utilization across 92% of the allotment and continue to provide for some BSC retention and litter accumulation, resulting in the maintenance of existing organic matter, soil structure and productivity. The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, reducing grazing level by 50% (to 891 AUMs) would result in some change in the impacts to soils by reducing the stock density around the water sources. The reduction in acres impacted may be near 50% less than Alternative 1, as the lower stock density around water sources would shrink the area impacted. Therefore, the impacted area around waterholes and along fences may go down to about 1,355 acres or 4% of the allotment. While wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs, the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 3: Change Livestock Management/Vegetation Treatments

The Pederson Pasture would become a separate allotment, but the management would remain the same as Alternative 1.

The impacts to soils from livestock use would be similar to Alternative 1 as the grazing use would be the same around the waterholes, springs, and along fences. The impacts in the Pederson Pasture would be the same as Alternative 1 with most of concentrated grazing occurring on private land.

The proposed vegetation treatment south of Soda Lake (500 acres) would remove most of the sagebrush and greasewood and replace it with perennial grasses and forbs. The brush would be removed by mowing. Cheatgrass would be removed by herbicide treatment, followed by reseeding the area with a mixture of crested wheatgrass, basin wildrye and perennial native forbs. The soil present is the McNye-Wildhill Complex, 2-15 percent, and is comprised of McNye, a cobbly loam soil occupying 65% of the complex and the Wildhill, a very stony loam occupying 20% of the complex. The McNye soil is deep (40-60 inches) to bedrock and is somewhat excessively drained. This allows for drilling if the seeded plants tolerate droughtiness. The hazard of water erosion is slight or moderate and seeding would increase ground cover and further reduce surface erosion, therefore benefiting the site production. The Wildhill soil is moderately deep (20-40 inches) to bedrock, well drained and the permeability is moderately slow. The hazard of erosion by water is slight or moderate but the stony nature of this soil will make drill seeding difficult in the estimated 20% of the landscape where this soil is dominant. Therefore, broadcast seeding may become necessary in areas dominated by the Wildhill soil. The short term impacts (1 year) to both soils in these sites would be negative with the removal of vegetation cover and exposing the bare soil to more wind and water erosion. However the long term impacts would be positive as seeding with grasses and forbs increase the ground cover and litter on the soils surface. This increased vegetation and litter cover would improve moisture storage, reduce exposure to erosion and increase microbial activity. This would result in better soil fertility and productivity in the long-term.

Under Alternative 3, there are 6 new herbicides proposed for use to control noxious weeds and invasive species; 4 of these are proposed specifically for use in this allotment to control infestations of known weeds and invasive species (Table 32). The potential impacts to soils of these new herbicides are addressed in Tables 39-44. Control of weeds and invasive species by these herbicides would benefit the soil resources long-term as the spread of weeds can reduce or eliminate native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, the public land would likely be fenced and excluded from grazing. Little change to soils would occur on public lands in the allotment in the short-term (up to 5 years). Most of the concentrated livestock use areas on public land associated with water sources and the cattle trails (about 2,696 acres) would reclaim naturally with vegetation and BSCs over the long-term (5-10 years). While wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs, most of the public lands in the area would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

However, the private land portion of Pederson Pasture (400 Acres) could be fenced off and still grazed. The severity of impacts to soils and BSCs on private lands would depend on how intensively the area is grazed.

No use of herbicides or manual control methods would result in the spread of noxious weeds that are currently controlled to some degree under Alternative 1. The spread of noxious weeds and invasive species would

negatively impact soils in the long-term by reducing perennial native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Environmental Consequences: Burro Springs Allotment (00213)

Alternative 1: No Action

There are 329 acres (5%) in the Burro Springs allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. Most of this estimated use (250 acres) is around the 2 major constructed waterholes, with a spring and trough (Map 3C) having less grazing pressure impacting about 25 acres (Table 17).

The concentrated use around Spanish Lake, beyond the area already accounted for by the waterhole is estimated to be about 50 acres (Table 17). Adding average impacts areas together, the total area impacted around water sources for the allotment would be about 325 acres.

Cattle trails located along the 6 miles of fence within the allotment where cattle are known to trail account for about another 4 acres of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

Therefore, the total area estimated to be impacted by livestock concentration around water sources and along fences would be about 329 acres (5%) of the allotment.

However, the grazing permit addressed in this EA authorizes only 64% of the total livestock grazing use allowed on this allotment. Therefore, only 64% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 211 acres or 3% of the allotment.

The average utilization measured across the entire allotment in five of the last ten years was 40%. The use pattern maps for these same 5 years showed the average area of heavy use was 4%. There was a wide range heavy use from 13% in 2007 to less than 1% in 2011 and 2012. This alternative would maintain slight to moderate forage utilization across 95% of the allotment and continue to provide for some BSC retention and litter accumulation, resulting in the maintenance of existing organic matter, soil structure and productivity. While wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs, the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% (to 90 AUMs) would result in some change in the impacts to soils by reducing the stock density around the water sources. The other permittee could continue to use his 100 AUMs, so number of AUMs would be reduced from 279 AUMs to 189 AUMs or 33%. The actual reduction in AUMs for the allotment would only be an effective 33% reduction. Therefore the reduction in acres impacted may be 33% less than Alternative 1, as the lower stock density around water sources would shrink the area impacted. The impacted area around waterholes may go down to about 223 acres or 3% of the allotment. The soil acreage impacted under alternative 2 (3%) would not be significantly different from soil acreage impacted in alternative 1 (5%). The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 3: Change Livestock Management/Vegetation Treatments

The impacts to soils would be similar to Alternative 1 for the Burro Springs Allotment, as the number of AUMs would be the same. The number of cows may be reduced, if the permittee elected to use the AUMs for entire grazing period. However, the acreage most impacted in the Burro Springs Allotment would still be around the spring troughs, waterholes, Spanish Lake, and along the fences. The total acres of soil impacted would be about the same as Alternative 1.

Extending the grazing season (3/1- 5/31) to match the other permittee could result in more spring use in the allotment, but the impacts on the soil should be minimal. The soils around the water sources where most of the concentrated use occurs are silty clay loams with high shrink–swell potential which mitigates the impacts of trampling. Therefore adjusting the season of use to allow more use in April and May should not have noticeable impacts on the in soils the allotment as a whole. The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Under Alternative 3, there are 6 new herbicides proposed for use to control noxious weeds and invasive species; 1 of these is proposed specifically for use in this allotment to control infestations of noxious weeds (Table 33). The potential impacts to soils of these new herbicides are addressed in Table 43. Control of weeds would benefit the soil resources long-term as the spread of weeds can reduce or eliminate native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Alternative 4: No Permit Issued/No Weed Treatments

Under this alternative, little change to soils would occur on the allotment as a whole in the short-term (up to 5 years). The other permittee could continue to use his 100 AUMs, so number of AUMs would be reduced from 279 AUMs to 100 AUMs or 36%. The actual reduction in AUMs for the allotment would only be an effective 64% reduction. Therefore the acres impacted may be 36% of the acres impacted in Alternative 1, as the lower stock density around water sources would shrink the area impacted. The impacted area around water sources may go down to about 121 acres or 1.7% of the allotment (Table 17). The soils and BSCs in the 208 acres (329 -121=208 acres) subject to lower livestock would benefit from lighter grazing use levels over the long-term (5-10 years). This reduction of 208 acres of soils impacted is only 3% of the allotment and therefore not a significant change between alternatives 1 and 4 in the acreage of soils or BSCs impacted. The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

No use of herbicides or manual control methods would result in the spread of noxious weeds and invasive species that are currently controlled to some degree under Alternative 1. The spread of weeds and invasive species would negatively impact soils in the long-term by reducing perennial native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Environmental Consequences: Hill Camp Allotment (00215)

Alternatives 1: No Action

There are 4,131 acres (12%) in the Hill Camp allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. However with the rest rotation grazing system

approximately one fourth of this area is rested every year so only about 9% of the allotment is impacted by livestock concentration each year. Most of this estimated use is around the 29 major water sources, including 21 reservoirs, 5 waterholes and 3 springs (Map 3C). There are 17 additional minor water sources including 8 reservoirs, 5 waterholes and 4 springs that receive less grazing pressure and cattle concentration impacts are within about one-tenth of a mile around these water sources. Therefore, approximately 425 acres around minor water sources would be impacted by concentrated grazing (Table 17). The total acreage impacted by concentration around these major and minor water sources is estimated to be about 4,050 acres (Table 17). In addition, there are intermittent natural water sources (MC Reservoir and Pinto Lake) where livestock concentration would impact the soil and it is estimated the impacted area is approximately 54 acres.

Cattle trails located along the 45 miles of fence within the allotment where cattle are known to trail account for about another 27 acres of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

Based on the methodology described above, an estimated total of approximately 3,098 acres (19%) of the soils and areas potentially containing BSCs within the allotment would be impacted by concentrated livestock use. However, the grazing permit addressed in this EA authorizes only 44% of the total livestock grazing use allowed on this allotment. Therefore, only 44% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 1,363 acres or 4% of the allotment (Table 17).

The average utilization measured across the entire allotment in six of the last ten years was 39 % with the range being 43% in 2012 and 2009 and 29% in 2011. The use pattern maps for these same 6 years showed the average area of heavy use was 4%. The range of heavy use was from 7% in 2012 to 2% in 2011.

This alternative would maintain slight to moderate forage utilization across 91% of the allotment using water hole assumptions to calculate heavy use and across 96% of the allotment using the use pattern maps. The reason for this variation is that water hole concentration method assumes every water hole is used and that rarely happens. Most years some of the water sources are dry and are not heavily utilized. Therefore this method overestimates the acres of concentrated use. However under either estimate this alternative would continue to provide for BSC retention and litter accumulation, resulting in the maintenance of the existing organic matter, soil structure and productivity. The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% (to 860 AUMs) would result in some change in the impacts to soils by reducing the stock density around the water sources. The actual reduction in AUMs for the allotment would only be an effective 22% reduction. The other permittees could continue to use the 2,213 AUMs, so the total number of AUMs would be reduced from 3,932 AUMs to 3,072 AUMs or 22%.Therefore the reduction in acres impacted may be 22% less than Alternative 1, as the lower stock density around water sources would shrink the area impacted. The impacted area around water sources may go down to about 2,422 acres or 7% of the allotment (Table 17). The soil acreage impacted under alternative 2 (7%) would not be significantly different from soil acreage impacted in alternative 1 (9%). The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 3: Change Livestock Management/Vegetation Treatments

The effects of livestock grazing use on this allotment would be similar to those described for Alternative 1.

However, under Alternative 3, there are 6 new herbicides proposed for use to control noxious weeds and invasive species; 4 of these are proposed specifically for use in this allotment (along with one existing herbicide) to control infestations of known noxious weeds and invasive species (Table 34). The potential impacts to soils of these new herbicides are addressed in Tables 36, and 39-44. Control of weeds by these herbicides would benefit the soil resources long-term as the spread of weeds and invasive species can reduce or eliminate native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which also promotes soil fertility and stability.

Alternative 4: No Permit Issued/No Weed Treatments

Under this alternative, little change to soils would occur on the allotment as a whole. This alternative would reduce grazing in this allotment by 44% to 2,213 AUMs. There are two other permits that authorize the 2,213 AUMs that are not part of this analysis. Therefore, about 1,744 acres or 56% of the existing concentrated livestock use areas associated with water sources and the cattle trails would continue to be impacts as described in Alternative 1 (Table 17). About 1,354 acres would receive less concentrated use and allowed to reclaim naturally with vegetation and BSCs over the long-term (5-10 years). The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

No use of herbicides or manual control methods would result in the spread of noxious weeds and invasive species that are currently controlled to some degree under Alternative 1. The spread of weeds and invasive species would negatively impact soils in the long-term by reducing perennial native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Environmental Consequences: FRF Cahill Allotment (00219)

Alternatives 1: No Action

There are 54.5 acres (4.2%) in the Cahill FRF allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. Most of this estimated use is around the 3 water sources on public land including one constructed waterhole and 2 natural lake playas that contain standing water seasonally (Map 3D). The total acreage impacted by concentration around these water sources is estimated to be 25 acres around the reservoir and 27 acres around the lake playas for a total of 52 acres of concentrated use around the water sources are 52 acres or 4% of the allotment (Table 17).

Cattle trails located along the 4.25 miles of fence within the allotment where cattle are known to trail account for about another 2.5 acres of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

Therefore, the total area estimated to be impacted by livestock concentration around water sources and along fences is 54.5 acres or about 4% of the allotment (Table 17). The high shrink-swell potential of these clay soils combined with fall and winter grazing use, would substantially mitigate the impacts of trampling and soil compaction in this allotment. Therefore, this alternative would continue to provide for BSC retention and litter

accumulation, resulting in the maintenance of existing organic matter, soil structure and productivity. The allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, reducing the grazing level by 50% (down to 140 AUMs) would result in no change in the impacts to soils, because the number of cows actually using the allotment would be the same. The number of public land AUMs in an FRF allotment is the estimated carrying capacity of the public lands, but the total number of livestock using the entire allotment is determined by the permittee. Wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs. The allotment should continue to meet rangeland health Standard 1 into the foreseeable future.

Alternative 3: Change Livestock Management/Vegetation Treatments

The effects of livestock grazing use on this allotment would be similar to those described for Alternative 1.

However, under Alternative 3, there are 6 new herbicides proposed for use to control noxious weeds and invasive species; 4 of these are proposed specifically for use in this allotment (along with one existing herbicide) to control infestations of known noxious weeds and invasive species (Table 35). The potential impacts to soils of these new herbicides are addressed in Tables 36, and 39-44. Control of weeds and invasive species by these herbicides would benefit the soil resources long-term as the spread of weeds and invasive species can reduce or eliminate native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which also promotes soil fertility and stability.

Alternative 4: No Permit Issued/No Weed Treatments

Under this alternative, the public land would be excluded from grazing. The current concentration area (54.5 acres) would reclaim naturally with vegetation and BSCs over the long-term (5-10 years). The severity of impacts to soils on private lands would depend on how intensively the area is grazed, but would likely fall within the range of impacts described for Alternatives 1-3. If these private areas are intensively grazed, this could potentially degrade soils and BSCs in these areas.

No use of herbicides or manual control methods would result in the spread of noxious weeds and invasive species that are currently controlled to some degree under Alternative 1. The spread of noxious weeds and invasive species would negatively impact soils in the long-term by reducing perennial native vegetation which is needed to protect soils from erosion, reduce evaporation, and promote infiltration and moisture storage. The native vegetation assists in processes necessary to maintain microbial activity in the soil which promotes soil fertility and stability.

Water Quality, Riparian and Aquatic Habitat, and Special Status Aquatic Species

Affected Environment – Common to All Allotments

Many small springs exist across the landscape within these allotments. Some have been fenced and/or developed for water sources, while others have been left unfenced and/or undeveloped. Those that have been fenced to exclude livestock are generally in good condition, with native riparian vegetation being prevalent. Those that are not fenced tend to be areas where cattle congregate due to the presence of water and more vegetation than the surrounding landscape, which has led to increased disturbance and less vegetation when compared to fenced springs.

The inventory of spring conditions across the allotments is an ongoing process. Springs have been developed as water sources to promote better cattle distribution throughout the allotments, and exclusion fencing has been used to protect key aquatic and riparian resources.

Affected Environment: Round Mountain Allotment (00211)

Twelvemile Creek, Fifteenmile Creek, Twentymile Creek, and Long Canyon are the primary streams in the Round Mountain Allotment. Lotic Proper Functioning Condition (PFC) site inventories were completed in 1996 on Twelvemile, Fifteenmile and Twentymile Creeks. At that time the majority of stream miles inventoried were at PFC.

The Twelvemile Creek reaches have been excluded from authorized grazing since 1980 and have been effectively excluded from grazing since 1994. The Fifteenmile reaches are being managed under consultation with the U.S. Fish and Wildlife Service on effects of grazing on the Threatened Warner Sucker. While the existing conditions are largely a result of past grazing practices, current management of livestock is resulting in improving stream conditions.

Site visits in 2013 and all available data generally indicate improving trends in fish habitat, stream channel, and riparian conditions throughout the allotment. Photos points established in the 1970's and 1980's that were retaken more recently show increases in native riparian vegetation, including willows, sedges and rushes, as well as stream channel narrowing and deepening, and increases in streambank stability. A rapid riparian scorecard assessment developed for the Fremont National Forest and Lakeview BLM (Riegel, unpublished) site was established on a grazed reach of Fifteenmile Creek in 2006 and re-read in 2013. The 2013 data showed the site continued to be in moderate ecological status, with some increases in late seral species and some decreases early seral species being noted. Juniper has been cut at the site since 2006, and its ecological condition is thought to be improving in general. Fifteenmile Creek is intermittent in the reach in question and a significant change in species composition will take place over a longer time period than seven years.

Twentymile, Twelvemile and Fifteenmile Creeks from the mouth to the headwaters do not meet state standards for temperature. Twelvemile Creek on the BLM is excluded from grazing and Twentymile Creek in this allotment is intermittent partially excluded from grazing, so livestock use is no longer a causative factor in not meeting the standard on these streams. Fifteenmile Creek is authorized for grazing in perennial reaches although, with the exception of two small (<100 feet) water gaps, it is generally not grazed significantly due to fencing and topography. No current water quality data exists for Fifteenmile Creek, although the lack of grazing on Fifteenmile Creek are thought to be resulting in improved water quality as stream channel and riparian conditions improve, as described above.

The Warner sucker is listed as a Threatened Species under the Endangered Species Act. There is no occupied habitat currently being grazed in the allotment. Twentymile Creek is intermittent and does not contain any fish habitat in the allotment, although it is Designated Critical Habitat for Warner sucker in the allotment. Because Fifteenmile Creek flows into occupied habitat less than a mile below the grazed pasture, it was determined in Section 7 consultation that grazing was having an adverse effect on suckers. This effect has been minimized by restrictions placed on riparian grazing and the Service issued a Biological Opinion to authorize "take" of the species. Warner redband trout, a Bureau Sensitive Species is found in Twelvemile and Fifteenmile Creek in the allotment. Their populations appear to be strong in both creeks.

Affected Environment: Rahilly Gravelly Allotment (00212)

Horse Creek and one perennial tributary to Horse Creek are the primary streams in the Rahilly Gravelly Allotment. Sucker Creek is a moderate (<10 foot bankfull width) intermittent creek that runs through the Nevada, Sucker Creek, and Coleman pastures. Sucker Creek is generally dry all summer, lacks riparian vegetation, and does not provide habitat for any fish species. Foskett and Dace Springs are fish bearing springs on the shore of Coleman Lake in the Coleman Lake Pasture.

Lotic PFC site inventories were completed in 1996 on Horse Creek and the Horse Creek Tributary throughout the allotment. Two reaches (about 50% of Horse Creek in the Allotment) on Horse Creek were rated as Functional at Risk with an Upward Trend in 1996; the remaining reaches were rated as PFC. In 2000, one of those two reaches was rated as PFC, leaving about 25% of uppermost portion of Horse Creek in the Allotment rated as Functional at Risk with an Upward Trend. The uppermost portion of Horse Creek in the allotment is now believed to be at PFC, although no recent survey has been completed.

In 1999, Horse Creek did not meet state standards for temperature; no temperature data has been collected since and it is unknown whether Horse Creek is currently meeting state water quality standards. Due to better grazing management, including more rest of the pasture and less use in the riparian area, there has been noticeable improvement in stream and riparian conditions, which is thought to be leading to improved water quality in Horse Creek

Photos points established on Horse Creek and the Horse Creek Tributary in 1989 that were retaken in 2013 show increases in native riparian vegetation, including willows, sedges and rushes, as well as stream channel narrowing and deepening, and increases in stream bank stability. A rapid riparian scorecard assessment developed for the Fremont National Forest and Lakeview BLM (Riegel, unpublished) was established in 2013 and showed the site to be in moderate to high ecological status. All available data, photo monitoring on file at Lakeview BLM, and professional judgment indicate improving trends in riparian conditions, which should lead to improved water quality throughout the Rahilly Gravelly Allotment.

The Warner sucker is listed as a Threatened Species under the Endangered Species Act. There is no occupied habitat in the allotment. Because Horse Creek flows into occupied habitat less than a mile below the grazed pasture, it was determined in Section 7 consultation that grazing may have an adverse effect on suckers. Any effects have been minimized by restrictions placed on riparian grazing. The US Fish and Wildlife Service issued a Biological Opinion to authorize take of the species (USFWS 1997).

The Foskett speckled dace is a fish indigenous to Foskett Spring, and listed as a Threatened Species under the Endangered Species Act. There is occupied habitat within the allotment in two springs in the Coleman Lake Pasture: Foskett Spring and Dace Spring. The population at Dace Spring was stocked there in the years following the construction of two ponds at the site in 2009. Grazing has been excluded from both spring sources. No authorized grazing occurs at Dace Spring as the fish habitat at the site is completely excluded. Some authorized grazing is scheduled to occur on occupied Foskett specked dace habitat at the lower end of Foskett Spring, near the shore of Coleman Lake; this action is scheduled to be consulted on with U.S. Fish and Wildlife Service this winter (2012-13). Grazing may be beneficial to Foskett speckled dace as it is thought to help maintain the open water habitat conditions preferred by the species.

Recent (2012-13) habitat improvement projects, including prescribed burning and pool excavation at Foskett Spring, have been successful at increasing the number of fish at the site considerably, as the population estimate at Foskett went from 1,848 in 2012 to 13,142 in 2013. Survival of the population at dace Spring has been poor (17% in 2013) due to water quality issues in the ponds related to algae blooms and low dissolved oxygen levels. Work in late 2013 improved water flow through the ponds and resulted in improved water quality.

One fish species, speckled dace, is known or thought to occupy habitat in Horse Creek within the allotment. Speckled dace are a native non-game fish widespread through the western US.

Warner redband trout, a Bureau Sensitive Species, is found in Twelvemile Creek at its confluence with Horse Creek below the allotment.

Affected Environment: Burro Springs Allotment (00213)

In 2004, an ID team determined that grazing at Burro Springs was contributing to the failure of the spring to function at site potential. The problems at this spring were corrected by enlarging the existing exclosure and repairing the overflow pipes to a second trough away from the spring, then allowing that overflow to return the water to the riparian area (BLM 2004c). Burro Springs is now considered to be functioning appropriately and its condition is improving. All 201 acres of wetland in the allotment were determined to be at PFC.

No water quality data exists for water bodies in the Burro Springs Allotment. No surface water or groundwater within the allotment has been listed for exceeding State Water Quality standards. Because all 201 acres of wetland in the allotment are at PFC, it is believed that water quality conditions are adequate.

There is no fish habitat in this allotment.

Affected Environment: Hill Camp Allotment (00215)

The Rangeland Health Assessments for the Hill Camp Allotment noted there were 54 acres of palustrine wetlands in the allotment and they were all in PFC. However, the assessment also noted problems in riparian-wetland function at four springs (Game, Hidden, Tim, and Jackass) where Rangeland Health Standard 2 (related to riparian/wetland function) was not being met and livestock grazing was a contributing factor at three of these (BLM 2004b). The assessment made recommendations on how to remedy these problems. Subsequently, several spring maintenance or restoration projects were implemented (BLM 2004c). Conditions at these three springs are now either meeting or making substantial progress towards meeting Rangeland Health Standard 2.

There are no perennial streams within the Hill Camp Allotment. Piute Creek is an intermittent stream located in the allotment. Although evidence of historic erosion is present along Piute Creek, rocky banks have contributed to maintaining these areas in a relatively static state. Cut banks are present in areas throughout the length of the creek. Most of these areas are relatively stable, but there are some stretches where active erosion is occurring. Sedimentation and siltation into the channel is occurring. The creek is also widening in some places (BLM 2004b).

The current rest rotation grazing system has resulted in an overall improvement of ecological conditions on much of Piute Creek, and this can be seen from the trend photos taken along the creek starting in the 1970s through last year. There are three trend photo plots on Piute Creek and two on tributary drainages, with four of the five showing a noticeable increase in ground cover and a reduction in the amount of exposed bank. The other trend plot appears to be unchanged through the years.

No water quality data exists for any water bodies within the allotment. No surface water or groundwater within the allotment has been listed for exceeding State Water Quality standards. Because all 54 acres of wetland in the allotment are at PFC, it is believed that water quality conditions are adequate.

There is no fish habitat in this allotment.

Affected Environment: FRF Cahill Allotment (00219)

There are no major intermittent or perennial streams on BLM in this allotment.

There are 257 acres of palustrine wetlands in the allotment. Lentic Properly Functioning Condition assessment (PFC) was performed in March, 1998 and all the acres were in PFC. Although there has been no recent lentic PFC assessments or surveys performed, the sites observed appear to be functioning properly.

No water quality data exists for any water bodies within the allotment. No surface water or groundwater within the allotment has been listed for exceeding State Water Quality standards. Because all 257 acres of wetland in the allotment are at PFC, it is believed that water quality conditions are adequate.

There is no fish habitat in this allotment, as a fence excludes cattle from accessing the shore of Crump Lake, which contains habitat for Warner sucker and Warner redband trout, among several other native and non-native non-game species.

Environmental Consequences: Common to all Allotments

Alternative s 1 and 2:

Integrated noxious weed treatments would be beneficial to aquatic resources by promoting native vegetation in the riparian areas, which should help to restore historic conditions to the affected areas, including flow regime and habitat conditions. Any sediment or flow related effects of creating bare ground would be negligible and immeasurable given the limited scope of the treatments. Any effects would be short-term in nature, and would be outweighed by the benefits of restoring native vegetation to the sites in the future. The current noxious weed treatment strategy is capable of suppressing noxious weeds in riparian areas, but is not capable of eradicating them.

Alternative 3: Change Livestock Management/Vegetation Treatments

Weed treatment effects of the proposed new chemicals are summarized in Tables 36, and 39-44. In general, impacts to water quality and fish range from beneficial to minor and short-term. The current noxious weed treatment strategy would continue in riparian areas, the effects of which are described above. Using the proposed new herbicides in adjacent uplands would have no direct impacts on fish, water quality, or riparian vegetation, as none of these would be used in riparian areas. However, more effectively controlling noxious weeds in upland areas would improve overall watershed health and reduce the risk of weeds spreading into and degrading riparian areas.

Alternative 4: No Permit Issued/No Weed Treatments

With no chemical weed treatments, the benefits of noxious weed treatments described above would not be realized and special status aquatic species and habitat, water quality, and riparian vegetation could be adversely affected over the long-term. If untreated, noxious weeds could become dominant in riparian areas which would result in reduced stream bank stability, increased erosion, reduced stream shade, and degraded fish habitat conditions.

Environmental Consequences: Round Mountain Allotment (00211)

Alternative 1: No Action

Under Alternative 1, no changes would be made to the current grazing management strategy. The current strategy is leading to improved fish habitat, riparian, and water quality conditions as described above. Therefore, continued improvement would be expected with implementation of this alternative.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would result in an increase in the rate of improvement to fish habitat, riparian, and water quality conditions when compared to Alternative 1, as stocking levels would be reduced. Reduced stocking levels would result in reduced grazing related impacts to fish habitat, riparian areas, and water quality.

Alternative 3: Change Livestock Management/Vegetation Treatments

Alternative 3 would generally have the same effects as Alternative 1 to fish habitat, riparian areas, and water quality. Although Alternative 3 would extend the grazing system by one week, the same year-end utilization standards would be in place and are designed to result in improved fish habitat, riparian, and water quality conditions, and have been successful, as described above for Alternative 1. Therefore, it is believed that by continuing to meet standards improvements would continue.

Alternative 4: No Permit Issued/No Weed Treatment

Alternative 4 would generally provide the most rapid rate of recovery to fish habitat, riparian, and water quality conditions, as all grazing related impacts would be alleviated.

Environmental Consequences: Rahilly Gravelly Allotment (00212)

Alternative 1: No Action

Under Alternative 1, no changes would be made to the current grazing strategy. The current strategy is leading to improved fish habitat, riparian, and water quality conditions as described above. Therefore, continued improvement would be expected with implementation of this alternative.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would result in an increase in the rate of improvement to fish habitat, riparian, and water quality conditions when compared to Alternative 1, as stocking levels would be reduced. Reduced stocking levels would result in reduced grazing related impacts to fish habitat, riparian areas, and water quality.

Alternative 3: Change Livestock Management/Vegetation Treatments

Alternative 3 would generally have the same effects as Alternative 1 to fish habitat, riparian areas, and water quality in this allotment.

The treatment, seeding, and fencing of 500 acres of upland area would have no direct effect on any fish species, fish habitat, riparian areas, or water quality, as the treatment area is located entirely in upland areas and over one mile from any fish habitat. However, by providing additional forage in upland areas without increasing AUMs in the allotment, and by creating a new upland pasture through fence construction within the Coleman

Pasture, it is likely that existing use at riparian sites, including the unfenced portion of Foskett Spring, would be reduced and indirectly benefit some riparian areas. Reduced stocking levels would result in reduced grazing related impacts to fish habitat, riparian areas, and water quality. Any benefits from grazing related to the maintenance of open water habitat at Foskett Spring may also be reduced, although recent habitat improvement activities at the site (see the Affected Environment section above) have shown that pool excavation can be accomplished without cattle.

The creation of the Pederson FRF Allotment is a purely administrative change that would result no substantial changes to conditions on the ground. Therefore, creation of the Pederson FRF Allotment would have no effects to fish habitat, riparian, and water quality conditions beyond those described above.

Alternative 4: No Permit Issued/No Weed Treatment

Alternative 4 would provide the most rapid rate of recovery to fish habitat, riparian, and water quality conditions as all grazing related impacts would be alleviated.

Environmental Consequences: Burro Springs Allotment (00213)

Alternative 1: No Action

Under Alternative 1, no changes would be made to the current grazing strategy. The current strategy has led to adequate and improving riparian and water quality conditions as described above. Therefore, maintenance and/or continued improvement would be expected with implementation of this alternative.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would result in an increase in the rate of improvement to riparian and water quality conditions when compared to Alternative 1, as stocking levels would be reduced. Reduced stocking levels would result in reduced grazing related impacts to riparian areas and water quality.

Alternative 3: Change Livestock Management/Vegetation Treatments

Alternative 3 would generally have the same effects as Alternative 1 to fish habitat, riparian areas, and water quality. Under Alternative 3, the number of cattle grazing the allotment would be reduced from 165 to 45 and the grazing season would be lengthened from 34 days to 120 days. The number of AUMs authorized to graze would remain the same. The same year end utilization standards would remain in place. Because the number of AUMS would not change and utilization levels would remain the same, the effects of Alternative 3 would generally be the same as Alternative 1.

Alternative 4: No Permit Issued/No Weed Treatment

Alternative 4 would provide the most rapid rate of recovery to riparian and water quality conditions as all grazing related impacts would be alleviated.

Environmental Consequences: Hill Camp Allotment (00215)

Alternative 1: No Action

Under Alternative 1, no changes would be made to the current grazing strategy. The current strategy has led to adequate and improving stream channel, riparian, and water quality conditions as described above. Therefore, maintenance and/or continued improvement would be expected with implementation of this alternative.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would result in an increase in the rate of improvement to stream channel, riparian, and water quality conditions when compared to Alternative 1, as stocking levels would be reduced. Reduced stocking levels would result in reduced grazing related impacts to riparian areas and water quality.

Alternative 3: Change Livestock Management/Vegetation Treatments

The impacts of this alternative on this allotment would be similar to Alternative 1.

Alternative 4: No Permit Issued/No Weed Treatment

Alternative 4 would provide the most rapid rate of recovery to stream channel, riparian, and water quality conditions as all grazing related impacts would be alleviated.

Environmental Consequences: FRF Cahill Allotment (00219)

Alternative 1: No Action

Under Alternative 1, no changes would be made to the current grazing strategy. The current strategy has led to adequate and improving riparian and water quality conditions as described above. Therefore, maintenance and/or continued improvement would be expected with implementation of this alternative.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would result in an increase in the rate of improvement to riparian and water quality conditions when compared to Alternative 1, as stocking levels would be reduced. Reduced stocking levels would result in reduced grazing related impacts to riparian areas and water quality.

Alternative 3: Change Livestock Management/Vegetation Treatments

The impacts of this alternative on this allotment would be the same as Alternative 1.

Alternative 4: No Permit Issued/No Weed Treatment

Alternative 4 would provide the most rapid rate of recovery to riparian and water quality conditions as all grazing related impacts would be alleviated.

Wetlands

Affected Environment:

The Rangeland Health Assessment for the Round Mountain Allotment (BLM 1999b) noted there were 266 acres of palustrine wetlands in the allotment and they were all in Proper Functioning Condition (PFC) (Table 46).

The Rangeland Health Assessment for the Rahilly-Gravelly Allotment (BLM 1999b) noted there were 1,783 acres of wetlands in the allotment, of which 208 acres are palustrine wetland and 1,575 acres are lacustrine (lake/open water) habitat. Approximately 1,656 acres were rated in PFC. The remaining 127 acres of wetlands were rated as non-functional, possibly due to a broken seal in the bottom of May Lake which appeared to be causing de-watering. Livestock grazing was not a contributing factor (Table 47).

The Rangeland Health Assessment for the Burro Springs Allotment (BLM 2004a) noted there were 201 acres of wetlands in the allotment of which 4 acres are palustrine wetlands and 197 acres are lacustrine (lake/open water) habitat. They were all in PFC (Table 48).

The Rangeland Health Assessment for the Hill Camp Allotment (BLM 2004d) noted there were 54 acres of palustrine wetlands in the allotment and they were all in PFC. However, the assessment also noted problems in riparian function at 4 springs (Game, Hidden, Tim, and Jackass) where Rangeland Health Standard 2 (related to riparian function) was not being met and livestock grazing was a contributing factor at 3 of these (BLM 2004). The assessment made recommendations on how to remedy these problems. Subsequently, several spring maintenance or restoration projects were implemented (BLM 2004c). Conditions at these 3 springs are now either meeting or making substantial progress towards meeting Rangeland Health Standard 2 (Table 49).

The Rangeland Health Assessment for the FRF Cahill Allotment (BLM 2004e) noted there were 257 acres of palustrine wetlands in the allotment and they were all in PFC (Table 50).

Environmental Consequences: Round Mountain Allotment 00211

<u>Alternatives 1 and 3</u>

The 266 acres of palustrine wetlands in the Round Mountain Allotment are functioning at PFC under the existing grazing practices and livestock grazing does not appear to be a factor limiting Riparian/Wetland function. Under current management (Alternative 1) and the proposed grazing season extension of seven days (Alternative 3) the 266 acres of wetlands is expected to maintain its current condition over time and continue to function at PFC.

<u>Alternatives 2 and 4</u>

Under these alternatives, wetland vegetation in this allotment would be expected to maintain or improve in condition with the reduction in livestock use.

Environmental Consequences: Rahilly-Gravelly Allotment 00212

<u>Alternatives 1 and 3</u>

The 208 acres of palustrine wetlands and 1,783 acres of lacustrine habitat found in the Rahilly-Gravelly Allotment are functioning at PFC and livestock grazing does not appear to be a factor limiting Riparian/Wetland function. Under current management (Alternative 1) the wetlands would be expected to maintain their

condition over time and continue to function at PFC. The impacts to wetlands under Alternative 3 would be somewhat greater than Alternative 1. However, the wetlands would be expected to maintain their condition over time and continue to function at PFC. The 127 acres of wetlands at May Lake rated as nonfunctional would likely remain so until the lakebed seal in the bottom of the waterhole can be restored.

Alternatives 2 and 4

Under these alternatives, wetland vegetation conditions in this allotment would be expected to maintain or improve with the reduction in grazing use or complete removal of livestock grazing.

Environmental Consequences: Burro Springs Allotment 00213

Alternatives 1 and 3

The wetlands in the Burro Springs Allotment are currently in PFC and livestock grazing does not appear to be a factor limiting Riparian/Wetland function. Under current management (Alternative 1) and Alternative 3 (extend grazing season) all wetlands would be expected to maintain their condition over time and continue to function at PFC.

Alternatives 2 and 4

Under these alternatives, wetland vegetation condition would be expected to maintain or improve with the reduction in grazing use. All wetlands would be expected to continue to function at PFC.

Environmental Consequences: Hill Camp Allotment (00215)

Alternatives 1 and 3

The 54 acres of palustrine wetlands found in the Hill Camp Allotment are currently in PFC and livestock grazing does not appear to be a factor limiting Riparian/Wetland function. Under current management (Alternative 1) and Alternative 3, the 54 acres of wetlands would be expected to maintain its condition over time and continue to function at PFC.

Alternatives 2 and 4

Under these alternatives, wetland vegetation would be expected to maintain or improve in condition with the reduction in livestock use. All wetlands would be expected to continue to function at PFC.

Environmental Consequences: FRF Cahill Allotment (00219)

Alternatives 1 and 3

The 257 acres of wetlands in the FRF Cahill Allotment are currently functioning at PFC and livestock grazing does not appear to be a factor limiting Riparian/Wetland function. Under current management (Alternative 1) and alternative 3, the 257 acres of wetlands would be expected to maintain its condition over time and continue to function at PFC.

Alternatives 2 and 4

Under these alternatives, wetland vegetation condition would be expected to maintain or improve with the reduction in grazing use or complete removal of livestock grazing. All wetlands would be expected to continue to function at PFC.

Upland Vegetation

Affected Environment: Round Mountain Allotment (00211)

The Round Mountain Allotment is dominated by Round Mountain on the border between the East and West Pastures. The allotment is bordered in the southeast by Twelvemile Creek and generally slopes down from west to east. Most of the allotment lies between 6,000 feet elevation on the west edge to 5,000 feet in the East Pasture.

Table 18 and Map 5A describe the dominant plant communities within the allotment, as summarized from the South Lake Ecological Site Inventory (ESI) which is hereby incorporated by reference in its entirety. The low sagebrush communities are the dominant types occupying about 43% of the allotment with low sagebrush/Sandberg bluegrass being the most common at 28% of the allotment. The mountain big sagebrush communities with a variety of understory grasses occupy about 18% of the allotment. The most common understory grass is Mountain big sagebrush/Thurber's needlegass at about 11% of the allotment. Another important vegetation type is antelope bitterbrush/grass community occupying about 10% of the allotment with Thurber's needlegrass being the most common understory grass. About 5% of the allotment has western juniper as the dominant plant species with a variety of understory vegetation.

Several indicators of plant community health are described. These include Soil Surface Factor (SSF), current dominant vegetation, Observed Apparent Trend (OAT), condition rating, and seral stage. Soil Surface Factor (SSF) is an indicator of accelerated erosion and is a method of documenting observations regarding erosion. With 12% (Table 15) of the allotment being stable and 87% in the Slight category and no acres in the moderate or higher classes, there is little or no active soil erosion or evidence of past erosion on these areas. This indicates the vegetation cover and litter are sufficient to limit soil movement, pedestalling, rills and gullies.

The Observed Apparent Trend (OAT) for the vegetation communities on public land was determined during the ESI (1987) and is seen in Table 16. In 1987, the OAT recorded that 25% of the allotment was in upward condition and most of the allotment (73%) was in a static trend.

The ESI compares the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. Based on the ESI data, the percent of the allotment in each seral stage or ecological condition is summarized in the Table 19.

The 3% of the allotment in the early seral stage includes the Antelope bitterbrush, aspen patches and the Silver sagebrush with no grass understory. The antelope bitterbrush and the aspen occur together in Long Canyon and along fifteen mile creek. The Antelope bitterbrush and the aspen patches in Long canyon have been burned and received juniper cutting treatment since the inventory was done and are improving. The antelope bitterbrush and the aspen stands found in fifteen mile creek are also improving as they are now within the Fifteenmile Creek exclosure. About 67% of the allotment is in the mid-seral condition and 13% is in the late seral condition. Most of the late seral acreage is in the low sagebrush/Idaho fescue communities. About 16 % of the allotment is unknown inclusions.

Table 18. Dominant Vegetation in the Round Mountain Allotment (00211)

Vegetation Type	Acres	Percent of Allotment
JUNCUS*	**20**	0.1%
ARCA Silver sagebrush	83	0.4%
Antelope Bitterbrush /Grass		
PUTR-AGSP Antelope bitterbrush/ blue bunch wheatgrass	152	1%
PUTR-STTH Antelope bitterbrush/ Thurber's needlegrass	1,170	6%
PUTR-BRTE Antelope bitterbrush/cheatgrass	583	3%
Antelope Bitterbrush /Grass TOTAL	**1,905**	**10%**
Low sagebrush/Grass		
ARAR-FEID Low sagebrush/fescue	2950	15%
ARAR-POSE Low sagebrush/Sandberg bluegrass	5377	28%
Low sagebrush/Grass TOTAL	**8,327**	**43%**
Big Sagebrush/Grass		
ARTR2-AGSP big sagebrush/blue bunch wheatgrass	426	2%
Big Sage/Grass TOTAL	**426**	**2%**
Mountain Sagebrush/Grass		
ARTRV Mountain big sagebrush	202	1%
ARTRV-AGSP Mountain sagebrush/blue bunch wheatgrass	165	1%
ARTRV-POSE Mountain big sage/ Sandberg bluegrass	96	1%
ARTRV-FEID Mountain big sage/Idaho fescue	862	5%
ARTRV-SIHY Mountain big sagebrush/bottlebrush squirreltail	111	1%
ARTRV-STTH Mountain big sagebrush/ Thurber's needlegrass	2065	11%
Mountain Sagebrush/Grass TOTAL	**3,501**	**18%**
Western Juniper/Low Sagebrush/Grass		
JUOC-ARAR-POSE Western Juniper Low Sagebrush/Sandberg bluegrass	213	1%
Western Juniper/Mountain Sagebrush/Grass		
JUOC-ARTRV-SIHY Western Juniper/ Mountain big sagebrush/ bottlebrush squirreltail	193	1%
JUOC-ARTRV-STTH Western Juniper/ Mountain big sagebrush/ Thurber's needlegrass	2	T
JUOC-ARTRV-FEID Western Juniper/ Mountain big sagebrush/ Idaho fescue	2	T
Western Juniper/Mountain Sagebrush/Grass TOTAL	**197**	1%
Western Juniper/Big Sagebrush/Grass		
JUOC-ARTR2-AGSP Western Juniper/big Sagebrush/blue bunch wheatgrass	496	3%
Quaking Aspen		
POTR-ELGL Quaking Aspen/blue wildrye	2	Trace
POTR Quaking Aspen	120	1%
TOTAL VEGETATION	**15,290**	**80%**
Rockland/ Rubble	96	1%

Inclusions**	3,715	19%
ALLOTMENT TOTAL	**19,101**	

** The plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at http://www.plants.usda.gov).*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different (often unknown or unmapped) vegetation communities.*

Table 19. Ecological Condition Class for the Round Mountain Allotment (00211)

Seral Stage	Percent comparability to Potential Natural Community	Percent of allotment in seral stage
Early	0-25%	3%
Mid	26-50%	67%
Late	51-75%	13%
Unknown*		16%

** The unknown acres include inclusions within a vegetation community that represent transition areas and plant communities too small to be mapped separately.*

There are 7 long term trend plots in the allotment and the type of plot and the trend is summarized in Table 20. There is one trend plot in East Pasture, one in North Pasture and 5 in the West Pasture. The trend plot in the North Pasture (RM-01) is a long term photo plot and the trend plot in East Pasture (RM-02) is a long term photo plot with associated step-toe vegetation transect. The five trend plots in the West Pasture include four long term photos plots (RM-03, 04, 05, 06) and one long term photo plot (RM-07) with associated step-toe vegetation transect.

Table 20. Ecological Trend by Pasture Based on Long-term Monitoring Photos and Plots on the Round Mountain Allotment (00211)

Pasture	Monitoring plot#	Photo Trend Years Taken	Transect Method Years	Trend
North	RM-01	Photo 14 years 1969-2011	Photo	Photo trend Upward 1969-1989 Static 1989-2011
East	RM-02	15 years 1969-2011	Steptoe 5 years 1986-2011	Upward Vegetation cover 28%-52%
West	RM-03	Upward 12 years 1969-2011	Photo	Photo trend upward
West	RM-04	Upward 14 years 1969-2012	Photo	Photo trend upward
West	RM-05	Static 14 years 1970-2011	Photo	Photo trend Static
West	RM-06	Static 14 years 1969 --2011	Photo	Photo trend Static except in increase in juniper size and density
West	RM-07	Upward 8 years 1986-2011	Steptoe 7 years 1986-2011	Trend Upward Vegetation cover 11% to 64% Grass Cover from 6% to 33%
West	RM-08*	Upward 5 Years 1997-2013	Stubble Height	Photo trend Upward

** Riparian transect established on Fifteenmile Creek to determine stubble height and willow use.*

There is also one riparian photo plot along Fifteenmile Creek established in 2002. At the riparian transect stubble height and browse data was collected various years between 2002 and 2013.

The trend photos for the North Pasture have shown an upward trend since the 1970s and static trend in recent years. There appears to be more grass cover than in the 1970s and even the low sagebrush is more vigorous.

The vegetation transect and photos from the East Pasture trend plot (RM-02) illustrates an increase in the vegetation cover, especially in the antelope bitter brush and sagebrush, with more grass cover as well. The other noticeable difference in the photos is the increase in juniper density and size since the 1970s.

The photo trend plots RM-3 and RM-04 were taken in Long Canyon. The photos illustrated an upward trend in ecological condition with higher vegetation cover and better bank stability. This upward trend appeared in the last 15 years following various juniper control projects in Long Canyon.

The trend plot RM-07 in the West Pasture had significant increase in vegetation cover since 1986. Following the prescribed fire in 2003 there was an increase in grass cover and forb cover (BLM 2013a). The shrub cover (sagebrush and bitterbrush) declined in 2005 following the prescribed fire, but the increase in grass and forb cover raised the total vegetation cover in 2011 to 64%. The photos also illustrate that as there was a reduction in juniper and shrubs, there was a noticeable increase in grass and forb cover.

The riparian photo plot on Fifteenmile Creek (RM-08) illustrates an improvement in riparian conditions over the last 10 years, but the juniper control on the creek has changed the appearance of the plot. The photo point in 2013 was dry and the condition of the plot thru the years is dependent on the amount of precipitation that year.

Environmental Consequences: Round Mountain Allotment (00211)

Effects Common to Alternatives 1-4

The impacts of continuing grazing under a rest-rotation grazing system on the upland plant communities within the Lakeview Resource Area have previously been analyzed in the *Draft Lakeview RMP/EIS* and *Lakeview Proposed RMP/Final EIS* (BLM 2001, 2003a) and these analyses are incorporated herein by reference. In summary, the vegetation composition of key species is expected to improve over time under this type of grazing system (BLM 2003a; pages 4-5 and 4-9). In addition, a rest rotation system would significantly improve the composition of the key perennial herbaceous species within both the big sagebrush/grassland and low sagebrush- grassland communities (BLM 2001; page A-162). Absent a wildfire, juniper expansion is expected to continue in the allotment regardless of grazing strategies, as it out-competes understory grasses and shrubs for available moisture and soil nutrients.

The vegetation would continue to be negatively impacted in livestock concentration areas near water sources and cattle trails under Alternatives 1-4. Using the use pattern maps, size and volume of the water sources (springs and dirt tanks) it is estimated that cattle tend to concentrate within about a quarter mile around the existing major water sources (a quarter of a mile buffer around a water source represents approximately 125 acres). There are smaller waterholes and less productive springs that with less water available receive less grazing pressure and the concentrated area of heavy use is 0.1 mile around the source or approximately 25 acres. These estimates of the disturbed areas for both major and minor water sources (Table 17) are for the purpose of calculation and comparison and will vary depending on topography, yearly precipitation and location in the pasture.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. The miles of fence located within an allotment where cattle are known to trail were estimated and

using the formula (# mi. x 5 ft. x 5,280 ft. per mi./ 43,560 $ft.^2$ per acre) the area of potential disturbance associated with past fence construction and livestock trailing was calculated. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment. It is assumed that the acres impacted by trailing along fences will be similar in alternatives where grazing is occurring. The breakdown of the estimated acreage impacted by concentrated livestock use in each allotment by alternative is summarized in Table 17.

Alternatives 1 and 3:

There are 2,169 acres (11%) in the Round Mountain allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. However with the rest rotation grazing system approximately one third of this area is rested every year so only about 8% of the allotment is impacted by livestock concentration each year. Most of this estimated use is around the 15 major water sources, which includes 8 major constructed waterholes, with 4 in North Pasture and 2 each in West and East pastures and 7 major springs with 5 being in East Pasture and 2 in West Pasture (Map 3A). There are 5 additional water sources that receive less grazing pressure and cattle concentration impacts are within about one-tenth of a mile around these minor water sources. Therefore approximately 125 acres around minor water sources would be impacted by concentrated grazing (Table 17).

The amount of concentrated use on creek banks seen in Table 17 includes Twentymile Creek, Long Canyon and Fifteenmile Creek. The area assumed to be impacted would be a 100 yard buffer along the 0.25 mile of Twentymile Creek, 1.5 miles of Long Canyon and 1 mile of Fifteenmile Creek that are accessible to grazing. Therefore the total 2.75 miles with a 300 foot buffer estimates 100 acres are impacted by concentrated livestock use along these water sources. Over 3 miles of Fifteenmile Creek and 0.75 miles of Twentymile Creek are either excluded with fences or are inaccessible. Therefore, the impacts of livestock on vegetation along about 60% of the riparian areas in this allotment is prevented or otherwise mitigated by existing exclosure fences and topography.

There is additional livestock concentration around a finger of Big Lake and Lucky Reservoir as both extend into the north edge of North Pasture. This is an additional 60 acres that receives heavy use from concentrated livestock use because of the close proximity to water.

Cattle trails located along the 15 miles of fence within the allotment where cattle are known to trail account for about another 9 acres of disturbance associated with past fence construction and livestock trailing (Table 17). BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

The grazing permit addressed in this EA authorizes only 61% of the total livestock grazing use allowed on this allotment. Therefore, only 61% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 886 acres or 5% of the allotment.

The use pattern mapping of the allotment over the last 10 years showed even lower percentages of the allotment were heavily used. The percent of heavy use was between 2% in the North Pasture (2008) and 8% in the West Pasture (2009). The 10 year average of acres mapped as heavy use for the East Pasture was 5%, the North Pasture, 5% and the West Pasture, 6%. This average percentage was only for years the pastures were grazed and does not include the rest years. Therefore with 1/3 of the allotment being rested every year, the percent of the total allotment being mapped as heavy use would be 3-5%. This data and the maps are on file in the Lakeview Resource Area Field Office.

This alternative would maintain slight to moderate forage utilization on over 92% of the allotment being grazed each year and 33% of the allotment is being completely rested each year. The average utilization in the years they were grazed was 45% in the East Pasture, 38% in the North Pasture and 37% in the West Pasture. This level of use would result in the maintenance of existing plant communities and species composition. Grasses and forbs that are grazed during their main spring-summer growing season would be completely rested every third year. Shrubs that become palatable to livestock during their late summer-fall growth cycle would never be grazed during this critical summer-fall period.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3. The rest rotation grazing management as adjusted through the flexibility provided in the annual application process, would continue to control livestock distribution, grazing utilization levels and provide rest from grazing. This rest rotation grazing management would likely sustain the current plant cover and species diversity. Grazing at light to moderate intensities would result in a diversity of residual grass cover heights across the allotment. The ecological site conditions have been observed to be very stable or improving under the current livestock grazing system. This trend would continue into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 337 AUMs would result in some change in the impacts to vegetation by reducing the stock density around the water sources. However a 50% reduction in the AUMs on this permit only reduces the AUMs on the allotment by 30% because another permittee on a separate permit has 39% of the AUMs. The reduction in acres impacted may be near 30% less than Alternatives 1 and 3, as the lower stock density around water sources would shrink the area impacted. Therefore, the impacted area around water sources and along fences may go down to 1,020 acres or 5% of the allotment (Table17). The acreage of vegetation impacted by heavy use under alternative 2 (5%) would not be significantly different from the acreage of vegetation impacted by heavy use under alternative 1 (8%).

Across the allotment the average utilization levels would be lower as the amount of forage consumed by livestock would be approximately 70% as much as under alternative 1. The reduced utilization will vary between pastures depending on vegetation type and topography. Using the previous average utilization levels by pasture, the future estimated average utilization levels would be 32% in the East Pasture, 27% in North Pasture and 26% in West Pasture. These decreased utilization levels would still in light use category (20-40%) and therefore not a significant change across the allotment. Across most of the allotment the reduced utilization levels would result in a negligible increase in ground cover of grass species preferred by cows, and the composition of species would remain about the same.

There would be no differences in the impacts between Alternatives 1 and 2 in each pasture every third year (rest year) because of the rest year in the rest rotation grazing system. The allotment would be expected to continue to meet rangeland health Standard 3 into the foreseeable future.

Alternative 3: Change Grazing Management/Vegetation Treatments

Under Alternative 3 the impacts would be the same as Alternative 1 as extending the grazing season by 7 days would not increase the number of AUMs in the allotment. One extra week to retrieve cattle would not significantly change the utilization or the grazing pattern.

Under Alternative 3, there are 6 new herbicides proposed for use to control noxious weeds; 4 of these are proposed specifically for use in this allotment to control infestations of known noxious weeds (Table 31). The potential impacts to upland vegetation of these new herbicides are addressed in Tables 39-44. There are noxious

weeds that can out-compete native vegetation and therefore reduce or eliminate native vegetation from a site. Some of these weeds require these new herbicides to control their spread and protect the native vegetation from being replaced long-term (Table 31). Therefore, control of noxious weeds by these new herbicides would benefit native upland vegetation over the long-term.

Alternative 4: No Permit Issued/No Weed Treatment

Plant communities shifts occur very slowly in the high desert climate without the influence of a major disturbance such as fire, weed invasion or catastrophic event. Under this alternative, there would be little or no noticeable difference in plant communities in the short-term 5-10 years and only slight shifts in vegetation over the long-term (10-20 years) (Holecheck *et al.* 2006).

The elimination of grazing under this alternative would only reduce total AUMs of use in the allotment by about 61%. The other permittee would continue to graze with 39% of the current number of AUMs. Therefore, the 61% reduction in AUMs would reduce the number of acres impacted by livestock concentration down to about 464 acres (Table 17) or 2% of the allotment. The vegetation in the 989 acres (1,453 -464=989 acres) subject to lower livestock concentration would benefit from lighter grazing use levels over the long-term (5-10 years). Under alternative 1 the majority of the allotment (92%) currently receives moderate to no use so the reduction in AUMs would lower utilization levels, but would only result in a negligible increase in ground cover of grass species preferred by cows, and the composition of species would remain about the same. Some disturbance may persist due to continued use by wildlife such as antelope and deer.

Absent a wildfire, juniper expansion is expected to continue regardless of grazing strategies, as it out-competes understory grasses and shrubs for available moisture and soil nutrients.

No use of herbicides would result in the spread of noxious weeds that are currently controlled to some degree by the 4 existing herbicides. These weeds can out-compete native vegetation and, therefore, reduce or eliminate native vegetation from a site. The spread of some noxious weeds would negatively impact native vegetation in the long-term.

Affected Environment: Rahilly Gravelly Allotment (00212)

The Rahilly Gravelly Allotment is divided into six pastures. The pastures are Coleman Lake, Rahilly, Sucker Creek, Horse Creek, Pederson and Nevada (Map 3B). The eastern part of the allotment is the Coleman Lake Valley and the western edge is the Horse Creek drainage. In between the ridges are dominated by low sagebrush/grass *Artemisia arbuscula* (ARAR8) (35% of the allotment)), big sagebrush/grass *Artemisia tridentata* (ARTR2), and juniper dominated inclusions with riparian vegetation found along the Horse Creek. Plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at http://www.plants.usda.gov.

Table 21 and Map 5B describe the composition of existing dominant plant communities within the allotment, as summarized from data in the South Lake Ecological Site Inventory (ESI), which is hereby incorporated by reference in its entirety. Table 22 summarizes vegetation data for just the Pederson Pasture.

Several indicators of plant community health are described. These include current dominant vegetation, Soil Surface Factor (SSF), Observed Apparent Trend (OAT), condition rating, and seral stage. Soil Surface Factor (SSF) is an indicator of accelerated erosion and is a method of documenting observations regarding erosion. With 72% (Table 15) of the allotment being slight and no acres in the moderate or higher classes there is little or no active soil erosion or evidence of past erosion on these areas. This indicates the vegetation cover and litter are sufficient to limit soil movement, pedestalling, rills and gullies.

Table 21. Dominant Vegetation Types in Rahilly Gravelly Allotment

Vegetation Type	Acres	% of Allotment
Grasses		
AGSP* Bluebunch wheatgrass	69	T
DISP Inland saltgrass	484	1%
Grass Total	**553**	**1%**
SHRUBS		
CHVI-Green rabbitbrush	274	1%
Shrubs/Grasses		
ATCO-BRTE Shadscale saltbush/cheatgrass	563	2%
ATCO-SIHY Shadscale saltbush /bottlebrush squirreltail	1296	3%
GRSP-SIHY Spiney hopsage//bottlebrush squirreltail	576	2%
SAVE-DISP Greasewood/ Inland saltgrass	292	1%
Shrub/Grass TOTAL	**2,727**	**7%**
Low sagebrush/Grass		
ARAR-POSE Low sagebrush/Sandberg bluegrass	12,407	34%
BIG SAGEBRUSH		
ATTR2 Big Sagebrush	3,123	8%
BIG SAGEBRUSH/GRASS		
ARTR2-AGSP Big Sagebrush/blue bunch wheatgrass	727	2%
ARTR2-BRTE Big Sagebrush/cheatgrass	2,762	7%
ARTR2-POSE Big Sagebrush/ Sandberg bluegrass	2,748	7%
BIG SAGEBRUSH/GRASS TOTAL	**6,237**	**17%**
WYOMING BIG SAGEBRUSH/GRASS		
ARTRW-BRTE Wyoming big sagebrush/cheatgrass	367	1%
Mountain Big Sage/Grass		
ARTRV-POA++ Mountain big sagebrush/bluegrass	863	2%
TREE		
JUOC- ARTR2-AGSP Western Juniper/big sagebrush/bluebunch wheatgrass	247	1%
TOTAL VEGETATION	**26,798**	**72%**
Playa	2,103	6%
Inclusions**	4,805	13%
Incomplete	3,309	9%
ALLOTMENT TOTAL	**37,015**	

** The plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at http://www.plants.usda.gov).*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different (often unknown or unmapped) vegetation communities.*

The Observed Apparent Trend (OAT) for the vegetation communities on public land was determined during the ESI and is summarized in Table 16. In 1987, the OAT recorded that 2% of the allotment was in upward condition, 69% was static and 2% was in downward trend. The area in downward trend was saltbush/cheatgrass and rabbitbrush communities located in the Coleman Lake Pasture bordering the private irrigated meadows in

Table22. Dominant Vegetation in Pederson Pasture of the Rahilly Gravelly Allotment (00212)

Vegetation Type	Acres	% of Allotment
Grasses		
AGSP* Bluebunch wheatgrass	69	2%
Low sagebrush/Grass		
ARAR-POSE Low sagebrush/Sandberg bluegrass	506	18%
BIG SAGEBRUSH/GRASS		
ARTR2-AGSP Big Sagebrush/blue bunch wheatgrass	418	15%
ARTR2-BRTE Big Sagebrush/cheatgrass	220	8%
ARTR2-POSE Big Sagebrush/ Sandberg bluegrass	354	12%
BIG SAGEBRUSH/GRASS TOTAL	**992**	**34%**
TOTAL VEGETATION	**1567**	**54%**
Inclusions**	309	11%
Incomplete	1004	35%
ALLOTMENT TOTAL	**2880**	

** The plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at http://www.plants.usda.gov).*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different (often unknown or unmapped) vegetation communities.*

Warner Valley. These are areas that were heavily grazed historically due to their close proximity to the private irrigated meadows. The historical heavy grazing resulted in loss of perennial grass understory and the downward OAT rating. However, in the last 30 years these areas were fenced off from the meadow and the utilization levels were light resulting in an early seral, but stable plant community.

The ESI also compares the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. Based on ESI, the percent of the allotment in each seral stage is summarized in the Table 23.

Table 23. Ecological Condition of Rahilly Gravelly Allotment (00212) from ESI

	Ecological Condition Classes					
	Early	**Mid**	**Late**	**Climax**	**Rockland or Playa**	**Unknown***
Acres	6610	6905	11987	1296	2103	8,114
Percent of Vegetation	18%	19%	32%	4%	6%	22%

** The unknown acres include inclusions within a vegetation community that represent transition areas and plant communities too small to be mapped separately.*

About 19% of the allotment is in the mid-seral condition and 32% is in the late seral condition. Most of the late seral acreage is in the low sagebrush/Sandberg's bluegrass type. The 18% in the early seral stage are shrub communities with either no understory or cheatgrass understory. These communities are in the northern part of Coleman Lake Pasture and close to the private irrigated meadows in Warner Valley. These areas were heavily grazed historically resulting in the loss of perennial grasses. These communities are now stable, but would require brush control and reseeding to restore perennial grass understory and improve the ecological condition rating.

There are four long-term upland trend plots in the allotment, with one in Rahilly Pasture, one in Nevada Pasture and 2 in Sucker Creek Pasture (Table 24). Three of the trend plots (RH-01, RH-02, RH-04) are long term photo

Table 24. Ecological Trend by Pasture Based on Long-term Monitoring Photos and Plots in Rahilly Gravelly Allotment (00212)

Pasture	Monitoring plot#	Photo Trend Years Taken	Transect Method Years	Trend
Sucker Creek	RG-01	Photo Static 10 years 1983-2013	Steptoe 9 years 1985-2013	Photo trend Static 1983-2013 Vegetation Trend Upward 1985-1998 Static 1998-2013
Sucker Creek	RG-02	Photo Static 11 years 1976-2012	Photo	Photo Trend Static
Rahilly	RG-03	Photo Static 10 years 1971-2010	Steptoe 6 years 1985-2013	Photo trend Static Vegetation Trend Upward 1985-1998 Static 1998-2013 Increase in Size of Juniper trees
Nevada	RG-04	Upward 13 years 1971-2013	Steptoe 6 years 1985-2013	Photo trend Upward Vegetation Trend Upward 1985-1998 Static 1998-2013

plots with associated step-toe vegetation transects. One of the trend plots in the Sucker Creek (RH-03) Pasture is simply a long term photo plot. The trend for three of the plots (RG-01, RG-02, and RG-03) was static with little noticeable change in the photos and no change in vegetation cover or composition with the vegetation transects (BLM, 2013 S&G Update). The other plot (RG-04) showed an upward trend in the photos especially from the 1970s as ground cover appears to have increased and antelope bitterbrush has increased in size and vigor between the 1970s and now. The vegetation transect for RG-4 also showed an increase in ground cover and an increase in the cover and frequency of antelope bitterbrush between 1985 and the 2013.

The Rangeland Health Assessment found that Standards 1 and 3 are being met (BLM 1999b) in the allotment and that includes the Pederson Pasture. The existing dominant vegetation in the Pederson Pasture are summarized in Table 22. SSF and OAT ratings included the Pederson Pasture area. The SSF rating for the Pederson Pasture was 58% of the pasture rated in the slight erosion condition and 42 percent unknown (Table 15). This illustrated that the Pederson Pasture, like the allotment as whole, exhibits infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form and root occupancy for the soil is appropriate

The Observed Apparent Trend (OAT) data (Table 16) was used to determine trend indicators correlated to soil stability within the Pederson Pasture. These indicators are: surface litter, pedestals, and gullies. OAT data collected indicates 20% in upward trend, 38% of the Pederson Pasture with stable soils and 42% is rated as unknown. This indicates that in the Pederson Pasture the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes.

Environmental Consequences: Rahilly Gravelly Allotment (00212)

<u>Effects Common to Alternatives 1 - 3</u>

The impacts of continuing grazing under a rest rotation grazing system on the upland plant communities within the Lakeview Resource Area have previously been analyzed in the *Draft Lakeview RMP/EIS* and *Lakeview*

Proposed RMP/Final EIS (BLM 2001, 2003a) and these analyses are incorporated herein by reference. In summary, the vegetation composition of key species is expected to improve over time under this type of grazing system (BLM 2003a; pages 4-5 and 4-9). In addition, a rest rotation system would significantly improve the composition of the key perennial herbaceous species within both the big sagebrush/grassland and low sagebrush- grassland communities (BLM 2001; page A-162). Absent a wildfire, juniper expansion is expected to continue regardless of grazing strategies, as it out-competes understory grasses and shrubs for available moisture and soil nutrients.

The vegetation would continue to be negatively impacted in livestock concentration areas near water sources and cattle trails under Alternatives 1-3. Using the use pattern maps, size and volume of the water sources (springs and dirt tanks) it is estimated that cattle tend to concentrate within about a quarter mile around the existing major water sources (a quarter of a mile buffer around a water source represents approximately 125 acres). There are smaller waterholes and less productive springs that with less water available receive less grazing pressure and the concentrated area of heavy use is 0.1 mile around the source or approximately 25 acres. These estimates of the disturbed areas for both major and minor water sources (Table 17) are for the purpose of calculation and comparison and will vary depending on topography, yearly precipitation and location in the pasture.

Alternative 1: No Action

There are 3,595 acres (11%) in the Rahilly Gravelly allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. However with the rest rotation grazing system approximately one fourth of this area is rested every year so only about 8% of the allotment is impacted by livestock concentration each year. Most of this estimated use (2,625 acres) is around the 21 major water sources, which includes 13 major constructed waterholes, 7 major springs and one well (Map 3B). There are 12 additional water sources that receive less grazing pressure and cattle concentration impacts are within about one-tenth of a mile around these water sources. Therefore approximately 300 acres around minor water sources would be impacted by concentrated grazing (Table 17). The total acreage impacted around all water sources is about 2,925 acres. However one of four pastures is rested every year so the actual heavy each is only about 2,200 acres around existing water sources.

The Pederson Pasture is not included in these calculations because the use is only 55 AUMs in the summer by horses and 79 AUMs in the winter by cows. During both seasons the water sources are on private land and the concentrated use (0.25 mile from water) is on private land. Therefore there is no concentrated impact from grazing on BLM land in the Pederson Pasture.

The concentrated use around Coleman Lake, Soda Lake, and May Lake is estimated to be about a 200 yard wide zone along the edge of these playas and impact area would be about (9 miles of perimeter times 600 feet) 655 acres (Table 17).

Horse Creek is a riparian area with over 2 miles of steam bank but under alternative 1 there is almost no use on Horse Creek, so long term impacts to the riparian vegetation are negligible (Table 17). In addition livestock use in the Horse creek Pasture of this allotment is partially governed by the Biological Opinion under consultation with the United State Fish and Wildlife Service (USFWS 1997). As a part of the Biological Opinion the creek is monitored for herbaceous use and willow utilization to determine how much the cows can graze the Horse Creek Pasture

Cattle trails located along the 25 miles of fence within the Rahilly Gravelly allotment where cattle are known to trail account for about another 15 acres (Table 17) of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-

country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

The total area estimated to be impacted by livestock concentration around water and along fences is 3,590 acres or about 10% of the allotment. Since one pasture is rested every year, the annual impact by concentrated use is about 2,696 acres or 8% of the allotment (Table 17).

The use pattern mapping of the allotment over the last 10 years showed even lower percentages of the allotment were used heavy. The percent of heavy use was between 1% in the Coleman Lake and Sucker Creek Pastures (2002) and 13% in the Coleman Lake Pasture (2007). The 10 year average of acres mapped as heavy use for the Coleman Lake Pasture was 6%, the Sucker Creek Pasture, 4% and the Rahilly Pasture, 6.5%. This average percentage was only for years the pastures were grazed and does not include the rest years. Therefore with 1/4 of the allotment being rested every year, the percent of the total allotment being mapped as heavy use would be 4-5%. This data and the maps are on file in the Lakeview Resource Area Field Office.

Even using the worst case scenario, the concentrated use calculations (Table 17), the annual impact by concentrated use is about 2,696 acres or 8% of the allotment. This alternative would maintain slight to moderate forage utilization across 92% of the allotment being grazed each year and 25% of the allotment is being completely rested each year. The average pasture utilization in the years they were grazed was 43% in the Coleman Lake Pasture, 42% in the Sucker Creek Pasture and 46% in the Rahilly Pasture. This level of use would result in the maintenance of existing plant community and species composition. Grasses and forbs that are grazed during their main spring-summer growing season would be completely rested every other year in Sucker Creek and Rahilly Pastures and every fourth year in the Coleman Lake and Nevada Pastures. Shrubs that become palatable to livestock during their late summer-fall growth cycle would never be grazed during this critical summer-fall period except in the Nevada Pasture and the trend plot (RM-04) in this pasture indicates that palatable shrubs such as antelope bitterbrush have been thriving the last 20 years.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3. The rest rotation grazing management as adjusted through the flexibility provided in the annual application process, would continue to control livestock distribution, grazing utilization levels and provide rest from grazing. This rest rotation grazing management would likely sustain the current plant cover and species diversity. Grazing at light to moderate intensities would result in a diversity of residual grass cover heights across the allotment. The ecological site conditions have been observed to be very stable or improving under the current livestock grazing system. This trend would continue into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 891 AUMs would result in some change in the impacts to vegetation by reducing the stock density and utilization levels. The reduction in acres impacted may be near 50% as the lower stock density around water sources would shrink the area impacted. Therefore the higher impacted area around waterholes and along fences may go down to 1,348 acres or 4% of the allotment (Table 17). This compares with 2,696 acres or 8% of the allotment under Alternative 1.

Across the allotment the average utilization levels would be lower as the amount of forage consumed by livestock would be approximately half as much as under alternative 1. The average utilization over the last ten years was 44% with Coleman Lake 43%, Rahilly at 46% and Sucker Creek Pasture at 42%. Therefore, the utilization levels would be approximately one half or about 22% under alternative 2. The reduced utilization levels would result in a minor increase in ground cover of grass species close to water, but the composition and production of species would remain about the same.

Alternative 3: Change Grazing Management/Vegetation Treatments

The impacts of concentrated grazing around water sources and along fences identified in Alternative 1 did not include the Pederson Pasture. Therefore the impacts of grazing identified in Alternative 1 would be the same in this alternative if Pederson Pasture was converted into an FRF Allotment. The Pederson Pasture would continue to be grazed by horses in the summer (55 AUMs) and cows (79 AUMs) in the winter. During both seasons the water sources are on private land and the concentrated use (0.25 mile from water) is on private land. Therefore, there would be no concentrated impact from grazing on BLM land in the Pederson Pasture.

This mow and seed project would restore about 500 acres of poor ecological condition shrub-steppe with a cheatgrass understory into a more productive perennial grass and forb community in the north part of Coleman Lake Pasture in the short-term (5-10 years). In the long-term (10-20 years), this seeded area would move towards a native shrubland with perennial grass understory typically associated with lakebed terraces. The new fence would create a new pasture to protect the new seeding in the short-term and provide more management flexibility in the rest rotation grazing system in the long-term (revised Map 2).

The new vegetation, a mixture of crested wheatgrass and basin wildrye, with a variety of native forbs would improve species diversity, ground cover, and plant production. The seeded area, combined with a new fence (1 mile) would create a separate 2,300-acre pasture in the northern part of the Coleman Lake Pasture and improve the flexibility of the grazing rotation. The establishment of perennial grasses in the new pasture would increase the forage base and allow expansion of the grazing period while using the same number of AUMs. This increased flexibility would allow for more rest periods in both the new pasture and the remaining portion of the Coleman Lake Pasture.

Under Alternative 3, 6 new herbicides would be available to control noxious weeds; 4 of these are proposed specifically for use in this allotment to control infestation (Table 32). The potential impacts to upland vegetation of these new herbicides are addressed in Tables 39-44. These weeds can out-compete native vegetation and, therefore, reduce or eliminate native vegetation from a site. Some of these weeds require these new herbicides to control their spread and protect the native vegetation from being replaced long-term (Table 32). Therefore, control of noxious weeds by these new herbicides would benefit native upland vegetation long-term.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, the public land in the allotment would be excluded from grazing. Plant community shifts would occur very slowly in the high desert climate without the influence of a major disturbance such as fire, weed invasion or some catastrophic event. There would be little or no noticeable difference in plant communities in the short-term 5-10 years and only slight shifts in vegetation over the long-term (10-20 years) (Holecheck *et al.* 2006). The majority of the allotment (92%) receives moderate to no use so any changes in vegetation would be slow and insignificant as long-term studies of areas excluded from grazing found no significant difference between moderately grazed sagebrush communities and excluded ones (Rose *et.al*. 1994).

Complete protection from livestock grazing may be relatively ineffective in increasing herbaceous biomass because of the long life and competitive nature of sagebrush (Daddy *et. al*. 1988). Little or no change in vegetation would be expected in the 36% of the allotment that is in the late or climax seral state (South Lake ESI, BLM 1988) which varies only slightly from the potential natural community for these vegetation types. The early seral stage (18% of the allotment) is found in the north edge of the allotment bordering Warner Valley meadows and on the Coleman Lakebed. These areas are virtually devoid of perennial grass and would not change ecological condition without rehabilitation. About 28% of the allotment is either rockland or identified as unknown inclusions. Therefore only in the 19% of the allotment that is in mid seral condition, would long-term shifts in vegetation be likely. These long-term changes may show a 5-10% shift of grass species toward an

increase in those that had been favored by cattle and a decrease in those less utilized by cattle. The shrub component is likely to remain relatively stable.

The total rest from grazing could increase the risk of wildfire. Not only does wildfire reduce sagebrush but was found to be more detrimental to perennial native grasses in rested areas then in grazed areas (Davies *et al.* 2009). Their study speculated that the increased litter component around long-term rested grass plants increased the risk of these plants being killed by wildfire as they saw a decline in perennial grasses inside exclosures after fire.

No use of herbicides would result in the spread of noxious weeds that are currently controlled by the 4 existing herbicides. There are noxious weeds that can out-compete native vegetation and, therefore, reduce or eliminate native vegetation from a site. The spread of some noxious weeds would negatively impact native vegetation in the long-term.

Affected Environment: Burro Springs Allotment (00213)

The Burro Springs Allotment has one pasture (Map 3C) that is part of the Coleman Lake watershed and occupies the area east of Coleman Lake and up the western slopes of the Coleman Rim. The primary vegetation types include salt desert shrubs in the lakeplaya and terraces and big sagebrush/grass on the slopes. Table 25 and Map 5C describes the dominant plant communities within the allotment, as summarized from the South Lake ESI which, is hereby incorporated by reference in its entirety.

Table 25. Dominant Vegetation in Burro Springs Allotment (00213)

Vegetation Type	Acres	% of Allotment
Shrubs/Grasses		
ATCO-BRTE* Shadscale saltbush/cheatgrass	1,592	23%
ATCO-SIHY Shadscale saltbush /bottlebrush squirreltail	337	5%
SAVE-DISP Greasewood/ Inland saltgrass	810	12%
Shrub/Grass TOTAL	**2,739**	**40%**
Low sagebrush/Grass		
ARAR-POSE Low sagebrush/Sandberg bluegrass	2	T
BIG SAGEBRUSH/GRASS		
ARTR2-AGSP Big Sagebrush/blue bunch wheatgrass	732	11%
ARTR2-BRTE Big Sagebrush/cheatgrass	940	13%
BIG SAGEBRUSH/GRASS TOTAL	**1,672**	**24%**
TOTAL VEGETATION	**4,413**	**64%**
Playa	650	9%
Rockland	519	7%
Inclusions**	824	11%
Incomplete	598	9%
ALLOTMENT TOTAL	**7,004**	

** The plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at http://www.plants.usda.gov).*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different (often unknown or unmapped) vegetation communities.*

The salt desert plant communities dominate the lower elevations with shadscale saltbush and greasewood occupying 40% of the allotment. The shadscale saltbush has either cheatgrass or bottlebrush tail dominating the understory. The greasewood (with inland saltgrass in the understory) occupies 12% of the allotment. The slopes

on the eastern part of the allotment are dominated by big sagebrush with either bluebunch wheatgrass (11% of the allotment) or cheatgrass (13% of the allotment) in the understory.

SSF is an indicator of accelerated erosion and is a method of documenting observations regarding erosion. With 62% (Table 15) of the allotment being in the Slight category and no acres in the moderate or higher classes, there is little or no active soil erosion or evidence of past erosion on these areas. This indicates the vegetation cover and litter are sufficient to limit soil movement, pedestalling, rills and gullies.

Based on the OAT, 10% of the allotment was in upward condition and 51% was static with no acres in downward trend. The remaining 42% of the allotment was either rockland, playa, or unknown (Table 16).

The ESI also compares the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. The percent of the allotment in each seral stage or ecological condition is summarized in Table 26.

Table 26. Ecological Conditions of Burro Springs Allotment (00213) from ESI

	Ecological Condition Classes					
	Early	Mid	Late	Climax	Rockland or Playa	Unknown*
Acres	0	1,638	2,678	0	1,169	1,519
Percent of Vegetation	0%	23%	38%	0	17%	22%

** The unknown acres include areas where condition is unknown, as well as inclusions within a vegetation community that represent transition areas and plant communities too small to be mapped separately.*

The Saltbush communities and the big sagebrush/bluebunch wheatgrass community occupy the 38% of the allotment that is in the late seral stage. The mid seral stage (23%) includes the big sagebrush/cheatgrass and the greasewood types. About 22% of the allotment is unknown inclusions and 17% is either rockland or lake playa.

There are 2 long-term photo trend plots in the Burro Springs allotment and photos were taken 10 separate times since 1973. Both photo plots (BS-01, BS-02) are in the big sagebrush/cheatgrass community and the ground cover and composition of perennial vegetation seen in these photos appears stable thru the years.

Environmental Consequences: Burro Springs Allotment (00213)

Effects Common to Alternatives 1 -2:

The impacts of continuing grazing under a winter a grazing system on the upland plant communities within the Lakeview Resource Area have previously been analyzed in the *Draft Lakeview RMP/EIS* and *Lakeview Proposed RMP/Final EIS* (BLM 2001, 2003a) and these analyses are incorporated herein by reference. In summary, the vegetation composition of key perennial herbaceous species is expected to improve or be maintained over time under this type of grazing system (BLM 2003a; pages 4-5 and 4-9). Absent a wildfire, juniper expansion is expected to continue regardless of grazing strategies, as it out-competes understory grasses and shrubs for available moisture and soil nutrients.

Alternative 1: No Action

Vegetation would continue to be negatively impacted in livestock concentration areas near water sources and cattle trails under Alternative 1. The use pattern maps and the abundance of water sources in the single pasture indicate that cattle tend to concentrate within a tenth of a mile around existing spring water source (2 troughs,) and around the 2 existing constructed waterholes (Map 3C). The impacted areas around the spring and troughs,

would be 1/10 mile buffer representing approximately 25 acres/water source (Table 17). Approximately 25 acres (1x 25 acres) around this water source would be impacted by concentrated grazing use.

The impacted areas around the 2 constructed waterholes would be ¼ mile buffer representing approximately 125 acres/water source. Approximately 250 acres (2x 125 acres) around these 2 water sources would be impacted by concentrated grazing use. The concentrated use around Spanish Lake, beyond the area already accounted for by the waterhole is estimated to be about 50 acres (2 miles of shoreline X 200 foot use along shoreline).

Cattle trails located along the 6 miles of fence within the Burro Springs allotment where cattle are known to trail account for about another 4 acres (Table 17) of disturbance associated with past fence construction and livestock trailing. BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

Therefore, the total area estimated to be impacted by livestock concentration around water sources and along fences is 329 acres or about 4% of the allotment (Table 17). However, the grazing permit addressed in this EA authorizes only 64% of the total livestock grazing use allowed on this allotment. Therefore, only 64% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 211 acres or 3% of the allotment.

The average utilization measured across the entire allotment in five of the last ten years was 40%. The use pattern maps for these same 5 years showed the average area of heavy use was 4%. There was a wide range of heavy use from 13% in 2007 to less than 1% in 2011 and 2012. This alternative would maintain slight to moderate forage utilization across 96% of the allotment resulting in the maintenance of existing plant community and species composition. Under the current management the allotment is meeting Rangeland Health Standard 3.

Therefore, the current number of AUMs in Alternative 1 appears appropriate as the utilization levels average 40% across the allotment, the percent of allotment with heavy use is only about 4% and the photo trend plots indicate ecological condition has been stable since the 1970s.

In Alternative 1, the grazing season is only one month in the winter (February). In the long term limiting the grazing to only one month in the winter can impact the limited amount of perennial grass available in the allotment. The perennial grasses available include inland saltgrass , basin wildrye and bluebunch wheatgrass. The inland saltgrass and basin wildrye are only found in the greasewood community (12% of the allotment). The bluebunch wheatgrass (11% of the allotment) is found on the slopes of Coleman Rim. Grazing this allotment only during the winter does limit the forage available as the cheatgrass which occurs on 36% of the allotment is not present in the winter. Cheatgrass as an annual is productive and very plentiful in the allotment most years in the spring months. Therefore the most plentiful forage on the allotment can't be utilized during the winter, putting most of the utilization pressure on the limited perennial grasses. If the utilization levels are kept below 60% in the winter, the perennial grass plants can recover in the spring and summer. These grass plants are able to maximize leaf growth, seed production and root growth during the growing season and mitigate the impacts of grazing during the winter.

Therefore, with only a one month winter grazing season it is important that the annual authorized livestock numbers are appropriate for the amount of perennial forage available that season so as not to exceed the 60% utilization levels.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% (to 90 AUMs) would result in some change in the impacts to vegetation by reducing the stock density around the water sources. The actual reduction in AUMs for the allotment would only be an effective 33% reduction. The other permittee could continue to use his 100 AUMs, so number of AUMs would be reduced from 279 AUMs to 189 AUMs or 33%.Therefore the reduction in acres impacted may be 33% less than Alternative 1, as the lower stock density around water sources would shrink the area impacted. The impacted area around waterholes and along fences may go down to about 223 acres or 3% of the allotment (Table 17).

Across the allotment the average utilization levels would be lower as the amount of forage consumed by livestock would be approximately two thirds as much as under alternative 1. The average utilization over the last ten years was 40% across the allotment. Therefore, the utilization levels would be approximately 27% under alternative 2. The reduced utilization levels would result in a minor increase in ground cover of grass species close to water, but the composition and production of species would remain about the same.

Alternative 3: Change Livestock Management/Vegetation Treatments

The amount of vegetation utilized by livestock grazing would be similar to Alternative 1 for the Burro Springs Allotment as the number of AUMs would be the same. The number of cows may be reduced if the permittee elected to use AUMs for the entire grazing season. The acreage impacted in the Burro Springs Allotment around the water sources and along the fence would be the same as in Alternative 1 (Table 17). The total acres of vegetation impacted would be 329 acres or about 4% of the Burro Springs Allotment and like alternative 1 only 64% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 211 acres or 3% of the allotment.

The average utilization across the allotment would not change much from Alternative 1 as the same number of AUMs would be utilized. Extending the grazing season (2/1-5/51) to more closely match the other permittee would provide greater flexibility and even reduce the impact on perennial grass species in the allotment. Extending the grazing period into the spring period would allow the livestock to utilize the annual cheatgrass which is the dominant grass species on about 36% of the allotment. Cheatgrass is actively growing in the spring and palatable to livestock during this period. Grazing this allotment in the spring when the cheatgrass is abundant would reduce grazing pressure on the perennial grass species such as saltgrass, basin wildrye and bluebunch wheatgrass. While grazing perennial grasses in the spring can be detrimental, the perennial grasses in the Burro Springs allotment saltgrass, basin wildrye and bluebunch wheatgrass do most of their growing in the summer and should recover from any spring use. Therefore, extending the grazing season into the spring (March-May) on this allotment should be beneficial to the perennial grasses. More of the use will be on cheatgrass and perennial grasses will have lower utilization levels than in alternative 1 and still have the summer to recover from any use they do receive. In this particular allotment the switch from winter to winter-spring grazing will not only continue to meet Rangeland Health Standard 3, but may result in improved ecological condition as more of the grazing use is switched from perennial grass to cheatgrass.

There are 6 new herbicides proposed for use to control noxious weeds; 1 of these is proposed specifically for use in this allotment to control infestations of known noxious weeds (Table 33). The potential impacts to upland vegetation of these new herbicides are addressed in Tables 39-44. These weeds can out-compete native vegetation and reduce or eliminate native vegetation from a site. Some of these weeds require these new herbicides to control their spread and protect the native vegetation from being replaced over the long-term (Table 33). Therefore control of noxious weeds by these new herbicides would benefit native upland vegetation long-term.

Alternative 4: No Permit Issued/No Weed Treatment

Plant communities shifts occur very slowly in the high desert climate without the influence of a major disturbance such as fire, weed invasion or catastrophic event. Under this alternative, there would be little or no noticeable difference in plant communities in the short-term 5-10 years and only slight shifts in vegetation over the long-term (10-20 years) (Holecheck *et al.* 2006). In the Burro Spring Allotment there is another permittee who would continue to use his 100 AUMs, so the number of AUMs would be reduced from 279 AUMs to 100 AUMs. The actual reduction in AUMs for the allotment would only be an effective 64% reduction. Therefore the reduction in acres impacted may be 64% less than Alternative 1, as the lower stock density around water sources would shrink the area impacted. The impacted area around waterholes and along fences may go down to about 118 acres or2% of the allotment. This a reduction from the 329 acres identified in alternative 1.

Across the allotment the average utilization levels would be lower as the amount of forage consumed by livestock would be approximately one third as much as under Alternative 1. The average utilization over the last ten years was 40% across the allotment. Therefore, the utilization levels would be approximately one 1/3 or about 13% average utilization under alternative 4. The reduced utilization levels would result in a minor increase in ground cover of grass species close to water, but the composition and production of species would remain about the same.

Under this alternative the majority of the allotment (98%) receives moderate to no use so any changes in the vegetation composition would be slow and insignificant. Little or no change in vegetation would be expected in the 38% of the allotment that is in the late seral. Another 13% of the allotment has annual cheatgrass dominating the understory of big sagebrush so no change would be expected in this type. Therefore only in the 12% of the allotment in the mid seral and Greasewood /saltgrass vegetation would any long-term shifts in vegetation be possible. These long-term changes may show a 5-10% shift of species toward an increase in those that had been favored by cattle and a decrease in those less utilized by cattle. The shrub component (Greasewood) is likely to remain relatively stable.

No use of herbicides would result in the spread of noxious weeds that are currently controlled to some degree by the 4 existing herbicides. There are noxious weeds that can out-compete native vegetation and reduce or eliminate native vegetation from a site. The spread of some noxious weeds would negatively impact native vegetation in the long-term.

Affected Environment: Hill Camp Allotment (00215)

Vegetation within the Hill Camp Allotment comprises a fairly complex sagebrush steppe system. There are multiple plant communities transitioning from one to another as influenced by soil type, elevation and aspect (Map 5C). The majority of the area is over 6,000 feet in elevation with the lowest elevation being about 5,700 feet. Therefore the three main varieties of sagebrush dispersed throughout the allotment include: Basin big sagebrush, *Artemisia tridentata tridentata* (ARTRT), Mountain big sagebrush *Artemisia tridentata vaseyana* (ARTRV), and low sagebrush, *Artemisia arbuscula* (ARAR8). The allotment supports a healthy abundance of native grasses and forbs.

Table 27 and Map 5C describe the dominant plant communities within the allotment as summarized from the South Lake ESI, which is hereby incorporated by reference in its entirety. Several indicators of plant community health are described including dominant vegetation, SSF, OAT, and ecological condition rating. Based on SSF about 10% of the allotment being stable, 65% in the slight category, and no acres in the moderate or higher classes (Table 15), there is little or no active soil erosion or evidence of past erosion on these areas. The OAT recorded that 4% of the allotment was in upward condition and this was in both the big sagebrush and the mountain big sagebrush/bluebunch wheatgrass types, and the mountain big sagebrush/Idaho fescue type along

Table 27. Dominant Vegetation in the Hill Camp Allotment (00215)

Vegetation Type	Acres	Percent of Allotment
JUNCUS*	**242**	1%
Shrubs		
ARAR low sagebrush	181	1%
ARTRT big sagebrush	759	2%
ARTRV Mountain big sagebrush	904	3%
ARCA Silver sagebrush	14	T
Shrubs TOTAL	**1,858**	**6%**
Shrubs/Grasses		
CHVI-AGSP Green rabbitbrush/blue bunch wheatgrass	80	T
PUTR-BRTE Antelope bitterbrush/cheatgrass	284	1%
SAVE-DISP Greasewwod-Inland Saltgrass	81	T
Shrub/Grass TOTAL	**444**	**1%**
Low sagebrush/Grass		
ARAR-FEID Low sagebrush/fescue	578	2%
ARAR-POSE Low sagebrush/Sandberg bluegrass	10,320	30%
ARAR-STTH Low sagebrush/Thurber's needlegrass	554	2%
Low sagebrush/Grass TOTAL	**11,452**	**33%**
Big Sagebrush/Grass		
ARTRT-AGSP big sagebrush/blue bunch wheatgrass	1,329	4%
ARTR-BRTE big sagebrush/cheatgrass	761	2%
ARTRT-FEID big sagebrush/Idaho fescue	99	T
ARTRT-SIHY big sagebrush/bottlebrush squirreltail	55	T
ARTRT-STTH big sagebrush/Thurber's needlegrass	2,553	7%
Big Sage/Grass TOTAL	**4,797**	**14%**
Mountain Sagebrush/Grass		
ARTRV-AGSP Mountain sagebrush/blue bunch wheatgrass	1,680	5%
ARTRV-BRTE Mountain big sage/cheatgrass	342	1%
ARTRV-FEID Mountain big sage/Idaho fescue	5,164	15%
ARTRV-SIHY Mountain big sagebrush/bottlebrush squirreltail	524	2%
Mountain Sagebrush/Grass TOTAL	**7,710**	**23%**
All Big Sagebrush/Grass TOTAL	**12,504**	**36%**
TOTAL VEGETATION	**26,503**	**76%**
Playa	110	T
Rockland/Rubble	1,108	3%
Unknown**	7,086	20%
ALLOTMENT TOTAL	**34,807**	

** The plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at http://www.plants.usda.gov).*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different (often unknown or unmapped) vegetation communities.*

with some acres in the Juncus type. The OAT was determined have a static trend for the remaining vegetation types (Table 16).

The ESI also compares the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. Based on the ESI methodology, the percent of the allotment in each seral stage is summarized in the Table 28. About 5% of the allotment is in the early seral stage and included most of the acres in the shrub types with no grass understory and part of the big sagebrush cheatgrass type. Most of the allotment was in the mid seral stage. The acres in the late seral stage (11%) include Mountain big sagebrush types with Idaho fescue or blue bunch wheatgrass understory and low sagebrush with Idaho fescue or Thurber's needlegrass in the understory.

Table 28. Ecological Condition in Hill Camp Allotment (00215)

	Ecological Condition Classes					
	Early	Mid	Late	Climax	Rockland or Playa	Unknown*
Acres	1,860	20,136	3,811	0	870	8,130
Percent of Vegetation	5%	58%	11%	0	3%	23%

** The unknown acres include areas where condition is unknown, as well as inclusions within a vegetation community that represent transition areas and plant communities too small to be mapped separately.*

Photos were taken between 1975 and 2012 at 23 long term trend plots and vegetation data was collected at one trend plot between 1990 and 2012. In 2012, vegetation transects were established at 21 of the long term photo plots. At the long-term trend plot with vegetation transect, the vegetation cover has increased from the 13% in 1990 to 46% in 1998. Since then the vegetation cover 29% and 26% in 2006 and 2009 respectively. The cover varied in response to differences in precipitation, but has been stable during the last 10 years. The long-term trend photos (1970s to present) across the allotment show the vegetation communities to be mostly stable with some increase in sagebrush cover and juniper cover except in the West Pasture. In the West Pasture there was a prescribed burn in 1992 and there was more sagebrush and junipers before the burn then there is now. However both sagebrush and juniper are slowly returning to the treated areas.

Environmental Consequences: Hill Camp Allotment (00215)

Alternatives 1 and 3:

The impacts of continuing grazing under a rest-rotation grazing system on the upland plant communities within the Lakeview Resource Area have previously been analyzed in the *Draft Lakeview RMP/EIS* and *Lakeview Proposed RMP/Final EIS* (BLM 2001, 2003a) and these analyses are incorporated herein by reference. In summary, the vegetation composition of key species is expected to improve over time under a rest rotation grazing system (BLM 2003a; pages 4-5 and 4-9). In addition, a rest rotation system would significantly improve the composition of the key perennial herbaceous species within both the big sagebrush/grassland and low sagebrush- grassland communities (BLM 2001; page A-162). Absent a wildfire, juniper expansion is expected to continue regardless of grazing strategies, as it out-competes understory grasses and shrubs for available moisture and soil nutrients.

There are 4,131 acres (12%) in the Hill Camp allotment estimated to be impacted by concentrated livestock using the calculations and criteria described in Table 17. However with the rest rotation grazing system approximately one fourth of this area is rested every year so only about 9% of the allotment is impacted by livestock concentration each year. Most of this estimated use is around the 29 major water sources, which includes 21 major reservoirs, 5 constructed waterholes and 3 springs (Map 3C). There are 17 additional minor water sources that receive less grazing pressure and cattle concentration impacts are within about one-tenth of a mile around these water sources. Therefore approximately 425 acres around minor water sources would be impacted by concentrated grazing (Table 17).

In addition there are intermittent natural water sources (MC reservoir and Pinto Lake) where livestock concentration would impact the vegetation and it is estimated the impacted area is approximately 54 acres (Table 17).

Cattle trails located along the 45 miles of fence within the allotment where cattle are known to trail account for about another 27 acres of disturbance associated with past fence construction and livestock trailing (Table 17). BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

However, the grazing permit addressed in this EA authorizes only 44% of the total livestock grazing use allowed on this allotment. Therefore, only 44% of total magnitude of this concentrated livestock use impact can actually be attributed to the grazing use authorized under this permit and this amounts to 1,363 acres or 4% of the allotment.

The average utilization measured across the entire allotment in six of the last ten years was 39 % with the range being 43% in 2012 and 2009 and 29% in 2011. The use pattern maps for these same 6 years showed the average area of heavy use was 4%. The range of heavy use was from 7% in 2012 to 2% in 2011. Therefore with 1/4 of the allotment being rested every year, the percent of the total allotment being mapped as heavy use would be 3%. This data and the maps are on file in the Lakeview Resource Area Field Office.

This alternative would maintain slight to moderate forage utilization across 88% of the allotment using water hole assumptions to calculate heavy use and across 96% of the allotment using the use pattern maps. The reason for this variation is that water hole concentration method assumes every water hole is used and that rarely happens. Most years some of the water sources are dry and are not heavily utilized. Therefore this method overestimates the acres of concentrated use. However under either estimate this alternative would result in the maintenance of the existing plant communities and species composition. Grass and forbs that are grazed during the spring and summer growing season would be completely rested every fourth year (Table 6). Shrubs that become palatable to livestock during the late summer–fall growth cycle would never be grazed during this critical period in the Coleman Seeding, Northeast and Basin Pastures. The Southeast Pasture is only grazed one of four years in the late summer-fall period. The West Pasture is grazed in the late summer-fall period three of four years and rested the fourth year. However the West Pasture contains large quantities of shrubs like antelope bitterbrush and utilization studies show that cattle use on these shrubs in the West Pasture is light to moderate under current grazing levels. Therefore the current grazing management is not impacting palatable shrubs even in the West Pasture.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3. The rest rotation grazing management as adjusted through the flexibility provided in the annual application process, would continue to control livestock distribution, grazing utilization levels and provide rest from grazing. This rest rotation grazing management would likely sustain the current plant cover and species diversity. Grazing at light to moderate intensities would result in a diversity of residual grass cover heights across the allotment. The ecological site conditions have been observed to be very stable or improving under the current livestock grazing system. This trend would continue into the foreseeable future.

<u>Alternative 2: 50% Reduction in Grazing</u>

The reduction of authorized AUMs by 50% (to 860 AUMs) under alternative 2 would only reduce total AUMs of use in the allotment by 22%. This is because other permittees not covered by this permit control 56% (2, 213 AUMs) of the authorized AUMs in the Hill Camp Allotment. The 22% reduction in AUMs would result in a 22% reduction in acres impacted as the lower stock density around water sources would shrink the area impacted.

The acreage of vegetation impacted by heavy use under Alternative 2 (7%) would not be significantly different from the acreage of vegetation impacted by heavy use under Alternative 1 (9%).

Across the allotment the average utilization levels would be lower as the amount of forage consumed by livestock would be approximately 78% as much as under Alternative 1. Under Alternative 1, the average utilization measured across the entire allotment was 39% so under this alternative the average utilization would be estimated to be (78% times 39%) 30%. The use pattern maps under Alternative 1 showed the average area of heavy use was 4%. The area of heavy use under Alternative 2 would be about 3%.

The reduced utilization levels would result in a minor increase in ground cover of grass species close to water, but the composition and production of species would remain about the same.

Alternative 3: Change Livestock Management/Vegetation Treatments

There are no proposed changes in livestock management specifically in the Hill Camp Allotment. Therefore, the effects of grazing management would be the same as Alternative 1. However, there are 6 new herbicides proposed for use to control noxious weeds; 4 of these are proposed specifically for use in this allotment to control infestations (Table 34). The potential impacts to upland vegetation of these new herbicides are addressed in Tables 39-44. These noxious weeds can out-compete native vegetation and reduce or eliminate native vegetation from a site. Some of these weeds require these new herbicides to control their spread and protect the native vegetation from being replaced over the long-term (Table 34). Therefore, control of noxious weeds by these new herbicides would benefit native upland vegetation long-term.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, little change to the vegetation would occur on the allotment as a whole. This alternative would reduce grazing in this allotment by 44% from 3,932 AUMs to 2,213 AUMs. There are two other permits that authorize the 2,213 AUMs that are not part of this analysis. Therefore about 56% of the existing concentrated livestock use areas associated with water sources and the cattle trails, totaling 1,744 acres would continue to be impacted as described in Alternative 1 (Table 17). About 1,354 acres (3,098 minus 1,744 = 1,354) would receive less concentrated use and be allowed to reclaim naturally over the long-term (5-10 years).

The majority of the allotment (95%) currently receives moderate to no use so the reduction in AUMs would lower utilization levels but would only result in a negligible increase in ground cover of grass species preferred by cows, and the composition of species would remain about the same. Some disturbance may persist due to continued use by wildlife such as antelope and deer.

Absent a wildfire, juniper expansion is expected to continue regardless of grazing strategies, as it out-competes understory grasses and shrubs for available moisture and soil nutrients.

No use of herbicides would result in the spread of noxious weeds that are currently controlled to some degree by the 4 existing herbicides. There are noxious weeds that can out-compete native vegetation and reduce or eliminate native vegetation from a site. The spread of some noxious weeds would negatively impact native vegetation in the long-term.

Affected Environment: Cahill FRF Allotment (00219)

The Cahill FRF Allotment is a single pasture allotment located in the wetlands adjacent to the southeast portion of Crump Lake (Map 3D). Table 30 and Map 5D describe the dominant plant communities within the allotment, as summarized from the South Lake ESI, which is hereby incorporated by reference in its entirety.

Table 30. Dominant Ecological Sites and Expected Vegetation in Cahill FRF Allotment (00219)

Range Types with associated Vegetation Type*	Acres	Percent of Allotment
Sodic Meadow alkali sacaton/inland saltgrass	328	25%
Sodic Flat Greasewood/basin wildrye/inland saltgrass	114	9%
Semi Wet Marsh Cattail/hardstem bullrush	345	27%
Lakebed spike rush/dock	241	19%
TOTAL VEGETATION	**1028**	**79%**
Playas	74	6%
Water	10	1%
Unknown**	184	14%
ALLOTMENT TOTAL	**1296**	**100%**

**The vegetation types were not described in the ESI (1987) but range types were identified.*
*** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different unmapped vegetation communities.*

The eastern portion of the allotment is upland dominated by greasewood, inland saltgrass, basin wildrye, creeping wildrye and squirreltail. To the west is a lake bottom with alkaili sacaton, hardstem bulrush, and meadow barley.

The ESI and other data contain indicators of plant community health including dominant vegetation, OAT, SSF, ecological condition rating, and seral stage. The SSF for the vegetation communities on the allotment was determined in 2013 (Table 15). The SSF rating for the allotment was 53% in stable and 44% unknown with 3% as playa. There appears to be sufficient vegetation and litter cover to limit soil erosion and protect against the formation of rills and gullies in the allotment. The OAT for the vegetation communities on the allotment was also determined during 2013 (Table 16). Based on the OAT, 53% of the allotment was in upward condition and 44% unknown, with 3% as playa. The OAT assessment found plant vigor was excellent and some seedlings of desirable plants were present.

The ESI did not describe the vegetation types present in the Cahill FRF allotment, but from the soil map and site writeup areas (SWA), the range type and the associated vegetation can be determined (Table 30). There is public land intermingled within all four plant communities. The Semi–Wet Marsh and Lakebed occupy 45% of the allotment and over 50% of the public land in the allotment. The species currently present in the four types does match what is described and the composition varies depending on the yearly precipitation, which can vary from flooded to completely dry. There was no ecological condition transects conducted on the allotment during the 1987 ESI, so there is currently no ecological condition rating for this allotment.

Environmental Consequences: Cahill FRF Allotment (00219)

<u>Effects Common to Alternatives 1 and 3:</u>

The impacts of continuing grazing under a fall-winter a grazing system on the plant communities within the Lakeview Resource Area have previously been analyzed in the *Draft Lakeview RMP/EIS* and *Lakeview Proposed RMP/Final EIS* (BLM 2001, 2003a) and these analyses are incorporated herein by reference. In summary, the vegetation composition of key perennial herbaceous species is expected to improve or be maintained over time under this type of grazing system (BLM 2003a; pages 4-5 and 4-9). In addition, a fall-winter system would maintain or improve the composition of the key perennial herbaceous species within both the salt desert shrub/grassland communities and the wetlands found in this allotment (BLM 2001; page A-167-168). The perennial grasses found in this allotment, inland saltgrass, basin wildrye, alkali sacaton are dormant during the

fall-winter grazing season and grow in the spring and summer after the cattle have left the allotment. Therefore these grass plants are able to maximize leaf growth, seed production and root growth during the growing season and mitigate the impacts of grazing during the winter.

There would continue to be some negative impacts on vegetation in livestock concentration areas near water sources and cattle trails under Alternatives 1 and 3. This FRF Pasture has 3 water sources on public land including one constructed waterhole and 2 natural lake playas that contain standing water seasonally. The livestock concentration areas on public land would be a 0.1mile around the waterhole and approximately 50 yards wide along the along the edges of the lake playas. The total acreage impacted by concentration around these water sources is estimated to be 25 acres around the reservoir and 27 acres around the lake playas (1.5 mile of playa shoreline times 150 feet divided by 43,560 sq. ft./acre equals 27 acres). The total acres of concentrated use around the water sources are 52 acres or 4% of the allotment (Table 17).

Cattle trails located along the 4 miles of fence within the allotment where cattle are known to trail account for about another 2.5 acres of disturbance associated with past fence construction and livestock trailing (Table 17). BLM does not have a quantifiable means of estimating disturbed acres associated with cross-country livestock trailing to water sources, but based on estimates associated with fencing, believes that it represents a very small percentage of the allotment.

Therefore, the total area estimated to be impacted by livestock concentration around water sources and along fences is 54.5 acres or about 4% of the allotment (Table 17). These alternatives would maintain slight to moderate forage utilization across 96% of the allotment resulting in the maintenance of existing plant community and species composition.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3.
The OAT and SSF observations taken in 2013 indicate the vegetation communities across the allotment appear stable or improving under current grazing management and this trend would continue into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, reducing the grazing level by 50% (to 140 AUMs) would result in no change in the impacts to vegetation, because the number of cows actually using the allotment would be the same. The number of public land AUMs in an FRF allotment is the estimated carrying capacity of the public lands, but the total number of livestock using the entire allotment is determined by the permittee.

Alternative 3: Change Livestock Management/Vegetation Treatments

There are no proposed changes in livestock management in specifically in the Cahill FRF Allotment. Therefore, the effects of grazing management would be the same as Alternative 1. However, there are 6 new herbicides proposed for use to control noxious weeds; 4 of these are proposed specifically for use in this allotment to control infestations (Table 35). The potential impacts to upland vegetation of these new herbicides are addressed in Tables 39-44. These noxious weeds can out-compete native vegetation and reduce or eliminate native vegetation from a site. Some of these weeds require these new herbicides to control their spread and protect the native vegetation from being replaced long term (Table 35). Therefore, control of noxious weeds by these new herbicides would benefit native upland vegetation long-term.

Alternative 4: No Permit Issued/No Weed Treatments

Under this alternative, the public land would be excluded from grazing. The current concentration area (49.5 acres) on public land resulting from the trailing along the 4.25 miles of fence would be eliminated and the trail would reclaim naturally with vegetation over the long-term (5-10 years). The severity of impacts to vegetation on private lands would depend on how intensively the area is grazed, but would likely fall within the range of impacts described for Alternatives 1-3. If these private areas are intensively grazed, there could negative impacts to vegetation on private lands.

No use of herbicides would result in the spread of noxious weeds that are currently controlled to some degree by the 4 existing herbicides. These weeds can out-compete native vegetation and reduce or eliminate native vegetation from a site. The spread of some noxious weeds would negatively impact native vegetation in the long-term.

Noxious Weeds and Invasive Species

Affected Environment:

The following noxious weed species are known to exist across the five allotments: Halogeton *(Halogeton glomeratus (*m. Bieb.) C.A. Mey), Russian knapweed *(Acroptilon repens (L.) DC.),* Bull thistle *(Cirsium vulgare* (Savi) Ten.*),* Hoary Cress *(Cardaria draba (L.) Desv.),* Perennial pepperweed (*Lipidium latifolium* L.), Mediterranean sage (*Salvia aethiopis* L.), Canada thistle (*Cirsium arvense* (L.)Scop.), Spiny cocklebur (*Xanthium spinosum* L.), Scotch thistle *(Onopordum acanthium* L.) and Dyer's woad *(Isatis tinctoria* L.). The majority of these noxious weeds are present along roads, right-of-ways, riparian areas, and exclosures. The estimated acres of noxious weed have been summarized in the following tables by allotment and pasture. These weeds are currently being managed under the Integrated Noxious Weed Management Program EA (BLM 2004b). Through this integrated weed management plan, noxious weeds are currently being managed using four herbicides (2,4-D, picloram, glyphosate and dicamba), biological control, and manual control methods (Tables 31-35).

There are several spring exclosures within the allotments that have large Canadian thistle infestations. These areas are currently being managed through biological *(Ceutorhynchus litura and Urophora cardui),* chemical, mechanical and cultural control methods. Even with several control methods available, BLM struggles to control these infestations due to the lack of effective chemicals available for use on BLM lands. Many species such as Halogeton, which none of the available methods can actually control, continue expanding across the allotments

In the last five years the Ruby Pipeline was installed across the Round Mountain Allotment and with the large amount of disturbance it is likely that many new noxious weeds could begin showing up on the pipeline and allotment. One of the species that is expected to show up is Medusahead rye (*Taeniatherum caput-medusae)*, a winter annual grass species that at this point the Lakeview District does not have an effective means to control. There are also two other invasive winter annual grass species that are an issue across the allotment Africa wiregrass (*Ventenata dubia)* and cheatgrass *(Bromus tectorum).* All of the allotments are monitored for noxious weeds annually.

Environmental Consequences:

Effects Common to Alternatives 1-4

Noxious weeds and invasive species are present along roads, streams, springs, water developments and are within many enclosures. Since weeds have the potential to spread through wind, water, animals and humans, they would continue to spread without effective control methods. The spread of the weed populations would

Table 31. Existing Weeds and Proposed Treatment Methods in Round Mountain Allotment (00211)

Pasture	Known Noxious Weed Species	Estimated Acres	Proposed Herbicide	Type of Application
East	Mediterranean sage *(Salvia aethiopis* L.*)* Canada thistle *(Cirsium arvense* (L.) Scop.*)* (Ruby Corridor) Mediterranean sage (*Salvia aethiopis* L.*)* (Ruby Corridor)	5 Acres 5 Acres 10 Acres	Clopyralid Clopyralid Clopyralid	Ground Broadcast
North	Mediterranean sage (*Salvia aethiopis* L.*)*	5 Acre	Clopyralid	Ground Broadcast
West	Canada thistle *(Cirsium arvense* (L.) Scop.*)* Hoary Cress *(Cardaria draba (L.) Desv.)* Scotch thistle *(Onopordum acanthium L.)* (Ruby Corridor) Canada thistle *(Cirsium arvense* (L.) Scop.*)* Dyer's woad *(Isatis tinctoria L.)* (Ruby Corridor) Mediterranean sage (*Salvia aethiopis* L.*)* (Ruby Corridor)	5 Acres 5 Acres 5 Acres 5 Acres 5 Acres 10 Acres	Clopyralid Chlorsulfuron Imazapyr Clopyralid Clopyralid Chlorsulfuron Clopyralid	Ground Broadcast and Spot

Table 32. Existing Weeds and Proposed Treatment Methods in Rahilly Gravelly Allotment (00212)

Pasture	Known Weed Species	Estimated Acres	Proposed Herbicide	Type of Application
Coleman Lake	Halogeton *(Halogeton glomeratus (*m. Bieb.) C.A. Mey.) Canada thistle *(Cirsium arvense* (L.) Scop.*)* Bull thistle *(Cirsium vulgare* (Savi) Ten.*)* Cheatgrass *(Bromus tectorum)*	30 acres 10 acres 10 acres 500 acres	Imazapyr Metsulfuron methyl, Clopyralid, 2,4-D Imazpic	Ground Broadcast and Spot Ground or Aerial Broadcast
Sucker Creek	Mediterranean sage *(Salvia aethiopis* L.*)* Spiny cocklebur *(Xanthium spinosum L.)* Bull thistle *(Cirsium vulgare* (Savi) Ten.*)* Perennial pepperweed (Lipidium latifolium) Canada thistle *(Cirsium arvense* (L.) Scop.*)*	5 acre 5 acre 5 acre 5 acre 5 acres	Clopyralid Chlorsulfuron Metsulfuron methyl Imazapyr	Ground Broadcast and Spot
Rahilly	Bull thistle *(Cirsium vulgare* (Savi) Ten.*)* Canada thistle *(Cirsium arvense* (L.) Scop.*)* Scotch Thistle (*Onopordum acanthium* L.)	1 acre 1 acre 10 Acres	Clopyralid Chlorsulfuron Metsulfuron methyl	Ground Broadcast and Spot
Nevada	Canada thistle *(Cirsium arvense* (L.) Scop.*)*	5 acre	Clopyralid	Ground Broadcast and Spot
Horse Creek	None Documented	0 Acres		
Pederson	Perennial peppweed (*Lipidium latifolium* L.)	5 Acres	Chlorsulfuron Imazapyr	Ground Broadcast and Spot

Table 33. Existing Weeds and Proposed Treatment Methods in Burrow Springs Allotment (00213)

Pasture	Known Weed Species	Estimated Acres	Proposed Herbicide	Type of Application
Burro Springs	Halogeton *(Halogeton glomeratus (*m. Bieb.) C.A. Mey.)	15 Acres	Metsulfuron methyl	Ground Broadcast and Spot

Table 34. Existing Weeds and Proposed Treatment Methods in Hill Camp Allotment (00215)

Pasture	Known Weed Species	Estimated Acres	Proposed Herbicide	Type of Application
Northeast	Russian knapweed *(Acroptilon repens (L.) DC.)*	20 acres (Enclosure)	Clopyralid, Imazapic,	Ground Broadcast and Spot
Southeast	None-Documented			
West	Bull thistle *(Cirsium vulgare* (Savi) Ten.*)*	10 acres	Clopyralid	Ground Broadcast and Spot
Basin	Hoary cress *(Cardaria draba (L.) Desv.)*	5 acre	Chlorsulfuron, Metsulfuron methyl, 2,4-D	Ground Broadcast and Spot
Coleman Seeding	Perennial pepperweed (*Lipidium latifolium* L.) Halogeton *(Halogeton glomeratus (*m. Bieb.) C.A. Mey.)	15 acres (private) 10 acres	Chlorsulfuron, Metsulfuron methyl, 2,4-D	Ground Broadcast and Spot

Table 35. Existing Weeds and Proposed Treatment Methods in Cahill FRF Allotment (00219)

Pasture	Known Weed Species	Estimated Acres	Proposed Herbicide	Type of Application
FRF	Perennial pepperweed (*Lipidium latifolium* L.) Russian Knapweed *(Acroptilon repens (L.) DC.)*	35 acres 15 acres	Chlorsulfuron, Metsulfuron methyl, 2,4-D Clopyralid, Imazapic	Aerial or Ground Broadcast Ground Spot

likely have harmful effects on livestock. Many studies and repeated landowner experiences show that weeds commonly reduce livestock carrying capacity from thirty-five to ninety percent (Hiken 1980, USDA 1994a). In addition, some noxious weeds are toxic to livestock, including Russian Knapweed and Halogeton.

According to the analysis in *Vegetation Treatments Using Herbicide on BLM Lands in Oregon EIS* (BLM 2010a), treatments that maintain or reduce the cover of weeds and invasive species would restore native and other forage vegetation on grazed lands and benefit livestock by increasing the quantity and the quality of forage. Decline in range condition from invasive weeds would be proportional to the acres projected to become infested over time. The difference between the alternatives could be expected to have differing effects of grazing capacity over the long term (BLM 2010a: p. 4).

The one weed control method that would be common to all alternative would be biological control. In 2011 and 2012 two types of biological control agents were released in the spring exclosures and riparian areas to control Canada thistle. These agents are as follows: *Ceutorhynchus litura* (Thistle Stem Weevil) and *Urophora cardui* (Thistle Stem Gall Fly). The *Ceutorhynchus litura* is a cold hardy weevil that attacks the young Canada thistle plats as they sprout from the soil in the early spring. The developing larvae internally mine the stem of the thistle plant as the shoot elongates during the summer. The *Urophora cardui* attacks the primary and lateral stems of Canada thistle. Adults will lay their eggs on the thistle plant in the early summer when plants are bolting. The developing larvae stimulate the plant to form a hard, woody, stem gall. Galling directs nutrients

away from the plant's normal metabolic reproductive functions. Abnormally developed flower heads frequently occur above the gall, often reducing seed production. Biological control agents often are able to effectively suppress noxious weed infestations; however they cannot effectively eradicate infestations.

Effects Common to Alternatives 1, 2, and 3

Herbicide Risks Common to Alternatives 1-3: The following four herbicides would be used to control noxious weeds in Alternatives 1-3: 2,4-D, dicamba, glyphosate, and picloram. These herbicides have been approved for use across the Lakeview RA through the Lakeview's Integrated Noxious Weed Control Program EA#OR-010-2004-03 (BLM 2004b). The risks are summarized in Table 36.

Effects Common to Alternatives 1 and 2:

Effects of Herbicides: Although herbicides would be applied to fewer acres under these alternatives than in Alternative 3, the potential effects of the four existing herbicides would be higher than the proposed new herbicides in Alternative 3 (see Tables 36, 39-44). The 2,4-D and glyphosate present risks to mammals from direct spray and consumption of contaminated grass at the typical and maximum application rates. Inadvertent spraying of grass and other forage near treated invasive weeds, as well as drift and other avenues, could result in exposure. Picloram also presents low to moderate risks under some exposure scenarios, and dicamba presents a low to moderate risk under food contamination scenarios for typical and maximum rate respectively. Effects of these four herbicides on other resource values are summarized in Table 36.

Effects of Invasive plants: Under Alternative 1 and 2 native plant communities would continue to be impacted by cheatgrass and may be invaded by medusahead and Africa wire grass. These species would decrease plant diversity, habitat quality and productivity, thereby reducing forage for livestock and wildlife. There is a large amount of cheatgrass that is invading the Cahill allotments, except for a very few weeks early in the season, it is unpalatable. Noxious weeds would continue to expand at their current rate. Many of the documented noxious weeds, such as halogeton, would go uncontrolled due to a lack of effective control measures.

Alternative 1: No Action

The vegetation would continue to be negatively impacted in livestock concentration areas. The impacts would be trampling and disturbance around water developments, along fences and within the non-excluded riparian areas. This disturbance would continue to allow noxious weeds and invasive species to invade these areas. Under the current grazing practices livestock would have the ability to spread the current noxious weed infestations, however in the past 10 years the majority of the weed infestations have been located along roads and riparian areas. This shows that the livestock are not the only vector for spreading noxious weeds, but in fact they are spreading primarily by vehicles and water. Within the allotments there are several spring and riparian enclosures that host weed infestations and even without grazing these infestations are flourishing more than the weeds present outside of the excluded areas. This demonstrates that current grazing practices may be important in controlling the weed infestation by allowing the cattle to graze off the tops of the plants before they have a chance to flower or produce seed. The effects of these four herbicides on other resource values are summarized in Table 36.

Alternative 2: 50% Reduction in Grazing

Under Alternative 2, a 50% reduction in livestock use would reduce disturbance around waterholes, springs (non-fenced), and cattle trails. Reduced grazing would result in smaller disturbed areas and reduce the opportunities for weeds to spread over the long-term.

Table 36. Environmental Effects of Existing Herbicides				
Resource	**2,4-D**	**Dicamba**	**Glyphosate**	**Picloram**
Soils and Biological Crusts (BLM 2010a: p. 182-184)	*2,4-D* would have a very short half-life that averages 10 days in moist soil. 2,4-D would be readily broken into simpler components soils which are typical on the Cahill Allotments, but the break-down would be slower in acidic soils. Furthermore, most studies of the effects of 2,4-D on microorganisms concluded that the quantity of 2,4-D reaching the soil from typical applications would probably not have a serious negative effect on most soil microorganisms (Bovey 2001).	*Dicamba* would be moderately persistent in soil. The half-life of dicamba in soil is typically 1 to 4 weeks. Under conditions suitable for rapid metabolism, the half-life would be less than 2 weeks. Metabolism by soil microorganisms would be the major pathway of loss under most soil conditions. The rate of biodegradation would increase with temperature and increasing soil moisture, and tends to be faster when soil is slightly acidic. Dicamba would slowly break down in sunlight. It would be stable to water and other chemicals in the soil. Dicamba does not bind to soil particles and would be highly soluble in water. It would therefore highly mobile in the soil.	*Glyphosate* would *b*inds tightly to soil particles. This binding would increase with increasing clay content, organic matter and decreasing soil pH. Glyphosate iwould biodegraded by soil organisms and many use it as a source of carbon. Currently no information that indicates that glyphosate would be harmful to soil microorganisms and may benefit some (Busse *et al*. 2004).	*Picloram* would break down primarily through photolysis and biodegradation mechanisms of dissipation (USDA 2000b). Picloram adsorbs to clay particles and organic matter, but if the soil contains little clay or organic matter, picloram would easily move by water. Picloram has been reported to remain active in soil at levels toxic to some plants for more than 1 year at typical application rates (SERA 2003b). The half-life of picloram in soil has been reported to vary from 1 month under favorable environmental conditions to more than 4 years in arid regions (USDA 2000b). Picloram can be persistent in plants. When plant parts containing picloram degrade, they may release it into the soil, where it can kill other plants.
Water Quality (BLM 2010a: p. 184-185)	*2,4-D*: Some salt forms of 2,4-D are registered for use in aquatic systems. 2,4-D has been a known groundwater contaminant38 although potential for leaching into groundwater would be moderate by its being bound to organic matter and its short half-life. In **terrestrial** applications, most formulations of 2,4-D would not bind tightly with soils, and therefore would have a moderate potential to leach into the soil column and to move off site in surface or subsurface water flows (Johnson et al. 1995 cited in Tu *et al.* 2001	*Dicamba would only be used outside of the riparian areas.* *Dicamba*: Dicamba has been a known groundwater contaminant, and has a high potential to leach into groundwater. The EPA has set health advisory concentration levels for dicamba (e.g., 300 µg/L for 1-day exposures	*Glyphosate*, registered for aquatic use, and would be applied to wetland and emergent aquatic vegetation. Strong adsorption to soil particles and organic matter slows microbial degradation, allowing glyphosate to persist in aquatic environments in bottom sediments (half-life of 12 days to 10 weeks) (Goldsborough and Brown 1993, Extension Toxicology Network 1996a, all cited in Tu *et al.* 2001). While glyphosate is very water soluble it would be unlikely to enter waters through surface runoff or subsurface flow	*Picloram* can move off site through surface or subsurface runoff, and has been detected in the groundwater of 11 states (Howard 1991). Picloram does not bind strongly with soil particles and would not degrade rapidly in the environment (Tu *et al*. 2001). Concentrations in runoff have been reported to be great enough to damage crops, and could cause damage to certain submerged aquatic plants (Forsyth *et al.* 1997 cited in Tu *et al.* 2001). Picloram would only be used in the uplands where runoff into the stream would not be an issue, because of the potential negative effects described above.

			because it binds strongly to soils, except when the soil itself would washed away by runoff; even then, it would remain bound to soil particles and generally unavailable (Rueppel *et al*. 1977, Malik *et al*. 1989, all cited in Tu *et al*. 2001).	
Riparian Vegetation (BLM 2010a: p. 211-212)	*2,4-D (aquatic)*: The principle hazard would be unintended spraying or drift to non-target plants; spot treatments applied according to the labeled rate do not substantially affect native aquatic vegetation or significantly change species' diversity (USDA 2005a, WA Dept of Ecology c). Only Aquatic formulations will be used with in the riparian areas.	*Dicamba: Not for use in Riparian Areas.*	*Glyphosate* would be used along banks to control grasses, and herbaceous weeds and would be approved for emergent aquatic vegetation in riparian areas. It has potential to move into surface water with eroded soil particles (although it would be unlikely it will dislodge from the particles and become active) where it rapidly dissipates from surface water by biodegradation and adsorption. Freshwater aquatic macrophytes and algae are reported to be susceptible to low amounts (20 mg/l concentrations).	Picloram: Not for use in Riparian Areas.
Fish (BLM 2010a: p. 226-227)	*2,4-D* would have formulations that are registered for use on aquatic vegetation. The toxicity of 2,4-D to fish would be relatively low (Norris *et al*. 1991). Risks would be greater under scenarios of direct application to water bodies or accidental direct spills. At the typical application rate, 2,4-D poses a low risk to fish, while at the maximum application rate, 2,4-D would poses a moderate risk to fish under scenarios of accidental direct spray or spill to a stream and pond. Routine (non-spill) acute and chronic exposure scenarios would not pose a risk to fish. Only Aquatic formulations would be used with in the riparian areas.	*Dicamba* is not registered for use in aquatic environments. The Ecological Risk Assessment shows there would be a low risk to susceptible fish under the spill scenario at the maximum rate, and no risk to fish under other exposure scenarios. Off-site drift and surface runoff of dicamba also present no risk to fish.	*Glyphosate* would be a non-selective systemic aquatic herbicide for use. It would be applied as a broadcast, spot, stem injection, or wipe application. In general, glyphosate would be immobile in soil, being readily adsorbed by soil particles and subject to microbial degradation (Norris *et al*. 1991). This immobility would reduce the potential for glyphosate to enter water bodies during runoff. Based on bioassays, technical grade glyphosate would be classified as non-toxic to practically non-toxic in freshwater fish (EPA 1993). Some	*Picloram* would act as a plant growth regulator. It would not be used to control aquatic vegetation. The acute and chronic toxicity of picloram has been analyzed in various species of fish.

			formulations would be more toxic to fish than technical grade glyphosate, however only non-toxic formulations would be used near fish bearing streams.	
Upland Vegetation (BLM 2010a: p. 146-147)	*2,4-D* (salts and esters) would be used as a selective herbicide that kills broadleaf plants, but not grasses. The selectiveness would allow for weeds control and native grass communities to flourish. 2,4-D would have a long history of use and would be relatively inexpensive. Direct spraying of non-target plant species would be the highest potential for damage due to 2,4-D application. Drift could damage non-target broadleaf species close to the application site (much less than 100 feet).	*Dicamba* would be used as a selective, systemic herbicide that can affect some annual, biennial, or perennial broadleaf and woody species as well as annual grasses. Susceptible plants would potentially be damaged by direct sprays and drift. The greatest risks to aquatic plants would be associated with runoff, but are highly site specific. Wind erosion may cause impacts in arid regions (SERA 2004g). Drift would have potential to cause damage to susceptible species at distances less than 100 feet from the application site. Vaporized or volatilized dicamba can affect non-target plants. Dicamba vapor has been known to drift for several miles following application at high temperatures (Cox 1994). Dicamba would be applied early in the day to prevent valorization.	*Glyphosate* would prevent plants from synthesizing three aromatic amino acids including a key enzyme, EPSP (5-enolpyruvylshikimate-3-phosphate). Glyphosate would be a non-selective, systemic herbicide that would damage all groups or families of non-target plants to varying degrees, most commonly from off-site drift. Plants susceptible to glyphosate would be damaged by drift up to 100 feet from the application site at the highest rate of application proposed. Species that are more tolerant are likely to be damaged at distances up to 25 feet (SERA 2003a). Non-target species are not likely to be affected by runoff or absorption from soil. Glyphosate strongly adsorbs to soil particles, which would prevent it from being taken up from the soil by plant roots (Tu *et al*. 2001, SERA 2003a). Glyphosate may only be applied though spot spray application on rangelands which allows for control of small populations of invasive grasses and broadleaf weeds.	In the Pesticide Re-registration Fact Sheet–Picloram (1995), the EPA noted that *picloram* poses very substantial risks to non-target (broadleaf and woody) plants. The EPA also noted that picloram would be highly soluble in water, resistant to biotic and abiotic degradation processes, and mobile under both laboratory and field conditions. They stated that there would be a high potential to leach to groundwater in coarse textured soils with low organic material. Plant damage has potential to occur from drift, runoff, and off-site where ground water is used for irrigation or is discharged into surface water (EPA 1995). Because picloram persists in soil, non-target plant roots can take up picloram (Tu *et al*. 2001), which would affect revegetation efforts. Lym *et al*. (1998) recommended that livestock not be transferred from treated grass areas onto susceptible broadleaf crop areas for 12 months or until picloram would disappeared from the soil without first allowing seven days of grazing on an untreated green pasture. Otherwise, urine may contain enough picloram to injure susceptible plants.
Wildlife (BLM 2010a: p. 246-247)	*2,4-D* is one of the more toxic herbicides for wildlife of the foliar-use herbicides. The ester form would be more toxic to wildlife than the salt form. Ingestion of treated vegetation would be a concern for mammals,	*Dicamba*: No adverse effects on mammals would be plausible for either acute or chronic exposures of dicamba. At the highest tested rate, there would be adverse reproductive effects possible for	*Glyphosate* would be a low toxicity herbicide, widely used for terrestrial applications and would be approved for aquatic use. Toxicity to most wildlife groups is very low, so much so that NOAEL	*Picloram*: Studies on birds, bees, and snails generally support picloram as relatively nontoxic to terrestrial animals. The few field studies indicated no change to mammal or avian diversity following picloram

	particularly since 2,4-D can increase palatability of treated plants (BLM 2006) for up to a month following treatment (Farm Service Genetics 2008). Mammals would be more susceptible to toxic effects from 2,4-D, and the sub-lethal effects to pregnant mammals were noted at acute rates below LD50. Birds are less susceptible to 2,4-D than mammals, and the greatest risk would be ingestion of contaminated insects or plants. The salt form would be practically non-toxic to amphibians, but the ester form would be highly toxic. It would present low risk to honeybees but little information was available for other terrestrial invertebrates.	acute scenarios consuming contaminated vegetation.	levels are used because the LD50 were not found at high doses in many cases.	treatment. Variations in different exposure assessments would have little impact to risk through ingestion, grooming or direct contact. Maximum rates have higher risk to mammals due to contaminated grass or insects. No information was found in the literature about picloram's effect on reptiles (SERA 2003b).
Livestock Grazing (BLM 2010a)	*2-4,D* would present a low to moderate acute risk to livestock under several of the direct spray, ingestion, and spill scenarios, and a moderate chronic risk for large mammals for consumption of on-site contaminated vegetation under both typical and maximum rate (SERA 2006). The Risk Assessment suggest that because large livestock eating larger quantities of grass and other vegetation would be at risk from routine exposure to 2, 4-D and because 2,4-D is considered for use in rangeland, it would not be applied over large application areas where livestock would only consume contaminated food. The majority of the 2,4-D applications within the Cahill allotments will be spot spraying or along roadsides. Due to this the small areas where 2,4-D is applied would not affect the livestock grazing. Meat animals should be removed from treated areas 3 days prior to slaughter	Dicamba: The ingestion of food items contaminated by direct spray of dicamba at the typical and maximum application rate would pose a low to moderate acute risk to large mammalian herbivores respectively, and no chronic risk. Dicamba would be proposed for use in rangelands and does have moderate residual activity, livestock may be at risk. However the use of dimamba will be minimal within the Cahill Allotments.	*Glyphosate* would present a low to moderate acute risk to livestock under several of the direct spray, ingestion, and spill scenarios, and a low chronic risk for large mammals for consumption of on-site contaminated vegetation under the maximum rate (SERA 2003a). Ingestion of treated grasses has potential to represent a risk, but glyphosate is non selective and kills grass, suggesting that spot applications in the Cahill Allotment rangeland would be the most appropriate use of this herbicide. Spot applications would reduce risk associated with consumption of contaminated vegetation, as fewer non-target areas would be impacted by direct spray or spray drift. Based on label direction, there are no restricts on livestock use of treated areas.	Picloram would pose a low to moderate risk for application at the typical and maximum application rates for 100 percent absorption of direct spray by a small animal would stand acute exposure through consumption of contaminated vegetation by a large mammal (SERA 2003b). Picloram is registered for use in rangeland and would be available to be applied over large areas heavily infested with weeds, as its primary targets are broadleaf and woody species. Therefore, in might be used to manage certain broadleaved plants without impacting native or other desirable grasses, but with the potential to expose livestock. Picloram has a number of restrictions on use in areas grazed by livestock. In general, livestock should not be grazed on treated areas for 2 weeks after treatment. Herbicide treatments using picoloram would be coordinated with the Range Staff to make sure the cattle are not in the

	allotment during application if large scale treatment is needed. Since the Cahill Allotments are such large areas small scale spot spraying should not affect the grazing animals.

Due to the majority of the weed infestations occurring along roads, right-of-ways, creeks, springs, and inside of exclosures, reduced grazing would not drastically affect these current infestations. While livestock and wildlife do have the ability to spread noxious weeds as they move across the allotments, many of the existing infestations occur along roads where vehicles would continue to be the major vector for spread noxious weeds. This trend would continue whether cattle grazing is reduced or not.

Alternative 3: Change Livestock Management/Vegetation Treatments

In Alternative 3, extending the grazing period by one week in the Round Mountain Allotment would not lead to additional disturbance or risk of weed spread compared to Alternative 1. Extending the grazing season for Burro Springs Allotment to include spring grazing would reduce the amount and spread of cheatgrass in the allotment. The expanded grazing use in the spring would create more disturbed areas that may allow new weed infestations to develop. Creating the new Pederson FRF allotment is an administrative action that would have no effects on weeds.

The additional 6 herbicides proposed for use to control noxious weeds and non-native invasive species would allow for more effective control of weeds across the allotments. These additional active ingredients would allow for control of many species which at this time are not controllable with the resources/methods currently available under Alternative 1. None of these new herbicides would be used to control noxious weeds within riparian areas, however they would assist in preventing weeds from spreading into riparian areas from adjacent uplands. These herbicides would also allow the control of weeds and invasive species before the infestation gets too large and costly to manage.

Many of the private landowners adjacent to the BLM have been effectively using these herbicides and have achieved control of weeds on private lands. The perennial mustard species such as perennial pepperweed and hoary cress have the ability to be very persistence and have the ability to spread quickly. Since many of the areas where these species are growing are adjacent to private land, the addition of chlorsulfuron and metsulfuron methl would allow the BLM to work cooperatively with adjacent landowners and prevent these weeds from spreading onto neighboring lands. The knapweeds and thistles would be more effectively controlled with the use of clopyralid. Halogeton, which is toxic to livestock, has been allowed to spread down many of the roads in the allotments due to lack of effective herbicides. The addition of chlorsulfuron, metsulfuron methyl and sulfometuron methyl would not only allow for effective control of this noxious weed, but the amount of active ingredient needed to control this species would drastically be reduced (Table 38).

All of the proposed herbicides, with the exception of sulfometuron methyl, have no grazing restrictions, and therefore, could be safely applied while the livestock are grazing the allotments. Sulfometuron methyl has been analyzed for grazing animals and poses an unlikely risk to livestock; however it is not registered for use on grazed areas. Sulfometuron methyl would only be used along roadsides that would not be grazed by livestock. Table 37 lists the currently available herbicides and maximum application rates. Table 38 lists the proposed additional herbicides and maximum application rates per acre.

Generally, the application of the six proposed herbicides would have less negative environmental effects on other resource values than the four existing herbicides. These environmental effects have been previously analyzed in the *Vegetation Treatments using Herbicides on BLM Lands in Oregon Final EIS* (BLM 2010a). This analysis in incorporated herein by reference in its entirety. These effects have been summarized in Tables 39-44.

Table 37. Maximum Application Rates for Four Existing Herbicides

Herbicide Active Ingredient	Annual Maximum Application Rate/ Acre A.I/A.E.	Annual Maximum Application Rate/ Acre Formulated Products
2, 4-D	1.9 lbs a.e	2.0 Quarts
Dicamba	2.0 lbs a.e.	2.0 Quarts
Glyphosate	7.0 lbs a.e.	2.0 Quarts
Picloram	1.0 lb. a.e.	2.0 Quarts

Table 38. Maximum Application Rates for the Proposed Additional Herbicides

Herbicide Active Ingredient	Annual Maximum Application Rate/ Acre A.I/A.E.	Annual Maximum Application Rate/ Acre Formulated Products
Chlorsulfuron	0.141 lbs a.i.	3.0 0unces
Clopyralid	1.000 lb a.e.	2.66 Pints
Diflufenzopyr+ Dicamba	0.350 lb a.e.	8.0 ounces
Imazapic	0.1875 lb. a.e	12.0 ounces
Metsulfuron methyl	0.15 lbs. a.e.	4.0 ounces
Sulfomethuron methyl	1.5 lbs a.e.	4.0 ounces

Table 39. Summary of Environmental Effects of Use of Chlorsulfuron

Resource	Proposed Herbicide: Chlorsulfuron	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Chlorsulfuron* would be stable in neutral soils throughout the Cahill Allotments. As with most biodegradation rates, the higher the pH, the slower the herbicide breaks down. The higher the temperature, soil moisture, organic matter content, and microbial biomass, the faster it breaks down. Chlorsulfuron is only mildly toxic to terrestrial microorganisms and effects are short term (transient) (SERA 2004a). The herbicide can remain active for more than a year. Sarmah *et al*. (1999) observed that the rate of chlorsulfuron degradation in alkaline subsoils was slow. They concluded that under conditions conducive to leaching in alkaline systems, prolonged persistence of chlorsulfuron in the soil profile is possible. It is likely that in some soils dissipation rates could be slower than the reported average, including arid soils with high pH and low organic matter. Such longevity could occur on the slightly (pH 7.4-7.9) and moderately (pH 7.9- 9.4) alkaline soils within the Aridisols, Mollisols, Inceptisols, and Entisols soil orders.	Thistles poison hemlock, Russian knapweed, perennial pepperweed, puncturevine, whitetop, and Dyers woad	Roadsides, Rangelands ROW
Water Quality (BLM 2010a, p. 188-208)	Chlorsulfuron would have potential to be persistent and highly mobile in the environment. Hydrolysis rates are fastest in acidic waters and slower in more alkaline systems (Sarmah and Sabadie 2002), which are found within the Cahill allotments. As hydrolysis rates drop, biodegradation becomes the mechanism affecting the breakdown of chlorsulfuron. Aquatic dissipation half-lives from 24 days to more than 365 days have been reported (ENSR 2005c), with a shorter time reported for flooded soil (47 to 86 days) than anaerobic aquatic systems (109 to 263 days; SERA 2004a). Chlorsulfuron is not known to be a groundwater contaminant, but has a high potential to leach into the groundwater. Chlorsulfuron would not be used with in riparian areas; therefore the adverse effect would be low to non on water quality. Chlorsulfuron would be an effective control for many of the noxious mustards that are invading the Cahill allotments, such as perennial pepperweed hoary cress, and Dyer;s woad.		
Fish, Riparian, and Wetlands	No effects would occur as no treatment will take place with this herbicide within riparian areas or wetlands.		

Resource	Proposed Herbicide: Chlorsulfuron	Target Vegetation	Target Areas
Wildlife and Special Status Wildlife Species (BLM 2010a, p. 240-258)	Chlorosulfuron would be a selective, ALS-inhibitor herbicide that would be used to control noxious weeds within wildlife habitat. Chlorosulfuron, an ALS-inhibitor; a group of herbicides that has the lowest risk to all groups of wildlife of the herbicides evaluated. All likely application scenarios would be below the LOCs for wildlife groups under tested scenarios, even under spill or off-site drift scenarios. It would be unlikely to cause any adverse effect on aquatic animals (Table 3-14). No studies on amphibians or reptiles were found (SERA 2004a).		
Grazing (BLM 2010a, p. 258-268)	Chlorsulfuron would positively improve the livestock situation within the Cahill Grazing Allotments by reducing noxious weed cover and increasing the carrying capacity. Noxious weeds have the ability to invade and inhibit the native perennial vegetation without effective means of control. Risk quotients for mammals for all modeled scenarios were below the conservative LOC of 0.1, indicating that direct spray and ingestion of sprayed vegetation would not likely to pose a risk to livestock. Based on label directions, there are no restrictions on livestock use of treated areas.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 144-146)	Chlorsulfuron would work by inhibiting the activity of an enzyme called acetolactate synthase (ALS), which is necessary for plant growth. Chlorsulfuron would be effective at very low dosages (half ounce to a few ounces per acre). Because of their high potency and longevity, this herbicide it has potential to pose a particular risk to non-target plants. Off-site movement of even small concentrations of this herbicides could result in extensive damage to surrounding plants, and damage to non-target plants has potential to result in concentrations lower than those reportedly required to kill target invasive plants (Fletcher et al. 1996).		

Table 40. Summary of Environmental Effects of Use of Clopyralid

Resource	Proposed Herbicide: Clopyralid	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Clopyralid* would be unstable in soil and would be considered moderately persistent based on its half-life. Leaching potential within the Cahill Allotments would be low since the majority of the soils are loams and clay. Biodegradation would be rapid in soil and thus the potential for leaching or runoff is low. Clopyralid can persist in plants and therefore can be introduced into the soil when plants die, therefore killing other plants.	Thistles knapweeds	Roadsides, meadows, burn and fire restoration, rangelands,
Water Quality (BLM 2010a, p. 188-208)	*Clopyralid* would not bind tightly to soil and would leach under favorable conditions. However, leaching and subsequent contamination of groundwater appear to be minimal (SERA 2004b), which is consistent with a short-term monitoring study of clopyralid in surface water after an aerial application (Rice et al. 1997a cited in SERA 2004b). No aerial application of clopyralid would be used near surface water within the Cahill allotments. Clopyralid would not be a common groundwater contaminant, and no major off-site movement has been documented. Clopyralid would not bind with suspended particles in water; biodegradation in aquatic sediments is the main pathway for dissipation. The average half-life of clopyralid in water has been measured at 9 and 22 days (Dow AgroSciences 1998). More effective noxious weed control would lead to better vegetation cover, which in the long term could assist with better water infiltration.		
Fish, Riparian, and Wetlands	No effects would occur as no treatment will take place with this herbicide within riparian areas or wetlands.		
Wildlife and Special Status	Clopyralid would be a selective herbicide, most effectively used post-emergence for the control of broadleaf weeds within the Cahill		

Resource	Proposed Herbicide: Clopyralid	Target Vegetation	Target Areas
Wildlife Species (BLM 2010a, p. 248)	Allotments. Clopyralid would be useful in treating starthistle, thistles, and knapweeds, which are noted as damaging to wildlife habitat. Clopyralid would be unlikely to pose risk to terrestrial mammals. All of the estimated mammalian acute exposures would be below the acute NOEL; mammalian chronic exposures are below the chronic NOEL. There would be no mortality to bees at relatively high doses. Four of 18 direct spray scenarios resulted in exposure levels below the estimated NOEL. Large and small birds would have some risk of ingestion of contaminated food but hazard quotients are below the level of concern for all exposure scenarios. No studies on amphibians/reptiles were found. Clopyralid is one of the herbicides with lower toxic risks (SERA 2004b). Since the majority of the application will take place in a spot spraying setting, the wildlife would have other vegetation available for consumption.		
Grazing (BLM 2010a, p. 258-268)	Large mammals would face low acute risks from direct spray and from consumption of contaminated grass at the typical and maximum application rate. The maximum application rate also poses a low chronic risk to large mammals consuming contaminated vegetation. All risks identified fall within the lowest risk category; adverse effects to livestock are unlikely with expected exposure scenarios. According to label directions, there would be no restrictions on grazing following an application at labeled rates, but livestock should not be transferred from treated grazing area to susceptible broadleaf crop areas without first allowing for 7 days of grazing on untreated pasture. (BLM 2010a page258-268) Clopyralid would allow for more effective weed control, which could increase the carrying capacity of the allotments. It would also assist in controlling toxic weeds to livestock such as knapweeds and thistles.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 145)	Clopyralid would be selective herbicide that limits enzyme activity, and focuses on broadleaf weeds and grasses. Clopyralid would be more selective and less persistent than picloram. Clopyralid would be relatively non-toxic to aquatic plants; however, accidental spills would have potential to result in temporary growth inhibition of aquatic plants. As with picloram, clopyralid would have little effect on grasses and members of the mustard family. Overall effects to non-target plants from normal application of clopyralid would likely to be limited to susceptible plant species in or very near the treatment area. Removal of noxious weeds would improve the upland vegetation and allow for more habitats for special status plant species.		

Table 41. Summary of Environmental Effects of Use of Dicamba +Diflufenzopyr

Resource	Proposed Herbicide: Dicamba +Diflufenzopyr	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Diflufenzopyr*: Biodegradation, photo-degradation, and hydrolysis would be the primary mechanisms that remove diflufenzopyr from soil. It would not be considered persistent. Diflufenzopyr appears to be soluble enough that transport in surface runoff would be possible, especially in neutral to alkaline soils. Dicamba was analyzed above under current approved herbicides for use on BLM.	knapweeds, kochia, and thistles.	Isolated occurrences of targeted species. Rapid response to new invaders.
Water Quality	Diflufenzopyr would be soluble, with transportation from surface runoff following application, particularly when diflufenzopyr when applied on soils with neutral to alkaline pH found within the Cahill Allotments.		

(BLM 2010a, p. 188-208)	However, based upon proposed uses, fate characteristics, and model predictions, the EPA does not expect diflufenzopyr to occur in drinking water in significant quantities (EPA 1999). Diflufenzopyr is not a known groundwater contaminant. This product would be used in very small amounts for rapid response on new invading species.		
Fish, Riparian, and Wetlands	No effects would occur as no treatment will take place with this herbicide within riparian areas or wetlands.		
Wildlife and Special Status Wildlife Species (BLM 2010a, p. 240-258)	Diflufenzopyr (in a formulation with dicamba in the product Overdrive®) would be used as a selective, systematic herbicide. Direct spray of Overdrive® would not likely to pose a risk to terrestrial animals. The mixture would have a moderate residual effect and has potential to effect insects and mammals through ingestion but insect lethal effects would be unlikely. It would would have low toxicity to honeybees. Risk Quotients for terrestrial wildlife would be below the most conservative LOC of 0.1 (acute endangered species), indicating that accidental direct spray impacts would not likely to pose a risk to terrestrial animals.		
Grazing (BLM 2010a, p. 258-268)	Diflufenzopyr would not be used alone. Risk quotient for terrestrial animals were all below the most conservative LOC of 0.1, indication that direct spray of diflufenzopyr is not likely to pose a risk to livestock . Based on label directions, there are no restrictions on livestock (Table 3-14; ENSR 2005d.) use of treated areas. Dicamba (already authorized for use)+ diflufenzopyr would poses a low chronic risk to large mammalian herbivores that consume plants contaminated by direct spray at the typical application rate and a moderate risk for ingestion scenarios involving direct spray at the maximum application rate (Table 3-14; ENSR 2005i). Based on label directions, there are no restrictions on livestock use of treated areas. Dicamba + diflufenzopyr would only be used for spot spraying and rapid response to new invading noxious weeds.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 144-146)	Diflufenzopyr + Dicamba. Dicamba would be used as a plant growth regulator that readily accumulates in the developing/growing plant parts and produces uncontrolled growth. It would absorb by the roots and leaves, and quickly and easily moves throughout the plant. Diflufenzopyr is a weak selective herbicide for broadleaf weeds that inhibits auxin transport, disrupting the auxin balance needed for plant growth (WDOT No Date). It would absorb by leaves and roots, and would move to other plant parts. The herbicide would have high surface runoff potential, low potential to leach to groundwater, and moderate volatility. The diflufenzopyr would block the transport of the dicamba away from the developing/growing plant parts, which results in an overwhelming accumulation of dicamba in the regions of active growth and would increase herbicide efficiency. When combined, the herbicides reduce the total amount of herbicide needed. The risks to non-target species would be moderate to high from drift or direct spray. This mixture of herbicide would only be used to control small isolated infestations. Non-target species damage would be minimal.		

Table 42. Summary of Environmental Effects of Use of Imazapic

Resource	Proposed Herbicide: Imazapic	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Imazapic* would be moderately persistent in soils and has not been found to move laterally with surface water. Most imazapic would be lost through biodegradation. Sorption to soil increases with decreasing pH and increasing organic matter and clay content. Sorption would be low within the Cahill Allotments.	Medusahead rye, African wiregrass, Cheatgrass	Roadsides, Rangelands, ROWs
Water Quality	Imazapic has low potential to leach into the groundwater. Imazapic would have very high water solubility and negligible to slight potential for		

(BLM 2010a, p. 188-208)	transport in surface runoff, due to its adsorption potential with soil and organic matter. It would be moderately toxic to fish, but is not proposed for aquatic use. In addition, imazapic is rapidly degraded by sunlight in aqueous solution, with a half-life of one or two days. Due to these characteristics and the SOPs that would be employed by the BLM, water resources impacts would not be anticipated to be significant from proposed imazapic applications.		
Fish, Riparian, and Wetlands	No effects would occur as no treatment will take place with this herbicide within riparian areas or wetlands.		
Wildlife and Special Status Wildlife Species (BLM 2010a, p. 240-258)	Imazapic, an ALS-inhibitor, would be used as selective, systemic herbicide. Direct spray of imazapic would not likely to pose a risk to terrestrial animals. Therefore, use of imazapic would primarily affect wildlife through habitat modification. The Cahill Allotments do not have any documented sites of medusahead rye or African wiregrass. Therefore, the only areas planned for the use of imazapic would be areas with planned range improvements. These areas would already have temporary habitat modification and the use of imazapic would not add to the habitat disturbance. The use in rangeland and other wildlife habitat areas would benefit wildlife by controlling invasive plant species, especially annual grass species. And would promoting the establishment and growth of native plant species that provide more suitable wildlife habitat and forage.		
Grazing (BLM 2010a, p. 258-268)	Risk quotients for terrestrial animals were all below the most conservative LOC of 0.1, indication that direct spray or drift of imazapic would be unlikely to pose a risk to livestock (Table 3-14; ENSR 2005h.) Based on label direction, there would be no restrictions on livestock use of treated areas, and since Imazapic will be applied in the fall there should be no effects the livestock that use the allotment.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 144-146)	Imazapic would work by inhibiting the activity of an enzyme called acetolactate synthase (ALS), which is necessary for plant growth. Imazapic would be applied at a very low dose (6 ounces per acre). Because of the high potency and longevity, this herbicide can pose a particular risk to non-target plants. Off-site movement of even small concentration of this herbicide can result in extensive damage to surrounding plants. Since imazapic would be applied early fall most of the native vegetation would be dormant from the long dry summers season. The key grass species listed above for the Cahill Allotments are Thurbers needlegrass *(Achnatherum thurberianum),* squirreltail *(Elymus elymodies),* Sandberg'd bluegrass *(Poa sandergii)*, Idaho fescue *(Festuca idahoensis)*, basin wildrye *(Elymus cinereus),* and Inland saltgrass *(Distichlis stricta).* These species would be tolerant to Imazapic up to a rate of 12 ounces per acre (which is double the rate we would be applying in the Cahill Allotment).		

Table 43. Summary of Environmental Effects of Use of Metsulfuron Methyl

Resource	Proposed Herbicide: Metsulfuron methyl	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Metsulfuron methyl* would have the principal modes of degradation of hydrolysis and microbial degradation, with the latter being the only major pathway in alkaline soils (Sarmah *et al.* 1998). Degradation rates are affected by soil temperature, moisture content, and soil pH. Half-lives in acidic or neutral soils vary from 5 to 190 days (Sarmah and Sabadie 2002, SERA 2004e). In alkaline soils, adsorption is very low and leaching potential would be high. This is likely to result in increased persistence in alkaline soils that are located within the Cahill allotments. At surface application rates of 0.04 to 0.067 lb/ac (between typical and maximum rates), decreases in soil bacteria were apparent for 3 days but reversed completely after 9 days. Biodegradation of metsulfuron methyl would increase as soil moisture increased from 20 percent to 80 percent of field capacity, and half-life would be decreased when the temperature raises	whitetop, perennial pepperweed and other mustards, biennial thistles. halogeton	Roadsides, Rangelands ROW

	from 20° to 30°C (Ismail and Azlizan 2002).		
Water Quality (BLM 2010a, p. 188-208)	Metsulfuron methyl: In addition to rights-of way and rangelands, would be proposed for use along ditches when they are dry. Metsulfuron methyl is not known to be a groundwater contaminant, although it would have a high potential to leach into the groundwater under where shallow groundwater occurs under porous surficial deposits. Because of this, metsulfuron methyl is not proposed for use in riparian or aquatic settings. Metsulfuron methyl would be moderate persistence in water (BLM 2007a), but would be rapidly taken up by plants. These factors and the implementation of agency SOPs would limit water resources impacts from metsulfuron methyl to less than significant levels.		
Fish, Riparian, and Wetlands	No effects would occur as no treatment will take place with this herbicide within riparian areas or wetlands.		
Wildlife and Special Status Wildlife Species (BLM 2010a, p. 240-258)	Metsulfuron methyl is an ALS-inhibitor that would not appear to bioaccumulate. Metsulfuron methyl would be effective for invasive weeds that are unsusceptible to other herbicides. None of the acute or chronic exposure scenarios exceeded the LOC at the typical rate, and few exceeded LOC at maximum rate. Metsulfuron methyl would have very low toxicity to birds for direct spray and consumption; no mortality of acute spray on honeybees; and, aquatic invertebrates would not be susceptible. Like other ALS-inhibitors, would be one of the least toxic of herbicides (SERA 2004e). Exposure at the typical application rate would not pose a risk to wildlife (SERA 2004c).		
Grazing (BLM 2010a, p. 258-268)	Metsulfuron methyl applications at the typical application rate would not pose a risk to livestock (SERA 2004e). Applications at the maximum rate would pose a low risk to small animals under scenarios involving 100 percent absorption of direct spray and to large mammals under scenarios involving consumption of contaminated vegetation. Metsulfuron methyl is registered for use in rangelands; impacts to livestock are unlikely if the typical application rate is used. However, a supplemental label would restrict the application on rangelands to 0.06 ounces active ingredient per acre. The majority of the application would take place along roads within the Cahill allotments. The main target plant species will be halogeton which in the past has not been readily grazed by cattle within the Cahill allotments.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 144-146)	Metsulfuron methyl would work by inhibiting the activity of an enzyme called acetolactate synthase (ALS), which is necessary for plant growth. Metsulfuron Methyl would be effective at very low dosages (half ounce to a few ounces per acre). Because of their high potency and longevity, this herbicide it has potential to pose a particular risk to non-target plants. Off-site movement of even small concentrations of this herbicide has potential to result in extensive damage to surrounding plants, and damage to non-target plants has potential to result in concentrations lower than those reportedly required to kill target invasive plants (Fletcher et al. 1996).		

Table 44. Summary of Environmental Effects of Use of Sulfometuron Methyl

Resource	Proposed Herbicide: Sulfometuron Methyl	Target Vegetation	Target Areas
Soils (BLM 2010a, p. 182-184)	*Sulfometuron methyl* would be broke down through hydrolysis and biodegradation. The half-life is short (Table 4-14). It has been found to move readily through coarse textured soils such as sand and sandy loams under field conditions, but Trubey *et al*. (1998) demonstrated it is immobile under field conditions and would not pose a threat to groundwater. Little is known about the effects to soil organisms; however, Busse *et al*. (2004) demonstrated that this herbicide would not alter the capability of mycorrhizal fungi to infect roots even at concentrations	cheatgrass, annual and perennial mustards, and medusahead rye	Roadsides, ROWs

	detrimental to seedling growth.		
Water Quality (BLM 2010a, p. 188-208)	Sulfometuron methyl would be applied to upland roadsides and in spot treatments of the Cahill allotment. Sulfometuron-methyl would not bind strongly to soil and would be slightly soluble in water (EXTOXNET 1996). In clay soils sulfometuron methyl has potential to persist for two years (Cox 2002), but it would largely retain in the upper three inches of soil (EXTOXNET 1996). It would break down in soil by microbial action, by hydrolysis, and by sunlight. Reported field half-lives for sulfometuron-methyl in water vary from 1 to 3 days to 2 months or more. In well-aerated acidic water, the herbicide is degraded quickly (EXTOXNET 1996).		
Fish, Riparian, and Wetlands	No effects would occur as no treatment will take place with this herbicide within riparian areas or wetlands.		
Wildlife and Special Status Wildlife Species (BLM 2010a, p. 240-258)	Sulfometuron methyl , an ALS-inhibitor, would be used as a broadspectrum, pre- and post-emergent herbicide. Direct spray of sulfometuron methyl would not likely to pose a risk to terrestrial animals. Because this herbicide would be relatively non-selective, it would not likely to be used in wildlife habitat areas and therefore, would result in few negative or positive impacts on wildlife. Long-term positive impacts could result if sulfometuron methyl would be used to clear former wildlife grazing habitat of an aggressive invasive, such as downy brome, and native forage was able to reestablish once this area was cleared.		
Grazing (BLM 2010a, p. 258-268)	This herbicide would be relatively non-selective and would be used on rights-of-way, but would not be registered for sites that are grazed. Risk quotients for terrestrial animals were all below the most conservative LOC of 0.1, indicating that direct spray or drift of Sulfometuron methyl would be unlikely to pose a risk to livestock (Table 3-14; ENSR 2005j). Sulfometuron would only be used in areas that will be rested for a year after application.		
Special Status Plant Species and Upland Vegetation (BLM 2010a, p. 144-146)	Sulfometuron methyl would be used as a broad spectrum pre- and post-emergent herbicide that inhibits cell division that focuses on grasses and broadleaf weeds. Sulfometuron methyl would work by inhibiting the activity of an enzyme called acetolactate synthase (ALS), which is necessary for plant growth. Sulfometuron methyl would be effective at very low dosages (half ounce to a few ounces per acre). Because of their high potency and longevity, this herbicide it has potential to pose a particular risk to non-target plants. Off-site movement of even small concentrations of this herbicide has potential to result in extensive damage to surrounding plants, and damage to non-target plants has potential to result in concentrations lower than those reportedly required to kill target invasive plants (Fletcher et al. 1996). To prevent off site movement Sulfomthuron applications the SOPs will be followed. This herbicide would be used to control stubborn roadside weed species and to enhance SSS habitats by removing noxious and invasive species.		

The proposed treatment in the Coleman Lake Pasture would convert 500 acres of Wyoming sagebrush and greasewood to perennial grasses and would have the potential to cause temporary disturbance and open the area up for weed invasion, primarily by winter annual grass species. The area already has a cheatgrass understory and the proposed application of imazapic would minimize the potential for expansion of this winter annual grass species within the project area. Imazapic would be used after mowing to control the annual grasses prior to seeding the perennial grasses. In the long-term, the conversion to perennial grasses would lead to more productive vegetation that would out-compete noxious weeds and invasive grass species.

Imazapic would also be used as an early detection, rapid response tool for controlling other invasive winter annual species such as medusahead rye and African wiregrass. These species have begun invading many areas across the Lakeview RA. This would allow BLM to quickly control these aggressive invasive species before they have the ability to negatively impact the five allotments.

Alternative 4: No Permit Issued/No Weed Control/No Weed Control:

Under alternative 4, no herbicide or manual control measures would be taken to control noxious weeds or invasive annual grass species. The biological control agents that are already present would continue to keep some of the Canada thistle suppressed. However, the Canada thistle plants and the biological control agents are unpredictable. Since the adult/larva insects spend the winter in the ground or on dead plant vegetation, on the years with extreme cold winters many of the insects would die off. This would lead to an explosion of Canadian thistle with no insects to control the weeds.

Several of the spring exclosures are infested with Canada thistle, with little to no weeds outside of the exclosure. This demonstrates that cattle must be grazing off the thistles prior to seed set and are serving as an effective control mechanism. Therefore, removing grazing would potentially have adverse effects on vegetation communities and other resource values by allowing these infestations to expand.

Even with grazing removed, some native grasses and forbs may not be able to out-compete with noxious weeds once they become established. In particular, it is likely that the perennial mustard species would continue to spread through waterways and invade additional areas. Halogeton would likely continue to spread along the roads and out into the salt flats. Canada thistle would likely continue to spread and create monocultures in riparian areas.

Special Status Plants

Affected Environment: Round Mountain Allotment (00211)

A three-acre population of *Gratiola heterosepala* (Boggs Lake hedeghyssop), a BLM sensitive plant species, occurs on the West Pasture of this allotment. The population represents the only known occurrence for this species in Oregon. Initial monitoring indicated that grazing had a detrimental effect on this species and the population was fenced to exclude cattle. The population size appears to fluctuate annually based on natural site hydrology conditions.

Environmental Consequences: Round Mountain Allotment (00211)

Alternatives 1-4

Due to the existing fenced cattle exclosure, the one population of *Gratiola heterosepala* would not be disturbed or otherwise affected by current grazing activity (Alternative 1), and would not be affected by any changes in grazing activity proposed under Alternatives 2-4. Continued maintenance of the exclosure would be necessary to insure long-term viability under Alternatives 1-3.

Alternative 3: Change Livestock Management/Vegetation Treatments

All proposed weed treatment sites would be surveyed for special status plant species prior to implementation. If any plants are located, herbicides would not be applied. Therefore, there would be no effects from the use of the proposed new herbicides on special status species.

Affected Environment: Rahilly Gravelly Allotment (00212)

This allotment includes the Rahilly-Gravelly ACEC/RNA which was designated in part, to protect special status plants (see ACEC/RNA section). Four populations of *Hymenoxys cooperi* var. *canescens* (Cooper's goldflower), a BLM sensitive plant species, have been documented within this allotment (Table 45). These populations occur at

Table 45. *Hymenoxys cooperi* var. *canescens* Populations in Rahilly Gravelly Allotment

Site ID	Pasture	Acreage	Latest site visit	Status	Threats
151985HYCOC_089	Rahilly	<1	6/3/1985	Occupied (8 individuals)	Unknown, latest site visit occurred almost 30 years ago
152005HYCOC_164	Sucker Creek	238	9/21/2011	Occupied	None
152007HYCOC_088	Sucker Creek	63	9/21/2011	Occupied	None
152007HYCOC_090	Nevada	9	9/21/2011	Absent	Grazing season coincides with flowering period

the northwestern edge of its range and represent the only known occurrences for this plant in Oregon. *Hymenoxys cooperi* var. *canescens* is a biennial or often short-lived perennial in the *Asteraceae* (sunflower family). Flowering occurs from June to September. The presence of individual plants along bladed road banks indicates some tolerance to disturbance.

Cumulatively, the populations cover about 310 acres in three pastures of the allotment. The smallest population was recorded in the Rahilly Pasture and consisted of 8 individuals occupying less than one acre. The Rahilly Pasture population has not been visited since its initial discovery in 1985. The larger two populations occur in the Sucker Creek Pasture, occupy 238 and 63 acres, respectively, and appear stable according to the latest monitoring in late September of 2011. During this monitoring trip, no plants were found in a 9-acre population occurring in the Nevada Pasture (BLM 2011c). A potential cause for this possible extirpation was not listed in the 2011 monitoring report. It is also possible that the plant is still present in the pasture, but the botanist conducting the monitoring effort simply could not find plants in this area due to the lateness of the growing season.

Environmental Consequences: Rahilly Gravelly Allotment (00212)

Effects Common to Alternatives 1-3:

The population of *Hymenoxys cooperi* var. *canescensi*o in the Nevada Pasture would be monitored to assess viability and the potential effects of cattle grazing (see Chapter 2). Further study of this plant's life cycle and habitat preference is necessary to determine the cause of this population's extirpation. If monitoring confirms the absence of *Hymenoxys cooperi* var. *canescens*, then adjustment of the grazing season or an increase in the rest period for this pasture may be necessary. Reseeding *Hymenoxys cooperi* var*. canescens* at this location without adjusting the grazing use would likely not be successful if grazing continues to coincide with the flowering period and adequate rest is not provided. Twenty-eight years have passed since a site visit to the Rahilly Pasture population and observing the dynamics of this population could help elucidate the effects of cattle grazing on *Hymenoxys cooperi* var*. canescens.*

Alternative 1: No Action

Based on past monitoring, the Sucker Creek Pasture populations of *Hymenoxys cooperi* var. *canescens* appear stable and would be expected to be maintained under the current grazing management. The status of the Rahilly Pasture population is unknown. However, effects are assumed to be similar to the Sucker Creek populations, as they share the same grazing management, elevation, aspect, and occupy the same Intermountain Basins - Big Sagebrush Steppe vegetative community.

The current grazing schedule may have led to the extirpation of *Hymenoxys cooperi* var. *canescens* in the Nevada Pasture. The Nevada Pasture is grazed during late summer (as compared to grazing in the Sucker Creek Pasture which occurs from mid-May to mid-July, every other year; see Table 3) and this may be affecting the population, as this coincides with its flowering period. Furthermore, grazing the pasture three out of four years may not allow this biennial plant the chance to reproduce. Biennial plants require successful seed germination from the previous season or seed bank, a year of vegetative growth, and a second year to develop flowers and set seed. While the vegetative rosettes of this plant are unlikely to be grazed due to their low stature, flowering stalks reach heights of 12 inches and could be grazed incidentally or intentionally. The cumulative effects of a possible reduction in seed set from grazing for three years and the single year of rest may be limiting the reproductive potential of this population.

Alternative 2: 50% Reduction in Grazing

The current grazing schedule appears to have little effect on *Hymenoxys cooperi* var. *canescens* in the Sucker Creek Pasture populations and they would continue to be maintained with a 50% reduction in active use. The status of the Rahilly Pasture population is unknown. However, effects are assumed to be similar to the Sucker Creek populations, as they share the same grazing schedule, elevation, aspect and occupy the same Intermountain Basins - Big Sagebrush Steppe vegetative community.

The reason for the possible extirpation of the Nevada Pasture population is unknown, so estimating the effects of reduced grazing is not possible. However, continued grazing use at any level during the flowering period is likely to impede re-colonization in the Nevada Pasture.

Alternative 3: Change Livestock Management/Vegetation Treatments

Grazing effects on special status plants would be similar to Alternative 1.

While the known populations of *Hymenoxys cooperi* var. *canescens* occur outside the proposed treatment and seeding area, it will still need to be surveyed for special status plant species prior to project implementation. Should any special status plant sites be found, they would be avoided during implementation and, therefore, would not be impacted by the proposed project.

All proposed weed treatment sites would be surveyed for special status plant species prior to implementation. If any plants are located, herbicides would not be applied, or other treatment techniques (manual, hand-pulling, etc.) would be used in a manner that avoids the plants. Therefore, there would be no effects from the use of the proposed new herbicides or other treatment methods on special status species.

Alternative 4: No Permit Issued/No Weed Treatment

Since current grazing management appears to have little effect on the Sucker Creek Pasture populations of *Hymenoxys cooperi* var. *canescens,* they would be maintained under this alternative. The status of the Rahilly Pasture population is unknown. However, effects are assumed to be similar to the Sucker Creek populations as they share the same grazing schedule, elevation, aspect and occupy the same Intermountain Basins Big Sagebrush Steppe vegetative community.

The reason for the possible extirpation of the Nevada Pasture population is unknown. Removal of livestock use during the flowering period would eliminate the potential threat to reproductive success. However, successful re-colonization would depend on a viable seed bank or dispersal from the remaining populations. Since neither of these possibilities is guaranteed, it is unknown if the removal of grazing alone would ensure the revival of this population.

Affected Environment: Burro Springs Allotment (00213)

This allotment includes most of the Spanish Lakes ACEC/RNA, which was designated in part to protect native plant communities (see ACEC/RNA section).

A 305-acre population of *Heliotropium curassavicum* var. *obovatum* (seaside heliotrope), a BLM sensitive plant species, occurs within the allotment. Heliotrope is a perennial with stout creeping roots. The fleshy, semi-succulent stems often arise in bunches and flower from June to September. Although population numbers appear stable, grazing and trampling from cattle were listed as a potential threat during the most recent monitoring visit to this population on July 18, 2012.

Another BLM sensitive plant species, *Symphoricarpos longiflorus* (fragrant snowberry), also occurs in the allotment. This perennial shrub occupies open rocky slopes and occurs in an area unlikely to be frequented by cattle. Older twigs often persist giving the plant a spiny appearance. Flowering occurs during May and June. This population appears stable according to the most recent monitoring report from 2012.

Environmental Consequences: Burro Springs Allotment (00213)

Alternative 1: No Action

Both sensitive plant populations appear stable under current grazing management and this trend would likely continue into the foreseeable future.

Alternative 2: 50% Reduction in Grazing

A reduction in grazing would reduce the ground disturbance to Spanish Lake. However, the current grazing season occurs in February when Spanish Lake soils are unlikely to be saturated or are frozen and not as susceptible to negative impacts from trampling. The heliotrope population would be expected to maintain or slightly improve under Alternative 2.

Since the *Symphoricarpos longiflorus* population appears stable under current grazing management and is located in an area unlikely to be frequented by cattle, this population would be maintained under Alternative 2.

Alternative 3: Change Livestock Management/Vegetation Treatment

Extension of the grazing period into May would increase cattle use of the Spanish Lake playa later into the spring growing season. Increased trampling of the playa surface while it is saturated may negatively affect the habitat of *Heliotroprium curassavicum* var. *obovatum.* The perennial rootstock may be damaged or exposed in deep hoofprints. Additionally, pedestalling and hummocks may negatively affect the habitat by reducing suitable germination sites and decreasing suitable site hydrology. The intensity of damage depends on the saturation levels of playa soils and intensity of cattle use during wet periods. This potential impact could be reduced by limiting livestock use during wet periods when soils are saturated.

The proposed extension of the grazing season may affect the *Symphoricarpos longiflorus* population as it coincides with the period when this shrub is most palatable to cattle. Utilization of *Symphoricarpos longiflorus* by livestock occurs in early spring when it is the first shrub to leaf out (McWilliams 2005). However, studies of the closely related *Symphoricarpos oreophilus* (mountain snowberry) indicate a tolerance to browsing if given adequate recovery time (Aleksoff 1999). Limiting the cattle use to February through May, leaves the remainder of the growing season for the shrubs to recover and does not overlap with snowberry's flowering period.

However, the population occurs in an area of the allotment that is not regularly accessed by cattle. Therefore, it is unlikely that this population would be negatively impacted. The population could be monitored during the first two years of implementation to document any effects of grazing. Adjustment of the grazing season may be necessary if a decline in the population is observed.

All proposed weed treatment sites would be surveyed for special status plant species prior to implementation. If any plants are located, herbicides would not be applied. Therefore, there would be no effects from the use of the proposed new herbicides on special status species.

Alternative 4: No Permit Issued/No Weed Treatment

The *Heliotroprium curassavicum* var. *obovatum* population appears stable under current grazing management and is expected to maintain or slightly improve with the removal of grazing. The heliotrope population may benefit from the removal of ground disturbance of livestock trampling to the Spanish Lake Playa and elimination of the potential negative impacts to the heliotrope's roots and habitat. Since the *Symphoricarpos longiflorus* population appears stable under current grazing management and is in an area unlikely to be frequented by cattle, it is expected to maintain under Alternative 4.

Affected Environment: Hill Camp Allotment (00215)

This allotment contains a portion of the High Lakes ACEC, which was designated in part to protect botanical resources (see ACEC/RNA section). However, no special status plants have been documented in this allotment.

Environmental Consequences: Hill Camp Allotment (00215)

Alternatives 1-4

Due to the lack of special status plant populations or suspected habitat, there would be no effects expected from the current grazing activity (Alternative 1), and none would be anticipated by any changes in grazing activity proposed under Alternatives 2-4. All proposed weed treatment sites would be surveyed for special status plant species prior to implementation. If any plants are located, herbicides would not be applied. Therefore, there would be no effects from the use of the proposed new herbicides on special status species.

Affected Environment: FRF Cahill Allotment (00219)

No special status plants have been documented in this allotment.

Environmental Consequences: FRF Cahill Allotment (00219)

Alternatives 1-4

Due to the lack of special status plant populations or suspected habitat, there would be no effects from the current grazing activity (Alternative 1), and none would be anticipated by any changes in grazing activity proposed under Alternatives 2-4. All proposed weed treatment sites would be surveyed for special status plant species prior to implementation. If any plants are located, herbicides would not be applied. Therefore, there would be no effects from the use of the proposed new herbicides on special status species.

Livestock Grazing Management

Affected Environment: Round Mountain Allotment (00211)

This is a ten year term grazing permit authorizing 673 AUMs of cattle use in Round Mountain Allotment (00211). There are 1,102 AUMs authorized in this allotment and two permittees, but this analysis only addresses the 673 AUMs authorized under the permit issued to one permittee (Cahill Ranch). The season of use is from April 10th thru July 8th. Grazing is managed as a rest rotation grazing system utilizing three pastures (Table 2).

The rest rotation grazing system rotates between two pastures during April to July each year and rests the third pasture. Two of the pastures (North and West) operate under a Biological Opinion as part of the Section 7 consultation process with the U.S. Fish and Wildlife Service (1997). The allotment is categorized as an "M" or "maintain" category and this category was determined by the following criteria:

- Present range condition satisfactory
- Allotments have moderate to high resource production potential, and are producing near their potential (trend is moving in that direction)
- No serious resource-use conflicts exist
- Opportunities may exist for positive economic return from public investments
- Present management appears satisfactory
- Other criteria appropriate to area

Range Condition

An interdisciplinary team conducted a Rangeland Health Assessment (RHA) in the allotment in 1999 to determine if grazing management was in conformance with the applicable standards. The RHA was reviewed again as part of this environmental analysis. In the 1999 RHA, both standards 2 and 4 were not being met, but it was determined that existing grazing management practices were promoting achievement or significant progress toward the Oregon Standards for Rangeland Health (BLM 1997a, 1999a). A summary of the 1999 RHA summary of conditions in 2013 are contained in Table 46 and are incorporated herein by reference in their entirety (BLM 1999a, 2013a).

Table 46. Rangeland Health Assessments for Round Mountain Allotment (BLM 1999a, 2013a)

Standard	1999	2013	Comments
1. Watershed Function – Uplands	Met	Met	The 1999 RHA found upland soils in the allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate. 86% of the allotment was in the Slight Erosion Condition Class, 12% was in Stable class, and the remaining acres were unknown. OAT found 26% of the allotment in upward trend, 71% static trend, and 3% unknown. Photo trend plots, step-toe transects, and professional judgment determined trend across the allotment to be static. Recent photos and transects (2000-2011) continue to show stable to increasing vegetation cover across the allotment in all pastures. In the 1999 RHA, 70% of the allotment was in mid seral and 13% was in late seral ecological condition. Based on assessing photos and transect data collected from 2000-2012, ecological condition has been stable or improving across the allotment. There is good plant vigor and cover allowing the upland soils to exhibit infiltration and permeability rates, moisture storage, and stability appropriate to soils, climate and landform.
2. Watershed Function Riparian/ Wetland Areas	Not Met	Met	The 1999 Rangeland Health Assessment stated that this standard is not being met because some stream reaches are not in Proper Functioning Condition (PFC). However the current management of livestock is resulting in significant progress towards meeting the goal. Lotic Proper Functioning Condition (PFC) site inventories were completed in 1996 on Twelvemile, Fifteenmile and Twentymile Creeks. The Twelvemile Creek reaches have been excluded from authorized grazing since 1980 and have been effectively excluded from grazing since 1994. The Fifteenmile reaches are being managed under consultation with the U.S. Fish and Wildlife Service on effects of grazing

			on the Threatened Warner Sucker. While the existing conditions are largely a result of past grazing practices, current management of livestock is resulting in significant progress towards meeting the goal. Site visits in 2013 and all available data generally indicate improving trends in fish habitat, stream channel, and riparian conditions throughout the allotment. Photos points established in the 1970's and 1980's that were retaken more recently show increases in native riparian vegetation, including willows, sedges and rushes, as well as stream channel narrowing and deepening, and increases in streambank stability. A rapid riparian scorecard assessment developed for the Fremont National Forest and Lakeview BLM (Riegel, unpublished) site was established on a grazed reach of Fifteenmile Creek in 2006 and re-read in 2013. The 2013 data showed the site continued to be in moderate ecological status, with some increases in late seral species and some decreases early seral species being noted. Juniper has been cut at the site since 2006, and its ecological condition is thought to be improving in general. Fifteenmile Creek is intermittent in the reach in question and a significant change in species composition will take place over a longer time period than seven years. There are approximately 266 acres of palustrine wetlands which occur within the allotment all of which are currently rated in Proper Functioning Condition.
3. Ecological Processes	Met	Met	The 1999 RHA concluded that the vegetation was healthy and productive with the cover and composition appropriate to soil, climate and landform for this allotment. The RHA used OAT data from the ESI (1988) and the long term monitoring plots to determine the trend of the vegetation condition across the allotment. The OAT from the 1988 ESI examined plant vigor, seedlings, litter, rills and gullies to determine that 26% of the allotment was in an upward trend and 71% had a static trend. In 1999 there were 7 long term photo plots in the allotment and one of the photo plots had an associated vegetation transect. The vegetation transect was in the West Pasture of the allotment located in the big sagebrush/Thurber's needlegrass community. This is the largest vegetation community in the northern part of the pasture and represents a key area that is consistently grazed by cattle. The data showed an increase in vegetation cover between 1986 and 1994. There also appears to be an increase in Thurber's needlegrass and Idaho fescue, both desirable grasses. The other 6 photo trend plots within the allotment were evaluated and the trend at these sites was determined to be static. Therefore the conclusion in the 1999 RHA was that the vegetation trend across the allotment is static to upward. In 2013, the assessment included the vegetation transect in the West Pasture (RM-07) and another vegetation transect in the East Pasture (RM-02) that began in 1986 and was read in 2000, 2005, 2008 and 2011. Assessing the vegetation transects (RM-02 and RM-07) in 2013 found that vegetation cover and composition has either been stable or slightly improved since the 1999 RHA. Assessing the photos from all 8 trend studies across the allotment in 2013 found the trend to be stable or slightly upward when comparing vegetation cover, composition and plant vigor. The only negative change was the increase in juniper size and density in trend plot RM-06 in the West Pasture.
4. Water Quality	Met	Met	In 1999 the RHA found this standard was not being met, but the current management of livestock was resulting in significant progress towards meeting the standard. Twentymile, Twelvemile and Fifteenmile Creeks from the mouth to the headwaters did not meet state standards for temperature. Currently, Twelvemile Creek on the BLM is excluded from grazing so livestock use is no longer a causative factor in not meeting the standard. Twentymile Creek is either excluded from grazing and/or is intermittent, so livestock use is no longer a causal factor in not meeting the standard. Because of past changes to grazing to better manage riparian vegetation, current livestock management continues to make significant progress toward meeting the standard.
5. Native, Threatened or Endangered and Locally Important Species	Met	Met	In 1999 the deer and pronghorn populations were healthy and increasing in number. Habitat quantity and quality did not appear to be limiting population size or health. Coyote predation was thought to be depressing mule deer recruitment, however, populations continue to fluctuate at or slightly below ODFW's Management Objective for the big game management units. A general hunt season is slowing the population expansion of elk within the two units. Big game habitat within the Round Mountain Allotment is monitored via at 12 browse (bitterbrush) transects. The condition of the bitterbrush stands demonstrates what fire suppression, historic livestock grazing practices, and past high deer numbers does to mule deer winter habitat. There are numerous decadent or dead bitterbrush plants within the allotment which provide valuable forage and cover for wintering deer, however, recruitment of young plants varies from virtually none within some transects to fairly decent in others. Overall there has been some improvement in bitterbrush vigor and stand

			replacement over the past 10-15 years. The habitat provided within the allotment is crucial to wintering deer in that it adjoins with winter range on the forest to the west and to BLM-administered winter range to the north and south. It provides habitat connectivity, as well as, a spatial distribution of lower elevation range critical during high snowfall years. In 2013, the mule deer and pronghorn antelope populations were relatively stable within this unit. Habitat quantity and quality do not appear to be limiting big game population size or health within the unit. Deer and pronghorn populations continue to fluctuate at or slightly above ODFW's population management objectives for the unit (ODFW 2012a,b). A population of Rocky Mountain elk occurs within the Round Mountain Allotment. Population expansion within this area is limited by disease mortality currently being monitored by the ODFW. Current livestock grazing use (both stocking rates and grazing season) does not appear to be limiting wildlife habitat within the allotment. The allotment provides habitat for numerous small and nongame birds and mammals common to the Great Basin, as well as, marginal sage grouse habitat. The allotment also provides habitat for raptors and BLM and state sensitive wildlife species and federally listed species. No critical habitat or limitations have been identified for any of these species which include wintering bald eagles, possibly pygmy rabbits and various sensitive bat species. Rangeland Health Standard 5 would continue to be met and the allotment would continue to provide adequate quality wildlife habitat that is capable of supporting an appropriate assemblage of sagebrush-dependent wildlife species. The Warner sucker is listed as a Threatened Species under the ESA. There is no occupied habitat currently being grazed in the allotment. Because Fifteenmile Creek flows into occupied habitat less than a mile below the grazed pasture, it was determined in Section 7 consultation that grazing was having an adverse effect on suckers. This effect has been minimized by restrictions placed on riparian grazing and the USFWS issued a Biological Opinion to authorize incidental "take" of the species. Warner red-band trout, a Bureau Sensitive Species is found in Twelvemile and Fifteenmile Creek. Their populations appear to be strong in both creeks. Noxious weeds are known to occur and are concentrated along travel routes, riparian areas, and waterholes. The rest rotation system will allow for control of the current weeds and will minimize the potential of weed populations increasing. The current rest rotation system maintains or improves the native plant community and this reduces the opportunity for the spread of noxious weeds. Special Status Plants: A three-acre population of *Gratiola heterosepala* (Boggs Lake hedeghyssop), a BLM sensitive plant species, occurs on the West Pasture of this allotment. The population represents the only known occurrence for this species in Oregon. Initial monitoring indicated that grazing had a detrimental effect on this species and the population was fenced to exclude cattle. The population size appears to fluctuate annually based on site hydrology. Due to the fenced exclosure, this population of *Gratiola heterosepala* is not disturbed or otherwise affected by current grazing activity.

Environmental Consequences: Round Mountain Allotment (00211)

<u>Effects Common to Alternative 1</u>

Actual use, utilization, and climate data have been summarized in the allotment monitoring file and indicate that livestock grazing levels are sustainable at the current forage allocation for the allotment. Trend photos indicate a stable trend in the key areas of the allotment, and the current rest rotation grazing system is meeting all Standards and Guidelines. Livestock grazing management is maintaining a vegetative community that supports other resources objectives and uses.

The average actual use over the last 12 years for both permittees in the allotment is 640 AUMs and the authorized use is 1,102 AUMs. The average actual use for the Cahill permit in Round Mountain was 313 AUMs out of the 673 authorized AUMs in this permit. The average utilization measured in the pastures varied between an average of 45% for East Pasture, 38% in the North Pasture and 37% in West Pasture. These average utilization levels only include the years the pastures were grazed, the levels would be lower if the years of rest were averaged in. In the last twelve years the East and North Pastures were rested 4 years and the West Pasture 3 years. However in two years the West Pasture was only used by less than 50 AUMs so it was effectively rested. The average utilization was below the 50% utilization level needed to sustain root growth and maintain perennial native grass production.

The grazing levels would remain at 673 AUMs under Alternatives 1 and 3. This level of use, along with managed grazing, would provide a sustainable forage base under both alternatives. There could potentially be a decline in forage production over the long-term as western juniper continues to expand into the area in the absence of wildfire.

Alternative 2: Reduced Gazing by 50%

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 337 AUMs. The permittee would need to replace 337 AUMs of lost forage with private land forage or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Alternative 3: Change Livestock Management/Vegetation Treatments

The effects of alternative 3 are the same as alternative 1 except the grazing season is 7 days longer in the summer. The number of permitted AUMs remains the same. This will allow the permittee an extra week to gather cows off the West Pasture and move onto the National Forest. Currently the permittee is not permitted to move onto the National Forest until July 1st. Under alternative 1 the permittee has from July 1st to July 8th to move the main herd and then go back find any cows that were missed and move them to the forest. The rough terrain and the woody vegetation in the West Pasture often requires 3 or 4 day long sweeps of the pasture to find the last few animals. Therefore the additional week would assure the permittee is not outside his permit while still making every effort to move cows onto the forest on July 1st.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, livestock grazing under the Cahill permit within the allotment would not be authorized. The permittee would need to replace 673 AUMs of lost forage with private land forage or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Existing range improvement projects assigned to Cahill ranch within the allotment would not be maintained. Therefore all the range improvements in the allotment would need to be maintained by the remaining permittee in the allotment (Carey Ranch).

Affected Environment: Rahilly Gravelly Allotment (00212)

This is a ten year term grazing permit authorizing 1,781 AUMs of cattle use in the Rahilly Gravelly Allotment. The season of use is from March 10th thru September 16th. Grazing is managed under the grazing permit as a combination rest rotation and deferred grazing system utilizing 6 pastures (Table 4). In addition, grazing

management in the Horse Creek Pasture is determined by the Biological Opinion under consultation with the USFWS (1997).

The rest rotation part of the grazing system is grazing 3 of 4 main pastures each year. The Horse Creek Pasture is a riparian pasture also under consultation with the USFWS and a Biological Opinion (USFWS 1997) which allows it to be grazed every other year. The Pederson Pasture operates like an FRF Pasture and is deferred and mostly grazed in the winter in conjunction with private meadow land. There are 1,781 AUMs on 33,285 acres of public land and 2,031 acres of private land with one permittee.

The allotment is categorized as an "I" or "improve" category and this category was determined by the following criteria:

- Present range condition unsatisfactory with most improving and some static
- Allotments have moderate to high resource production potential, and are producing low to moderate. Much potential for both native and artificial treatment.
- Limited resource-use conflicts may exist. There are values for deer, antelope and sagegrouse.
- Opportunities exist for positive economic return from public investments. Good opportunities for burning and seeding.
- Present management appears satisfactory. Grazing sysem has been effective.
- Other criteria appropriate to area. Permittees are very cooperative.

Range Condition

An interdisciplinary team conducted a Rangeland Health Assessment (RHA) within the allotment in 1999 to determine if grazing management was in conformance with the applicable standards. Standards 2 and 4 were not being met, but it was determined that existing grazing management was not a significant factor in not meeting the Standards (BLM 1999b). The RHA was reviewed again in 2013. Current grazing management practices in the allotment are either meeting or are making significant progress towards meeting these standards (BLM 2013b). Both the 1999 RHA and 2013 RHA update are summarized in Table 47 and are incorporated herein by reference in their entirety (BLM 1999b, 2013b).

Environmental Consequences: Rahilly Gravelly Allotment (00212)

Alternative 1

Actual use, utilization, and climate data have been summarized in the allotment monitoring file and indicate that livestock grazing levels are sustainable at the current forage allocation for the allotment. Trend photos indicate a stable trend in the key areas of the allotment, and the current rest rotation grazing system is meeting all Standards and Guidelines. Livestock grazing management is maintaining a vegetative community that supports other resources objectives and uses.

The average actual use over the last 12 years in the allotment is 1,111 AUMs for the 4 main pastures in which the authorized use is 1,647 AUMs. The average annual actual use for the Pederson Pasture is 134 AUMs and the authorized use is 134 AUMs. The average utilization measured in the pastures varied between an average of 42% for Sucker Creek Pasture, 43% in the Coleman Lake Pasture and 46% in Rahilly Pasture. The average utilization was below the 50% utilization level needed to sustain root growth and maintain perennial native grass production.

The grazing levels would remain at 1,781 AUMs under Alternative 1. This level of use, along with managed grazing, would provide a sustainable forage base under this alternative. There could potentially be a decline in

Table 47. Rangeland Health Assessment for Rahilly Gravelly Allotment (BLM 1999b, 2013b)

Standard	1999	2013	Comments
1. Watershed Function – Uplands	Met	Met	The 1999 RHA found upland soils in the allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy in the soil was appropriate. 1% of the allotment was rated as stable, 87% was rated as slight, 5% was rated moderate for erosion conditions. The remaining 8% was unknown. OAT was upward on 2%, static on 86%, and unknown on 8% of the allotment. Photo trend stations found a static trend on half of the sites and an upward trend on the other half. The step-toe vegetation transects depicted an upward trend with an increase in the amount of vegetation present versus bare ground. Recent photos and transects (2000-2013) continue to show stable to increasing vegetation cover across all pastures. In 1999, 70% of the allotment was in mid seral and 13% was in the late seral ecological condition. Assessing the photos and transect data collected from 2000-2012, it appears the ecological condition has been stable or improving across the allotment. There is good plant vigor and cover allowing the upland soils to exhibit infiltration and permeability rates, moisture storage, and stability appropriate to soils, climate and landform.
2. Watershed Function Riparian/ Wetland Areas	Not Met	Met	In 1999, approximately 1,656 acres of lentic wetlands in the allotment were rated in PFC and 127 acres were nonfunctional (May Lake). This condition appeared to be the result of lakebed pits piercing the clay seal of the playa, allowing de-watering. Livestock grazing was not the causal factor. Lotic PFC site inventories were completed in 1996 on Horse Creek and Horse Creek tributary. Two reaches (about 50%) on Horse Creek were rated as Functional at Risk with an Upward Trend; the remaining reaches were rated as PFC. In 2000, one of those two reaches had improved and was rated as PFC. The uppermost portion of Horse Creek is now believed to be at PFC, based on the field reconnaissance by the Fish Biologist and BLM staff. Photos points established in 1989 that were retaken in 2013 show increases in native riparian vegetation, including willows, sedges and rushes, as well as stream channel narrowing and deepening, and increases in stream bank stability. A riparian scorecard assessment (Riegel, unpublished) was completed in 2013 and showed the site to be in moderate to high ecological status. All available data, photo monitoring on file at Lakeview BLM, and professional judgment indicate improving trends in fish habitat and riparian conditions throughout the allotment. For these reasons, this standard is now being met in the allotment.
3. Ecological Processes	Met	Met	In the 1999 RHA, the OAT (ESI, 1987) was in upward trend on 2% and static on 86% of the allotment. The vegetation transect data showed an increase in vegetation cover between 1986 and 1999, indicating an upward trend. In 2013, recent trend data (2000-2012) indicates vegetation communities in the allotment are stable since 1999. The allotment supports most of the terrestrial animals common to the sagebrush steppe in the Great Basin. The allotment provides habitat for huntable populations of mule deer, pronghorn antelope, elk, and sage-grouse. There are 350 AUMs of forage allocated to wildlife (329 for deer/antelope and 21 for other wildlife) and are adequate to support current wildlife populations. There is currently no major competition between wildlife and domestic livestock for forage, either early green-up grasses and forbs, or winter browse such as antelope bitterbrush and curl-leaf mountain mahogany. The allotment lies within ODFW's Warner Big Game Management Unit. Current populations are slightly below management objectives for deer and substantially below that proposed for elk. The entire allotment contains yearlong habitat for mule deer, and portions of the allotment are used by elk throughout the year. The allotment also contains year-round habitat for antelope and sage-grouse; however, no crucial habitat has been identified for either species.
4. Water Quality	Not Met	Met	In 1999 Horse Creek did not meet state water quality standards for temperature. No temperature data has been collected since and it is unknown whether Horse Creek is currently meeting state water quality standards. However, due to changes in grazing management, including more rest of the pasture and less use in the riparian area, there has been noticeable improvement in stream and riparian conditions. Photos points established in 1989 that were retaken in 2013 show increases in native riparian vegetation, including willows, sedges and rushes, as well as stream channel narrowing and deepening, and increases in stream bank stability. A riparian scorecard assessment (Riegel, unpublished) was completed in 2013 and showed the site to be in moderate to high ecological status. All available data, photo monitoring on file at Lakeview BLM, and professional judgment indicate improving trends in

			riparian conditions, which should lead to improved water quality throughout the allotment. For these reasons, this standard is now being met.
5. Native, Threatened or Endangered and Locally Important Species	Met	Met	In 1999, the diversity of wildlife and plant species was an indication of health and productivity found in the different habitats within the allotment. The habitat provided within the allotment is crucial to wintering deer, in that it adjoins with winter range on the forest to the west and to BLM-administered winter range to the north and south. It provides habitat connectivity, as well as a spatial distribution of lower elevation range that is critical during high snowfall years. The deer, elk, and antelope populations are healthy and increasing in number within the allotment; habitat quantity and quality do not appear to be limiting population size or health. Coyote predation is thought to be depressing mule deer recruitment; however, populations continue to fluctuate at, or slightly below, ODFW's Management Objective for the unit. A general hunt season is slowing the population expansion of elk within the unit. However, if ODFW is unable to limit future expansion to the proposed Management Objective for the area, competition with domestic livestock could occur, and depredation on private lands could become an issue. The allotment also provides habitat for numerous small, nongame birds and mammals common to the Great Basin, including sage-grouse habitat. In the 1999 RHA there were 7 known sage grouse leks found within the allotment. Sage grouse populations, like the rest of southeastern Oregon, were stable to declining. In 2013 following more intensive sagegrouse studies, there are 3 “occupied” leks and 6 “unoccupied pending” leks in this allotment. Sagegrouse populations in Lake County are stable to increasing (ODFW, 2011a). Sage-grouse habitat in the Rahilly Gravelly Allotment has maintained an appropriate mix of suitable to marginal sage-grouse habitat under the current grazing management. It is expected that vegetation trends would remain static or improve slightly and provide adequate habitat for sage-grouse. In the long-term Western Juniper expansion could affect portions of suitable breeding habitat in the allotment. The allotment also provides habitat for raptors and some BLM and state sensitive wildlife species and federally listed species. No critical habitat or limitations have been identified for any of these species, which may include wintering bald eagles, pygmy rabbits, and various sensitive bat species. The Warner sucker is listed as a Threatened Species under the ESA. There is no occupied habitat in the allotment. Because Horse Creek flows into occupied habitat less than a mile below the grazed pasture, it was determined in Section 7 consultation that grazing was having an adverse effect. This effect has been minimized by restrictions placed on riparian grazing and the USFWS issuing a Biological Opinion to authorize incidental take of the species. The Foskett speckled dace is listed as a Threatened Species under the ESA. There is occupied habitat in two springs in the Coleman Lake Pasture. Grazing has been excluded from both spring sources. No authorized grazing occurs at Dace Spring as the fish habitat at the site is completely excluded. Some authorized grazing may occur on occupied Foskett specked dace habitat at the lower end of Foskett Spring, near the shore of Coleman Lake, to help maintain the open water habitat conditions preferred by the species; this action is scheduled to be consulted on with USFWS this winter. Warner redband trout, a Bureau Sensitive Species, is found in Twelvemile Creek at its confluence with Horse Creek below the allotment. Noxious weeds are known to occur along travel routes, riparian areas, and waterholes. The rest rotation system will allow for control of the current weeds and will minimize the potential of weed populations increasing. The current rest rotation system maintains or improves the native plant community and this reduces the opportunity for the spread of noxious weeds.

forage production over the long-term as western juniper continues to expand into the area in the absence of wildfire.

<u>Alternative 2: Reduce Grazing by 50%</u>

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 891 AUMs. The permittee would need to replace 891 AUMs of lost forage with private land forage

or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Alternative 3: Change Livestock Management/Vegetation Treatments

Under Alternative 3 most of the effects in the Rahilly Gravelly allotment would be the same as in Alternative 1, as the AUMs and the grazing system would remain the same. Creating a Pederson FRF Allotment will not change management, but will simplify the paperwork for the permittee and the BLM, as the actual use bills in the Rahilly Gravelly allotment would be separated from the advanced bills required for the new Pederson FRF allotment.

Under alternative 3 about 500 acres in the Coleman Lake Pasture would be burned and seeded with grasses to dramatically improve the forage conditions and productivity of that 500 acre parcel. One mile of fence would be constructed to separate the seeded area from the rest of Coleman Lake Pasture and create a new pasture. In the short term (2-3 years) the permittee would have to rest seeded the area within the newly created pasture and this would reduce available AUM's.

However, in the longer term (3 years and beyond) the creation of another pasture within the Coleman Lake Pasture, encompassing the treated area, would provide the permittee more flexibility in the rest rotation system. Under Alternative 1 the Coleman Lake Pasture can only be used in the spring and early summer because cheatgrass is the primary forage. With the newly created seeded pasture the permittee could rotate between the two pastures, grazing the seeded pasture in spring some years and in the summer other years, providing more growing season rest for the remaining part of Coleman Lake Pasture. The increased flexibility would allow the permittee, in coordination with the BLM to adjust the spring and summer grazing schedule each year to take advantage of the different precipitation amounts. Being able to adjust the grazing schedule to fit the growing conditions would improve animal performance in the short term and range conditions in the long term.

Alternatives 4: No Permit Issued/No Weed Treatment

Under this alternative, livestock grazing could continue on the private land within the allotment if the permittee fenced off the private land. The private land portions of the allotment (over 2,000 acres), includes large parts of the Pederson and Horse Creek Pastures and smaller parts of the Sucker Creek and Coleman Lake Pastures and would require 7- 8 miles of new fence. There would be about 135 AUMs of forage left on the private land. The permittee would need to replace 1,781 AUMs of lost forage that occurs on the public land within the current allotment with private land forage or hay in the general vicinity. The additional cost to replace this forage and build the new fences would be at the permittee's expense. These costs are discussed further in the social and economic section.

Existing range improvement projects on public lands within the allotment would not be maintained. However, the allotment boundary fences would still need to be maintained by the BLM or adjacent permittees.

Affected Environment: Burro Springs Allotment (00213)

This is a ten year term grazing permit authorizing 179 AUMs of cattle use in Burro Springs Allotment (00213). There are 279 AUMs authorized in this allotment and two permittees, but this analysis only addresses the 179 AUMs authorized under the permit issued to one permittee, (Cahill Ranch). The season of use is from February 1st thru March 1st. Grazing is managed under this grazing permit as a winter grazing system even though the allotment is authorized for spring grazing under another permittee (Table 4).

There is only one pasture in the allotment and the grazing schedule is for the allotment to be grazed four years and rested one year. The allotment is categorized as an "M" or "maintain" category and this category was determined by the following criteria:

- Present range condition satisfactory
- Allotments have moderate to high resource production potential, and are producing near their potential (trend is moving in that direction)
- No serious resource-use conflicts exist
- Opportunities may exist for positive economic return from public investments
- Present management appears satisfactory
- Other criteria appropriate to area

Range Condition

An interdisciplinary team conducted a RHA in the allotment in 2004 to determine if grazing management was in conformance with the applicable standards. Standard 2 was initially not being met, but the issues causing the spring site to be nonfunctional were corrected and standard 2 is now being met. The existing grazing management in the Burro Springs allotment is promoting achievement of, or making significant progress toward, rangeland health standards (BLM 1997a, 2004a, 2004c). Both the 2004 RHA and 2013 RHA update are summarized in Table 48 and are incorporated herein by reference in their entirety (BLM 2004a, 2013c).

Table 48. Summary of Rangeland Health Assessments for Burro Springs Allotment (BLM 2004a, 2013c)

Standard	2004	2013	Comments
1. Watershed Function – Uplands	Met	Met	The 2004 RHA found upland soils in the allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate. In 2004, there was little or no active soil erosion or evidence of past erosion. ESI data showed 58% of the allotment had a Slight SSF rating and no acres in the moderate or higher classes. OAT showed 10% of the allotment in upward trend and 51% in static trend and no acres in downward trend. Low average utilization levels on native species (25%) taken between 1989 and 2004 indicate that ample standing crop was being left behind to protect soils from erosion. The annual actual use averaged 159 AUMs out of the 279 AUMs of authorized use. This low actual use and the spring grazing was the reason for the low utilization levels. The current winter/spring grazing system takes advantage of the green cheatgrass when it is palatable, before it has a chance to go to seed. From observation the two native perennial grasses, salt grass and basin wildrye, are benefiting from this winter/spring grazing, as they receive very little use. Since 2004, actual use has remained low (83 AUMs) and the average utilization level is still only 40% on the perennial grasses. The main forage in the winter-spring grazing system is still cheatgrass and this continues to benefit the perennial grasses and limits the potential for soil erosion. Another indicator of Upland Watershed condition is plant composition and community structure. (Vegetation composition can be seen in Table 25). About half of the vegetation communities are stable with a perennial grass dominating the understory and the other half has cheatgrass dominating the understory. The two trend plot photos, taken in the big sagebrush/cheatgrass type, show perennial grasses present. There is no apparent trend except in drier years when the grass plants are shorter and less robust. The current winter/spring grazing system takes advantage of the green cheatgrass. The plant community and structure appears stable and may be improving because of low utilization levels and a grazing system that utilizes the green cheatgrass.

			In 2004, about 38% of the allotment was in the late seral stage and 23% was in the mid seral stage. Monitoring data collected since 2004 (photo trend plots and utilization) indicate very little change since 2004. Therefore, the vegetation appears stable, is not affected substantially by the current grazing management, and the standard continues to be met.
2. Watershed Function - Riparian/ Wetland Areas	Not Met	Met	In 2004, there were 4 acres of palustrine wetlands and 197 acres of lacustrine wetlands all in PFC. In 2004 the ID team determined that grazing at Burro Springs was contributing to the failure to function at site potential and, therefore, Standard 2 was not being met in this small area. The problem at this spring was corrected by enlarging the existing exclosure and repairing the overflow pipes to a second trough away from the spring, then allowing that overflow to return the water to the riparian area (Memo to Grazing File, BLM, 2004b). After completion of these repairs, BLM determined this standard was being met or substantial progress towards meeting the standard had been made. In 2013, there is no change in this assessment.
3. Ecological Processes	Met	Met	In 2004, an interdisciplinary team made the following observations about the plant community: vegetation appeared healthy and productive and livestock did not appear to be having a negative effect on vegetation. Plant growth and decomposition processes were normal. Based on 1987 ESI data, OAT for the vegetation communities on public land showed 10% of the allotment was in upward condition (big sagebrush/bluebunch wheatgrass type which occurs in the higher elevations and has always received lighter utilization (<30%) than the lower elevation types). With even lower stocking rates now than before 1987, BLM assumes that the upward trend in the bluebunch wheatgrass sites is continuing, except for an increase in juniper which is the result of fire suppression. OAT for the remaining vegetation types has a static trend. The 2 photo trend plots taken in the 2001, 2006, 2009 and 2012 appear to show the vegetation composition and production is stable at these sites. The grazing management, actual use and utilization have remained similar since 2004. Therefore, the 2004 findings remain accurate in 2013.
4. Water Quality	Met	Met	No surface water or groundwater within the allotment has been listed for exceeding State Water Quality standards.
5. Native, Threatened and Endangered, and Locally Important Species	Met	Met	The 2004 RHA noted there were no known conflicts exist between cattle grazing and wildlife species within the allotment. There were no known sage-grouse leks in the allotment. Since 2013, sagegrouse studies have determined there is 1 “occupied pending” and 1 “unoccupied pending” lek with the Burro Springs Allotment. Based on the distance from the nearest active lek and the sagebrush cover heights associated with the current dominant vegetation types, the Burro Springs Allotment contains no suitable nesting and yearlong habitat. Based on the cover heights associated with the current dominant sagebrush vegetation types, approximately 1,700 acres (24%) of the Burro Springs Allotment contains marginal nesting, summer habitat, and yearlong habitat. Due to the lack of suitable habitat within the Burro Springs Allotment, continuing grazing under current management would have minor effects on sage-grouse nesting and brood-rearing/summer habitat within the allotment. No noxious weeds or special status plant species were known in the allotment in 2004. Currently, two special status species and one noxious weed are present.

Environmental Consequences: Burro Springs Allotment (00213)

Alternative 1: No Action

Actual use, utilization, and climate data have been summarized in the allotment monitoring file and indicate that livestock grazing levels are sustainable at the current forage allocation for the allotment. Trend photos indicate a stable trend in the key areas of the allotment, and the winter/spring grazing system is meeting all Standards and Guidelines. This permit authorizes winter grazing but the other grazing permit authorizes spring grazing. The monitoring of this allotment cannot differentiate the use or the impacts of the different permits. Therefore actual use, utilization data and trend data are the result of both winter and spring grazing. Livestock grazing management is maintaining a vegetative community that supports other resources objectives and uses.

The average actual use over the last 12 years was 80 AUMs with the highest number of AUMs being 166 in 2008. The average utilization measured across the allotment was 41%. Utilization in the Burro springs Allotment only exceeded the target utilization rate of 50% in one year (2007). The reason for the higher utilization (57%) in 2007 was the low precipitation (49% of average) in the 12 months preceding the2007 grazing season. This resulted in below average forage production in the allotment and therefore higher utilization levels.

The limited one month grazing period (February) during the winter does limit the permittee (Cahill Ranch) use on this allotment because the most productive forage on this allotment is cheatgrass and it is not always available in February. Therefore, the permittee's cows must rely on old perennial forage, primarily saltgrass, basin wildrye, shadscale saltbush and bluebunch wheatgrass growing on the slopes. The quality of these plants in the winter can be poor so this allotment is not always for good winter grazing. This impacts the permittee and limits his ability to use the allotment.

Alternatives 2: Reduced Grazing by 50%

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 90 AUMs. The permittee would need to replace 90 AUMs of lost forage with private land forage or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Alternative 3: Change Livestock Management/Vegetation Treatments

The positive impacts to the permittee would be significant. The longer grazing season extended into the spring would not increase the AUMs, but would provide much needed flexibility in the use of the allotment. As seen in Table 25, some of the most common plant communities in the allotment are dominated by cheatgrass in the understory and this plant is only palatable in the spring. Therefore, the permittee would get much better use of the allotment by grazing it in the spring and better animal performance as well.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, livestock grazing authorized by this permit within the allotment would not be authorized. There would still be 100 AUMs of authorized livestock use on this allotment under a different permit and by a different permittee. The permittee (Cahill Ranch) would need to replace 179 AUMs of lost forage with private land forage or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Existing range improvement projects assigned to Cahill ranch within the allotment would not be maintained. Therefore all the range improvements in the allotment would need to be maintained by the remaining permittee in the allotment (Rogers Ranch).

Affected Environment: Hill Camp Allotment (00215)

The term Grazing Permit authorizing 1,719 AUMs of cattle use in Hill Camp Allotment is one of three grazing permits in this allotment and only 44% of the 3,932 AUMs authorized in this allotment. The season of use is from March 8th to October 3rd. Grazing is managed under a rest rotation grazing system using five pastures (Table 6).

The allotment is categorized as an "M" or "maintain" category and this category was determined by the following criteria:

- Present range condition satisfactory
- Allotments have moderate to high resource production potential, and are producing near their potential (trend is moving in that direction)
- No serious resource-use conflicts exist
- Opportunities may exist for positive economic return from public investments
- Present management appears satisfactory
- Other criteria appropriate to area

Range Condition

A RHA was performed in 2004 to determine if current management was in conformance with the applicable rangeland health standards. Existing grazing management practices in the Hill Camp Allotment were found to promote achievement or significant progress towards meeting the standards at that time (BLM 1997a, 2004d). The RHA was reviewed again in 2013. Current grazing management practices in the allotment meet all five standards (BLM 2013d). Both the 2004 RHA and 2013 RHA update are summarized in Table 49 and are incorporated herein by reference in their entirety (BLM 2004d, 2013d).

Environmental Consequences: Hill Camp Allotment 00215

Alternatives 1 and 3

Actual use, utilization, and climate data have been summarized in the allotment monitoring file and indicate that livestock grazing levels are sustainable at the current forage allocation for the allotment. Trend photos indicate a stable trend in the key areas of the allotment, and the current rest rotation grazing system is meeting all Standards and Guidelines. Livestock grazing management is maintaining a vegetative community that supports other resources objectives and uses.

The average actual use over the last 12 years for three permittees in the allotment is 1,437 AUMs and the authorized use is 3,932 AUMs. The average actual use for the Cahill permit in Hill Camp Allotment was 1,277 AUMs out of the 1,719 authorized AUMs in this permit. The average utilization measured in the pastures varied between an average of 45% for West Pasture, 41% in the Northeast Pasture, 37% in the Southeast Pasture, 35% in the Basin and 36% in Coleman Seeding Pasture. These average utilization levels only include the years the pastures were grazed, the levels would be lower if the years of rest were averaged in. In the last twelve years the Southeast and Northeast Pastures were rested 4 years and the Coleman Seeding Pasture 3 years. The West Pasture was only rested 2 years and the Basin Pasture only one year. However, the West Pasture is deferred every year and only used late in the season. The Basin Pasture was used 4 years by 100 AUMs or less, so it was effectively rested. The average utilization was below the 50% utilization level needed to sustain root growth and maintain perennial native grass production.

The grazing level under this permit would remain at 1,719AUMs and is 44% of the 3,932 AUMs in the allotment.

Alternative 2: Reduce Grazing by 50%

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 860 AUMs. The permittee would need to replace 860 AUMs of lost forage with private land forage or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Table 49. Summary of Rangeland Health Assessments for Hill Camp Allotment (BLM 2004d, 2013d)

Standard	2004	2013	Comments
1. Watershed Function – Uplands	Met	Met	The 2004 RHA found soils in the Hill Camp Allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate. Based on 1987 ESI data, the SSF rating showed 10% of the allotment was in Stable, 65% in Slight, and no acres in the moderate or higher SSF erosion classes; so there is little or no active soil erosion or evidence of past erosion in the area. In 2013, a summary of the vegetation trend plots indicate the vegetation cover is stable and there is still little or no active soil erosion. In 2004, the average actual use for the allotment over 20 years was 2,184 AUMs, compared to the average actual use of 3,472 AUMs in 20 years prior to 1984. The authorized use for the allotment is 3,932 AUMs. In 2004, the low average utilization across the allotment on native species such as bluebunch wheatgrass, bottlebrush squirreltail, Thurber's needlgrass, and Idaho Fescue was about 37%. These utilization levels indicate that ample standing crop was being left behind to protect the soil from erosion. The average utilization levels from 2004 to 2013 were similar to those seen in the 2004 RHA and the average actual use was lower. Therefore, the conclusion that ample plant material is being left behind to protect from soil erosion is still accurate in 2013 and the standard continues to be met.
2. Watershed Function - Riparian/ Wetland Areas	Not Met	Met	In 2004, the allotment contained about 54 acres of palustrine wetlands in PFC. However, the ID team determined that grazing at 3 springs (Game, Hidden, and Tim) was contributing to their failure to function at their site potential and, therefore, Standard 2 was not being met in these specific areas. The problems at these springs were corrected by enlarging the existing exclosures and repairing the overflow pipes to return water back into the riparian area (BLM 2004c). Following implementation, BLM determined this standard was being met or substantial progress towards meeting the standard had been made. In 2013, there is no change in this assessment.
3. Ecological Processes	Met	Met	In the 2004 RHA, an ID team made the following observations about the current plant communities: overall plant diversity was high with shrubs and grasses in excellent condition. There are 23 trend photo plots scattered around the allotment which began in the 1960s or 1970s and continue today. These photos illustrated the plant communities are either stable or improving across the allotment. The vigor, condition, and composition of the vegetation in the photos were influenced by the amount of moisture, the grazing schedule, and fire. But even taking into account these factors, the ecological condition of these sites has either remained stable or improved over the last 30 years, except there has been an increase in juniper density at the sites where fire has not been present. Another noticeable trend is that following fire, the mountain big sagebrush returns to the site in 10-15 years. In 2013, an analysis of the 23 photo trend plots since 2004 found the same conclusions apply. In 2004 and in 2013 the allotment is supporting the current and proposed number of mule deer and pronghorn antelope identified by ODFW big game management plans**.**
4. Water Quality	Met	Met	No surface water or groundwater within the allotment has been listed for exceeding State Water Quality standards.
5. Native, Threatened and Endangered, and Locally Important Species	Met	Met	The 2004 RHA found the allotment contained healthy, productive, and diverse plant and animal populations and communities that were appropriate to soil, climate, and landform. IN 2004 no conflicts were identified between cattle grazing and wildlife species. There were two known sage-grouse lek sites in the allotment. In 2013 there are 3 occupied sage-grouse leks found in the allotment. Sage-grouse habitat in the Hill Camp Allotment has maintained an appropriate mix of suitable to marginal sage-grouse habitat under the current grazing management. It is expected that vegetation trends would remain static or improve slightly and provide adequate habitat for sage-grouse. In the long-term Western Juniper expansion in the Hill Camp Allotments could affect portions of suitable breeding habitat in the allotments. In the Coleman Seeding Pasture there is both Perennail Pepperweed (*Lipedium latifolium*) and

			Halogeton (*Halogeton glomeratus*). These two weeds have invaded from the private land to the west and along the Coleman Lake road. These weed sites are manageable and are currently being monitored and treated. The current grazing management does not appear to have any effect on these noxious weeds. No known sensitive plant species in the allotment. In 2013, the allotment still contained healthy, productive, and diverse plant and animal populations and communities that are appropriate to soil, climate, and landform.

Alternative 4: No Permit Issued/No Weed Treatment/No Weed Control

Under this alternative, livestock grazing under this permit would not be authorized, but 56%% of the AUMs in the allotment would still be authorized under 2 separate permit and different permittees. The permittee under the Cahill permit would need to replace 1,719AUMs of lost forage with private land forage or hay in the general vicinity. The additional cost to replace this forage would be at the permittee's expense. These costs are discussed further in the social and economic section.

Affected Environment: Cahill FRF Allotment (00219)

This is a ten year term grazing permit authorizing 280 AUMs of cattle use in Cahill FRF Allotment (00219). The season of use is from September 27th thru February 28th. Grazing is conducted as a fenced federal range (FRF) Allotment. This allotment is a single pasture with only 571 acres of public land and 725 acres of private land.

The allotment is categorized as a "C" or "custodial" category and this category was determined by the following criteria:

- Present range condition satisfactory
- Allotments have moderate to high resource production potential, and present production low to moderate
- Limited conflicts or controversy may exist
- No Opportunities for positive economic returns or no developments proposed
- Present management appears satisfactory or only logical practice
- Other criteria appropriate to area

Range Condition

An interdisciplinary team conducted a RHA within the allotment in 2004 to determine if grazing management met applicable standards (BLM 2004e). The RHA was reviewed again in 2013. Current grazing management practices in the allotment are meeting all five standards (BLM 2013e). The findings of the RHA and update for this allotment are summarized in Table 50 and are incorporated in their entirety herein by reference (BLM 2004e, 2013e).

Environmental Consequences: Cahill FRF Allotment (00219)

Effects Common to Alternatives 1 and 3

The authorized use would remain at 280 AUMs under Alternatives 1. This level of use was determined to be the carrying capacity of the BLM land (571 acres) within the Cahill FRF allotment. This level of use will sustain root growth and maintain perennial grass production on the BLM land over the long-term (5-10 years).

Table 50. Summary of Rangeland Health Assessments for Cahill FRF Allotment (BLM 2004e, 2013e)

Standard	2004	2013	Comments
1. Watershed Function – Uplands	Met	Met	The 2004 RHA found upland soils in the allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate. No transects were done on this allotment during ESI in 1987. However, observations of the 571 acres of BLM land in the allotment indicated there was ample vegetation to prevent accelerated erosion. There is no evidence of significant wind or water erosion as the site is relatively flat with no gullies or rills apparent. In 2013, both SSF and OAT ratings were determined for largest soil type, Crump-Pit complex (53%) in the allotment. SSF was stable and OAT was upward trend. These ratings indicate there is still sufficient vegetation and litter cover to limit erosion and protect against development of rills and gullies. Another indicator of Upland Watershed condition is plant composition and community structure. The dominant vegetation was not mapped, but the range sites were identified from the soil mapping (Table 30). The vegetation associated with the dominant range sites mapped in the 1987 ESI (and described in the 2004 RHA) are still present in 2013. The Sodic Meadow, Semi Wet Meadow, Lakebed, and Sodic Flats contain significant vegetative cover and the appropriate vegetation composition to insure soil stability.
2. Watershed Function - Riparian/ Wetland Areas	Met	Met	There are no major intermittent or perennial streams on BLM in this allotment. There are 257 acres of lentic palustrine wetlands in the allotment, all were in PFC in 1998. Although there has been no recent lentic PFC assessments or surveys performed, the sites observed appear to be functioning properly.
3. Ecological Processes	Met	Met	The 2004 RHA found the allotment contained healthy, productive and diverse plant and animal populations and communities that were appropriate to soil, climate, and landform and were supported by ecological processes of nutrient cycling, energy flow, and the hydrologic cycle. Following are observations from the ID team: vegetation appeared healthy and productive. Livestock did not appear to be having a negative effect on the vegetation in the areas surveyed. Ecological processes for plant growth and decomposition appeared normal. This allotment has an exceptionally healthy population of great basin wild rye. No introduced species were noted. In 2013, observations found the conditions similar to 2004. For this reason this standard continues to be met.
4. Water Quality	Met	Met	This standard was determined to be not applicable or otherwise met since there were no 303d listed water bodies within the allotment.
5. Native, Threatened and Endangered, and Locally Important Species	Met	Met	The 2004 RHA found the allotment contained healthy, productive, and diverse plant and animal populations and communities that are appropriate to soil, climate, and landform. The deer and pronghorn populations are healthy and stable in number. Habitat quantity and quality do not appear to be limiting population size or health. Wildlife populations fluctuate at or slightly below ODFW's Management Objective for the unit. The allotment also provide habitat for numerous small and nongame birds and mammals common to the Great Basin. There are no known sage grouse leks or sagegrouse habitat in the allotment. The allotment provides habitat for raptors and other sensitive species, as well as, some federally listed species. No critical habitat or limitations have been identified for any of these species which include wintering bald eagles, Peregrine falcons, and possibly pygmy rabbits and sensitive bat species. Livestock grazing does not appear to be limiting wildlife habitat within the allotment. No special status or cultural plant species are known to occur in the allotment. Two noxious weed species currently occur in the allotment.

Alternative 2: Reduce Grazing by 50%

Under this alternative, authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 140 AUMs. The effects of this reduction would be no different than Alternative 1 except the permittee would pay less in grazing fees. BLM would collect 50% of the grazing fee collected in Alternative 1. The permittee would continue to determine the number of cattle to graze and the grazing schedule.

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative, livestock grazing public lands within the allotment would not be authorized. The permittee would need to fence off the public lands to continue grazing the private land within the current allotment boundary. The permittee would be responsible for the costs of construction and maintenance of this new fence. These costs are discussed further in the social and economic section.

If the permittee chose not fence off the public land from the private land, livestock could not graze the private lands either and the additional cost to replace this forage would be at the permittee's expense.

Existing range improvement projects within the allotment would not be maintained. However, the allotment boundary fences would still need to be maintained by the BLM or adjacent permittees.

Wildlife and Special Status Wildlife Species

Affected Environment:

The Rangeland Health Assessments for the five allotments all meeting Rangeland Health Standards 3 and 5 related to wildlife habitat (BLM 1999a, 1999b, 2004a, 2004d, 2004e, 2013a, 2013b, 2013c, 2013d, 2013e). A mix of big and low sagebrush communities inter-mingled with invasive juniper comprise the dominant vegetation across the allotments. Water for wildlife within the allotments is available from a few natural sources and livestock water developments (waterholes, reservoirs, and developed springs). Competition for water can occur between wildlife and livestock in areas where water is scarce.

The allotments fall within the larger Oregon Department of Fish and Wildlife (ODFW) 2,507 square mile Beaty Butte big game habitat management unit. The mule deer and pronghorn antelope populations are relatively stable within this unit. Habitat quantity and quality do not appear to be limiting big game population size or health within the unit. Deer and pronghorn antelope populations continue to fluctuate at or slightly above ODFW's population management objectives for the unit (ODFW 2003, 2011b, 2012a, 2012b). The allotments comprise a small percentage of the unit and provide habitat capable of supporting California bighorn sheep, mule deer and pronghorn antelope (revised Map 6). Of this Herd Unit, the area within the allotments provide spring-fall and winter habitat for mule deer, including fawning habitat. There are currently 1,068 AUMs allocated for mule deer, pronghorn antelope, California Bighorn sheep, and other wildlife species within the allotments (BLM 2003b, pages A-50 to A-56, and A-60). Based on previous consultation with ODFW biologists, they believe this forage allocation is adequate to support big game populations within the allotments.

California bighorn sheep habitat occurs within the Burro Springs and Hill Camp Allotments. The ODFW describes the existing bighorn habitat as adequate for future population expansion. The only limitations in bighorn habitat within the allotments are limited perennial water sites and unrestricted movement to and from these water sources.

Rocky Mountain elk occasionally occur within the Round Mountain and Rahilly Gravelly Allotments. Population expansion within these areas is limited by disease mortality currently being monitored by the ODFW.

Other mammals observed in the allotments are jackrabbits, cottontails, coyotes, ground squirrels, chipmunks, marmots, bobcats, mountain lions, badgers, bats, and other common shrub-steppe mammal species. In some areas porcupines and bears have been seen.

Some migratory birds use all habitat types in the allotments for nesting, foraging, and resting as they pass through on their yearly migrations. There has been no formal monitoring of migratory birds on these allotments. Common species observed or expected to occur based on species range and vegetation in the allotment are included in the following table (birds identified under the Migratory Bird Treaty Act of 1918, as amended).

Birds of Conservation Concern for the Great Basin Region that may inhabit the allotments are also included in Table 51. Waterfowl may frequent the allotment during migration and a few pairs may breed on the private

Table 51. Wildlife Species with Special Management Considerations

Species	General Habitat	Species Status	Birds of Conservation Concern	Migratory Birds	Focal Species	Game Birds Below Desired Condition	Eagle Act
Prairie Falcon	Cliff-open habitat				x		
Ferruginous Hawk	Sagebrush-shrub steppe		x	x	x		
Golden Eagle	Elevated nest sites in open country		x	x			x
Sage Sparrow	Sagebrush		x	x	x		
Greater Sage Grouse	Sagebrush dominated rangelands	*FC	x		x		
Peregrine Falcon	Cliff-open habitat	**SSS	x	x			
Loggerhead Shrike	Open country/ scattered trees/shrubs		x	x	x		
Swainson's Hawk	Open Habitat			x			
Sage Thrasher	Sagebrush-shrub steppe		x		x		
Bald Eagle	Wetlands/River Systems/Lakes	**SSS	x				x
Burrowing Owl	Grasslands-shrub steppe			x	x		
Brewer's Sparrow	Sagebrush clearings in bitterbrush		x	x	x		
Pygmy Rabbit	Sagebrush with deep soils	**SSS					
Kit Fox	Arid shrub-steppe	**SSS					
Pallid Bat	Arid regions/rocky outcroppings	**SSS					
Townsend's Big-eared Bat	Lava fields /Rocky Cliffs /Abandoned Structures	**SSS					
Northern Harrier	Wetlands/ Ponds/Riparian Areas			x			

**FC – Federal Candidate Species*
***SSS – Special Status Species*

reservoirs in the area. The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973." *Birds of Conservation Concern 2008* (USFWS 2008) is the most recent effort to carry out this mandate.

Partners in Flight use the focal species approach to set biological objectives and link priority species with specific conservation recommendations. It is a multi-species approach in which the ecological requirements of a suite of focal species are used to define an 'ideal landscape' to maintain the range of habitat conditions and ecological processes required by landbirds and many other species. Focal species are considered most sensitive to or limited by certain ecological processes (*e.g.* fire or nest predation) or habitat attributes (*e.g.* patch size or snags). The requirements of a suite of focal species are then used to help guide management activities.

Migratory game bird species identified by the USFWS that represents species whose population is below long-term averages or management goals, or for which there is evidence of declining population trends, and may be present in the allotment, are also included in the following table. Golden and bald eagles are 2 species given special protection under the Bald Eagle Protection Act of 1940 (as amended).

There are also numerous amphibian and reptile species that occur within the allotments including fence lizards, sagebrush lizards, gopher snakes, rattlesnakes, horned–lizards, and many other common shrub–steppe species.

Special Status Species

Affected Environment:

BLM policy on special status species is to conserve those species and the ecosystems upon which they depend (BLM 2008c). While there are no wildlife species classified as federally-listed Threatened or Endangered or proposed or designated critical habitat within the project area, the Greater Sage-grouse is a Federal Candidate Species and is currently managed as a special status species.

<u>Greater Sage-Grouse</u>

The allotments provide habitat for the Greater sage-grouse. The *Lakeview Proposed RMP/Final EIS* (BLM 2003a) Map W-2 shows areas defined as sage-grouse habitat as of spring 2002. The data displayed in the map is considered to be a "broad-brush" habitat map subject to refinement/update with new information over time. As noted in the footnotes of Map W-1, the habitat data represented *"*the best data currently available*"* and this data was expected to be refined or updated over time. Since the map was published, a cooperative habitat mapping effort with ODFW has occurred throughout eastern Oregon resulting in updated sage-grouse habitat and lek location data.

Knick and Connelly (2011) contains a compilation of recent sage-grouse research which addresses a variety of issues related to management of the species at the range-wide scale (often referred to as the "Monograph"). Information from the Monograph was synthesized at the regional scale (Oregon) within the *Greater Sage-Grouse Conservation Assessment and Strategy for Oregon: A Plan to Maintain and Enhance Populations and Habitats* (ODFW 2011a).

Based on Oregon Department of Fish and Wildlife's (ODFW) most recent sage-grouse lek data, there is 1 unoccupied pending lek <u>and 1 occupied pending lek</u> found within the Round Mountain Allotment. There are also three occupied and 5 unoccupied pending leks found within 4-miles of the Round Mountain Allotment. There are 3 occupied leks and 6 unoccupied pending leks within the Rahilly-Gravelly Allotment. There are also 1

occupied, 2 occupied pending, and 2 unoccupied pending leks found within 4 miles of the Rahilly-Gravelly Allotment. There are no leks within the Burro Springs Allotment. There are 2 occupied, 1 occupied pending and 3 unoccupied pending leks found within 4 miles of the Burro Springs Allotment. There are 2 occupied leks, 1 occupied pending, and 2 unoccupied pending leks found within the Hill Camp Allotment. There are also 3 occupied, 2 occupied pending, and 7 unoccupied pending leks found within 4 miles of the Hill Camp Allotment. There are no sage-grouse leks found inside or within 4 miles of the FRF Cahill Allotment (revised Map 6).

ODFW (2011a) developed a habitat dataset that identifies the most productive landscapes for sage-grouse as either "core habitat" or "low density habitat". Since that time, the BLM, in coordination with ODFW, have refined this dataset. At this point in time, core habitat has become synonymous with what BLM is currently calling "preliminary priority habitat" (PPH). This habitat is defined as areas that have the highest conservation value for maintaining sustainable greater sage-grouse populations. These areas include breeding, late brood-rearing, and winter concentration areas. BLM is currently calling low density habitat "preliminary general habitat" (PGH). This is defined as areas of occupied seasonal or year-round habitat outside of priority habitat. This modelling exercise considered a landscape approach to wildlife conservation prioritizing sage-grouse habitats and was based upon sage-grouse distribution and abundance in association to nearest lek and was not based on actual vegetation.

Approximately 1,734 acres (9%) of the Round Mountain Allotment, 25,661 acres (73%) of the Rahilly- Gravelly Allotment, 5,036 acres (72%) of the Burro Springs Allotment, and 30,613 acres (88%) of the Hill Camp Allotment are in sage-grouse PPH. There is no sage–grouse PPH within the FRF Cahill Allotment. Approximately 15,874 acres (81%) of the Round Mountain Allotment, 4,735 acres (13%) of the Rahilly Gravelly Allotment, 1,266 acres (18%) of the Burro Springs Allotment, 3,635 acres (11%) of the Hill Camp Allotment, and 75 acres (6%) of the Cahill FRF Allotment are in sage-grouse PGH (revised Map 6).

Sage-grouse habitat quality was reassessed using the *Sage-grouse Habitat Assessment Framework* (Stiver *et. al.* 2010). According to Conley *et al.* (2004) and Knick and Conley (2011), most sage-grouse nest within 4 miles of occupied lek sites. A review of unpublished telemetry data from the Lakeview Wind Energy Study (which overlaps portions of Round Mountain and Rahilly-Gravelly Allotments and adjacent lands to the north), shows that 87% (140 of 158) of nest sites in the spring of 2010 and 2011 were located within 3 miles of an active lek and 96% (152 of 158) were located within 5 miles of an active lek. Based on this data, the local sage-grouse population appears to be very sedentary and most nesting generally occurs within close proximity to lek sites.

Based on the distance from the nearest occupied lek and the sagebrush cover heights associated with the current dominant vegetation types, approximately 14,038 acres (76%) of the Round Mountain Allotment is suitable nesting and suitable yearlong habitat. Based on the cover heights associated with the current dominant sagebrush vegetation types, approximately 3,200 acres (17 %) of the Round Mountain Allotment contains marginal nesting, marginal summer habitat, and marginal yearlong habitat. Approximately 1,344 acres (7%) of the Round Mountain Allotment contains unsuitable nesting, summer and winter habitat (Map 8).

Based on the distance from the nearest occupied lek and the sagebrush cover heights associated with the current dominant vegetation types, approximately 18,643 acres (53%) of the Rahilly-Gravelly Allotment is suitable nesting and suitable yearlong habitat. Based on the cover heights associated with the current dominant sagebrush vegetation types, approximately 4,081 acres (11%) of the Rahilly-Gravelly Allotment contains marginal nesting, marginal summer habitat, and marginal yearlong habitat. Approximately 12,309 acres (35%) of the Rahilly Gravelly Allotment contains unsuitable nesting, summer and winter habitat (Map 8).

Based on the distance from the nearest occupied lek and the sagebrush cover heights associated with the current dominant vegetation types, the Burro Springs Allotment contains no suitable nesting and yearlong habitat. Based on the cover heights associated with the current dominant sagebrush vegetation types, approximately 1,700 acres (24%) of the Burro Springs Allotment contains marginal nesting, summer habitat, and yearlong habitat. Approximately 5,304 acres (76%) of the Burro Springs Allotment contains unsuitable nesting, summer and winter habitat.

Based on the distance from the nearest occupied lek and the sagebrush cover heights associated with the current dominant vegetation types, approximately 16,948 acres (49%) of the Hill Camp Allotment is suitable nesting and suitable yearlong habitat. Based on the cover heights associated with the current dominant sagebrush vegetation types, approximately 16,938 acres (49%) of the Hill Camp Allotment contains marginal nesting, marginal summer habitat, and marginal yearlong habitat. Approximately 828 acres (2%) of the Hill Camp Allotment contains unsuitable nesting, summer and winter habitat (Map 9).

Based on the distance from the nearest occupied lek and the sagebrush cover heights associated with the current dominant vegetation types, all 470 acres of BLM-administered lands in the Cahill FRF Allotment was rated as unsuitable sage–grouse habitat.

Bats

Special status bats may occur within the allotments, but likely only involve occasional migrating individuals or animals foraging or passing through from adjacent habitat. There are no known caves, adits, shafts, or outbuildings on the BLM portion of the allotment capable of providing hibernacula for bats. Habitat is unknown on adjacent private lands. Due to the low potential for occurrence and lack of roosting/resting habitat, none of the alternatives would likely have any measurable impacts to bats. Therefore, they are not carried forward for further analysis.

Pygmy Rabbit

Potential habitat for pygmy rabbits (BLM sensitive species) was identified in the Round Mountain, Rahilly-Gravelly, and Hill Camp Rangeland Health Assessments (BLM 1999a, 1999b, 2004d, 2013a, 2013d). However, based on field inventory conducted to date, pygmy rabbit sign (burrows, droppings or pellets, and tracks) have only been confirmed in a few locations within the Hill Camp Allotment. Pygmy rabbits were observed at one location within this allotment near Greaser Basin. Pygmy rabbit habitat has not been identified within the other 2 allotments.

Kit Fox

The allotments lie within the northern range of the kit fox, a bureau sensitive species, in Oregon. No kit fox have been documented within the Lakeview Resource Area; however, potential habitat does exist.

Peregrine Falcon and Eagles

Peregrine falcons (BLM sensitive Species) have been observed in the general area due to releases from the Crump Lake hack site; however, no nesting has been documented within the allotments.

Currently, there are no known nests or nesting habitat for bald eagles within the allotments. They are suspected to be occasional visitors to the area. There are two confirmed golden eagle nests within the Hill Camp Allotment.

Environmental Consequences: Wildlife and Special Status Species

Effects Common to Alternatives 1-4

ODFW (2011a; page 13) cites two unpublished studies that documented sage-grouse mortality associated with fencing as a risk factor in winter habitat in Wyoming and near lek sites in Idaho. BLM interim management direction in IM No. 2012-043 is based on the Stevens (2011) model identified in the Natural Resources Conservation Service guidelines (NRCS 2012) which recommend marking "high-risk" fences within 1.25 mile of occupied or occupied pending leks with anti-strike markers (reflectors). Within the Hill Camp and Rahilly Gravelly Allotments, there are two sections of existing fence that are located within 1.25 miles of existing leks (revised Map 6). These sections of fence were inspected by BLM biologists and anti-strike markers were installed in accordance with criteria outlined in IM No. 2012-043 which adequately mitigates the potential risk of future fence collisions within the allotments.

Another sage-grouse risk factor identified in the Monograph, the Oregon Strategy, and the 12-Month Finding is West Nile virus spread by mosquitoes around standing water (Knick and Connelly 2011, ODFW 2011a, USFWS 2010). Sage-grouse are susceptible to West Nile Virus (Clark *et al*. 2006) and mortality may be as high as 100 percent in certain areas (Naugle *et al*. 2004). The virus is primarily transmitted by infected mosquitoes, and was first detected in southeastern Oregon near Burns Junction in 2006, and then later near Crane and Jordan Valley that same year. Across the species range, total mortalities attributable to West Nile Virus have markedly declined since 2003. The virus has not been detected near the allotments or in southeast Oregon since the first observations in 2006 (DeBess 2009). Existing water troughs are designed to minimize overflow and minimize potential for the production of mosquitoes. There are no new water development projects proposed in any of the allotments under any of the alternatives. Under Alternatives 2 and 4, existing water developments would remain within the five allotments similar to Alternatives 1 and 3, because some level of grazing would continue under those alternatives under other grazing permits. For these reasons, the risk of virus spread or associated mortality would be low and virtually identical under all alternatives.

Due to low quality or the lack of suitable sage-grouse habitat within the Burro Springs and FRF Allotments, continuing grazing under these alternatives would have minor effects or no effect on sage-grouse or their habitat in these allotments.

Alternatives 1 and 3

An estimated 2,044 acres (11%) of predominantly sagebrush wildlife habitat types within the Round Mountain Allotment, 3,611 acres (10%) within the Rahilly-Gravelly Allotment, 329 acres (4%) within the Burro Springs Allotment, 4,046 acres (12%) within the Hill Camp Allotment, and 50 acres (4%) within the FRF Cahill Allotment (approximately 10,000 acres total for all allotments or 11% of total land area) would continue to be impacted by livestock trailing and concentration near existing water sources.

The majority of these acres represent marginal and unsuitable sage-grouse habitat. The remainder of the vegetation and associated sage-grouse habitats within the four allotments would continue to be impacted to a very minor degree by dispersed grazing use. In the long-term, the diversity of native plants and residual cover currently classified as marginal habitat for sage-grouse would be maintained or improved under the livestock management associated with Alternatives 1 and 3. The presence of herbaceous vegetation within each pasture would not increase the available vertical or horizontal screening cover, but would retain forbs and habitat for insects, which are important to sage-grouse during the spring and summer months (Drut *et al*. 1994, Gregg and Crawford 2009). Continued grazing would have little effect on either suitable or marginal quality sage-grouse winter habitat in all four allotments.

The impacts of livestock grazing on pygmy rabbits and their habitats are poorly understood. In one study in Washington state, pygmy rabbits avoided grazed areas (Siegel-Thines *et al.* 2004), but in two south central Oregon studies they did not avoid grazed areas (Crawford *et al.* 2010, Lawes 2010). Based on these studies and the minimal amount of suitable pygmy rabbit habitat known within the allotments, continued grazing under Alternatives 1 and 3 would have similar and very minor, if any impacts to pygmy rabbits or their habitat.

Alternative 1: No Action

Current grazing management (both stocking rates and grazing season) has already achieved Rangeland Health Standards 3 and 5 for wildlife habitat and does not appear to be limiting wildlife habitat within the allotments (BLM 1999a, 1999b, 2004a, 2004d, 2004e, 2013a, 2013b, 2013c, 2013d, 2013e). For this reason, Rangeland Health Standards 3 and 5 would continue to be met and the allotments would continue to provide adequate quality wildlife habitat that is capable of supporting an appropriate assemblage of sagebrush-dependent wildlife species.

Up to approximately 10,000 acres (11%) of all sagebrush habitat within the entire five allotment area would continue to be impacted by concentrated livestock use (near cattle trails and water sources), while impacts to habitat across the majority of the allotments would be dispersed and much less concentrated. The existing vegetation communities contain a diversity of native grasses, forbs, and shrubs that would be maintained across the allotments through continuation of the current grazing management (Refer to the Upland Vegetation section). In particular, the allotments would continue to have adequate habitat to support an appropriate assemblage of wildlife including migratory birds and sage-grouse.

Sage-grouse habitat in the Round Mountain, Rahilly-Gravelly, and Hill Camp Allotments has maintained an appropriate mix of suitable to marginal sage-grouse habitat under the current grazing management. It is expected that vegetation trends would remain static or improve slightly and provide adequate habitat for sage-grouse. In the long-term Western Juniper expansion in the Round Mountain, Rahilly-Gravelly, and the Hill Camp Allotments could affect portions of suitable sage-grouse breeding habitat, but future juniper management is not specifically addressed in this analysis.

The entire Burro Springs Allotment is marginal and unsuitable sage-grouse habitat under the current grazing management. It is expected that under current management vegetation trends will remain static to slight improvement and provide adequate habitat for the occasional sage-grouse use the allotment provides.

Alternative 2: 50% Grazing Reduction

The impacts of this alternative on wildlife habitat in the allotments in general would be somewhat less than Alternative 1. Livestock use within the allotments would be reduced by 50%. The existing vegetation communities contain a diversity of native grasses, forbs, and shrubs that would be maintained across the allotments with the proposed 50% reduction in grazing use (Refer to the Upland Vegetation section).

Under this alternative there would be very little change in the existing quality of wildlife or migratory bird habitat available in the allotments compared to the No Action Alternative. Up to approximately 7,646 acres (9%) of sagebrush habitat within the five allotments formerly impacted by livestock trailing and concentration near existing water sources would improve over the long-term due to the reduction in grazing use. The reduction in livestock utilization would provide some increased forage availability for wildlife.

Rangeland Health Standards 3 and 5 would continue to be met and the allotment would continue to provide adequate quality wildlife habitat that is capable of supporting an appropriate assemblage of sagebrush-dependent wildlife species. The effects of this alternative on sage-grouse habitat would be similar to Alternative 1 and provide adequate habitat for sage-grouse in both the short and long-term.

Based on existing studies (Siegel-Thines *et al*. 2004, Crawford *et al.* 2010, Lawes 2010) and due to the minimal amount of suitable pygmy rabbit habitat within the allotments, reduced grazing under Alternative 2 would have very minor, if any beneficial impacts to pygmy rabbits or their habitat.

Alternative 3: Change Livestock Management/Vegetation Treatments

Under this alternative there would be very little change in the existing quality of wildlife habitat, including sage–grouse and migratory bird habitat, available in the allotments compared to the No Action Alternative. The allotments currently meet Rangeland Health Standards 3 and 5, and provide quality wildlife habitat and forage, and would continue to do so under this alternative into the foreseeable future.

Up to approximately 10,000 acres (11%) of all sagebrush habitat within the entire five allotment area would continue to be impacted by livestock trailing and concentration near existing water sources while impacts to habitat across the majority of the allotments would be dispersed and much less concentrated. The existing vegetation communities contain a diversity of native grasses, forbs, and shrubs that would be maintained across the allotments under the proposed grazing management (Refer to the Upland Vegetation section). In particular, the allotments would continue to have adequate habitat to support an appropriate assemblage of sagebrush-dependent wildlife, including migratory birds.

The vegetation treatment proposed in the Rahilly-Gravelly Allotment would impact wildlife habitat in the short-term through the removal of some sagebrush cover. However, the current habitat quality is poor in this area due to the dominance of cheatgrass in the understory. Perennial grasses and some forbs of benefit to wildlife would establish in the short-term. Sagebrush would reinvade over the long-term providing an overall net benefit to sagebrush-dependent wildlife by restoring a perennial grass-sagebrush community.

Though the vegetation treatment area is currently mapped within sage-grouse PGH, it has been assessed by a wildlife biologist in accordance with habitat criteria in the HAF methodology and does not provide sage-grouse habitat at this time due primarily to the dominance of a cheatgrass understory (Map 8). The nearest occupied lek is located over 3.5 miles away and sage-grouse use has never been documented within the proposed vegetation treatment project area.

This proposed fence is located about 3.8 miles from the nearest occupied sage-grouse lek. Further, no known seasonal habitats exist in the vicinity of the proposed fence. For these reasons, the proposed fence presents a very low collision risk to sage-grouse and no anti-strike markers would be required under IM-2012-043 (BLM 2011a) or the ODFW Sage-Grouse Conservation Strategy (ODFW 2011). Therefore, there would be little or no impacts to sage-grouse or its habitat from construction of the proposed fence.

In addition, a field survey of the proposed project areas was conducted and no pygmy rabbits, burrows, or suitable habitat was located. Therefore, these projects would have no impacts on pygmy rabbits or their habitat.

The proposed fence would be constructed to BLM wildlife specifications for mule deer and pronghorn antelope passage (BLM 1989b) to mitigate the effects of fence construction on these species. No other big game species would be impacted by the proposed fence since habitat for other big game species is not present within the vicinity (Map 10).

Alternative 4: No Permit Issued/No Weed Treatment

Under this alternative there would be very little change in the existing quality of wildlife or migratory bird habitat available in the allotments in the short-term compared to the No Action Alternative. An estimated 3,244 acres (4%) of sagebrush habitat within the allotments formerly impacted by livestock trailing and concentration near existing water sources would improve over the long-term. The removal of some grazing would provide some increased forage availability for wildlife. The allotments currently meet Rangeland Health Standards 3 and 5, and provide quality wildlife habitat and forage (BLM 1999a, 1999b, 2004a, 2004d, 2004e, 2013a, 2013b, 2013c, 2013d, 2013e), and would continue to do so under this alternative into the foreseeable future.

There would be no substantial change in special status species habitat quantity or quality in the short-term compared to Alternative 1. Based on existing studies (Siegel-Thines *et al*. 2004, Crawford *et al.* 2010, Lawes 2010) and due to the minimal amount of suitable pygmy rabbit habitat within the allotments, reduced grazing under Alternative 4 would have very minor, if any beneficial impacts to pygmy rabbit habitat. The effects of this alternative on sage-grouse habitat would be similar to Alternatives 1-3, as the allotments would continue to provide adequate habitat for sage-grouse in both the short and long-term.

Native American Traditional Practices

Affected Environment: Round Mountain Allotment (00211)

The area of the Round Mountain Allotment has been identified by the Fort Bidwell Indian Community as an area which they used frequently in the past. It is on the edge of the Big Valley area, which they consider to be a Traditional Cultural Practices (TCP) Area and of importance. During analysis of the Ruby Pipeline project, which crosses this area, the BLM determined that this particular area was not within their proposed TCP. Things of interest to them would include rock art sites, rock cairn sites, natural feature areas, and plant collection areas. This area is known to have a very high concentration of rock art sites. These range from sites that may only cover a few square inches on the rock face of a rim to sites which may have hundreds of designs along many feet of the rim. The area is abundant in yampa, a plant of major importance to the tribe.

Affected Environment: Rahilly Gravelly Allotment (00212)

The allotment has been identified by the Fort Bidwell Indian Community as an area which they used frequently in the past. It is an area which they consider to be a Traditional Cultural Practices (TCP) Area and of importance. However, BLM has not completed a formal analysis of a TCP to date. Things of interest to them would include rock art sites, rock cairns, natural feature areas, and plant collection areas. This area is known to have a very high concentration of rock art sites. These range from sites that may only cover a few square inches on the rock face of a rim to sites which may have hundreds of designs along many feet of the rim. The area is abundant in yampa, a plant of major importance to the tribes of the region. Portions of the area around the Terry Spring and Spearpoint Spring have been designated as an Area of Critical Environmental Concern (ACEC), in part to protect culturally important plants. While yampa is the most important one, biscuit root and bitterroot also occur in the allotment.

Affected Environment: Burro Springs (00213), Hill Camp (00215), and FRF Cahill (00219) Allotments

There are no known Traditional Use areas within these allotments. However, many native American tribes, including the Fort Bidwell Indian Community, consider all aspects of cultural resources on the landscape to be

significant and in need of protection. These allotments would have been used by the Fort Bidwell Indian Community and would have been important for hunting and plant collection and processing prior to exclusion from the area by Euro-americans. The low-sagebrush lithic soil areas on the Hill Camp Allotment contain many species of *Lomatiums* (desert parsley, biscuit root), bitterroot, sego lily, wild onions, balsamroot, big-headed clover and other edible geophytes.

Alternative 1: No Action

There are no existing studies that indicate managed livestock grazing has any effects on most types of traditional use areas (rock art sites, religious sites, natural features, etc.). It is possible that livestock grazing could have some negative or positive effects on culturally important plants, depending upon the species. Some species would be negatively affected by direct grazing or trampling of plants. Other species appear to benefit from periodic disturbance such as grazing and fire. For these reasons, continued grazing under the existing permit terms and conditions would likely maintain the status quo condition of culturally important plant species in the five allotments.

Alternative 2: 50% Reduction in Grazing

This alternative would benefit those culturally important plant species that are negatively affected by grazing or trampling and would negatively impact those species that require periodic disturbance.

Alternative 3: Change Grazing Management/Vegetation Treatments

The effects of this alternative on culturally important plants would vary across the five allotments. Generally, the allotments where the grazing season would be extended, grazing season altered, or vegetation treated would negatively impact those culturally important plants by increased trampling, grazing, or disturbance from treatment equipment. Other species may benefit from additional disturbances.

Alternative 4: No Permit Issued/No Weed Treatments

This alternative would remove or reduce the amount of grazing and weed treatment related disturbance across the five allotments. Those species that are not well adapted to periodic disturbance would benefit the most under this alternative, whereas those species that require periodic disturbance would be the most negatively affected of all the alternatives.

Cultural and Historic Resources

Affected Environment: All Allotments

None of the five allotments have been comprehensively surveyed for the presence of cultural or historical resources. Surveys have been done on portions of the allotments around water developments, power line right-of-ways, fire rehab projects, and other ground-disturbing projects in the general area. This represents a resource for which there is "incomplete or unavailable information". According to the CEQ's NEPA regulations (40 CFR Part 1502.22), when an agency is evaluating impacts and there is incomplete or unavailable information, the agency must make clear that such information is lacking. Further, if the information "cannot be obtained because the cost of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include…. (1) a statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts….; (3) a summary of the existing credible scientific evidence which is relevant to evaluating the reasonably

foreseeable significant impacts… and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community…".

The DOI NEPA regulations state that these costs are not just monetary, but can also include "social costs, delays, opportunity costs, and non-fulfillment or non-timely fulfillment of statutory mandates" (43 CFR Part 46.125). The costs of obtaining a comprehensive survey of cultural resources across the five allotments is estimated at $800 to $1080 per acre based upon current costs for contract survey work. Surveying the remaining 72,521 unsurveyed acres within the allotments would cost approximately $58,017,000 to $78,323,000 and is considered to be exorbitant. Nevertheless, the following section describes what is known about existing cultural/historic resources in each allotment based on past surveys, followed by a discussion of potential impacts to those resources.

Affected Environment: Round Mountain Allotment (00211)

There are over 100 archaeological sites recorded within this allotment. Site types include rock art, lithic quarry sites, campsites, village sites, hunting sites, lithic scatters, rock cairns, rock alignments, stone rings, and burials. Sites range in size from as little as a few square feet up to 40 or more acres. The obsidian quarry area near Surveyor Spring covers over 640 acres. Some areas have a high density of sites recorded. However, only about 20% of the allotment has been systematically surveyed. This would indicate that are potentially hundreds of sites in the allotment have not yet been recorded. Sites are most often located along the many rock rims of the area, at lake shorelines, along drainages, at springs and in material source areas such as the obsidian area around Surveyor Springs. Broad open areas where root crops are found often have high numbers of cultural sites.

Affected Environment: Rahilly Gravelly Allotment (00212)

There are over 100 archaeological sites recorded within the allotment. Site types include rock art, lithic quarry sites, campsites, village sites, hunting sites, lithic scatters, rock cairns, rock alignments, stone rings and burials. Sites range in size from as little as a few square feet up to 40 or more acres. Some areas have a high density of sites recorded. However, only about 20% of the allotment has been systematically surveyed. This would indicate that are potentially hundreds of sites in the allotment have not yet been recorded. Sites are most often located along the many rock rims of the area, along lake shores, along drainages, and springs. Broad open areas where root crops are found often have high numbers of sites. Archaeological research in the area which has been conducted by the University of Nevada, Reno, indicates that the area has archaeological resources of importance. Occupation and use of the area is estimated to goes back a minimum of 10,000 years and may go back as far as 14,000 years ago.

Affected Environment: Burro Springs Allotment (00213)

About 20% of this allotment has been systematically surveyed for cultural resources. At the present time, only 8 sites are recorded within this allotment. It is expected that more will be present within the un-surveyed portions of the allotment. However, the terrain, soils and vegetation of the area do not make it as desirable for use as do other areas in Coleman and Warner Valleys. A lower density of site would be expected for this allotment as compared to others in more favorable areas. Sites which are known for the allotment include burials, large lithic scatters, small occupation sites, sites at springs, and rock art sites.

Affected Environment Hill Camp Allotment (00215)

About 2 to 5% of this allotment has been systematically surveyed for cultural resources. At the present time, only 10 sites have been recorded. It is expected that many more will be present within the un-surveyed portions

of the allotment. The terrain, soils and vegetation of the area would make it desirable for past use. A fairly high density of sites would be expected for this allotment. Sites which are known for the allotment include large lithic scatters, small occupation sites, sites at springs, rock art sites, rock cairns, rock alignments and stone house rings.

Affected Environment: FRF Cahill Allotment (00219)

About 50% of the BLM-administered land in this allotment has been systematically surveyed for cultural resources. No survey work has been done on the private property which makes up a fairly large portion of the allotment. At the present time, only 11 sites are recorded within this allotment. It is expected that many more will be present within the un-surveyed portions of the allotment. The terrain, soils, availability of water in the past and vegetation of the area would make it desirable for past use. A fairly high density of sites would be expected for this allotment. Sites which are known for the allotment include large lithic scatters, small occupation sites, sites at small and large lakebeds, rock art sites, rock cairns, house pits, and mussel shell middens. The full extent of some of the sites has not been determined since they cross onto private property. The state property within the allotment also has not been surveyed for cultural resources.

Environmental Effects:

Effects Common to Alternatives 1-4 in All Allotments

It is unknown to what extent livestock may currently be impacting cultural resource sites within the five allotments. There have been few, if any, studies of livestock trampling impacts to cultural resources, but based on field observations by BLM cultural resources staff, concentrated livestock use can impact cultural materials located in the soil profile. These effects could include ground cover removal, surface scuffing, and hoof shear. Cultural materials within the top 12 inches of soil are the most susceptible to exposure and trampling damage, potentially resulting in reduced site integrity. The deepest disturbance is typically seen at wet sites located in congregation areas (near water sources and trailing areas) where concentrated hoof shear and soil layer mixing is common. Artifacts can be mixed between layers of the soil profile, moved both vertically and horizontally, or broken and chipped. In addition, removal of vegetation, especially within concentration areas can lead to erosion by wind and water, further exposing cultural materials near the surface. Dispersed grazing, on dry uplands away from natural water sources may cause light hoof shear and surface scuffing over time.

Maintenance of existing range developments would have little or no additional impact on cultural resources at a given site (if any in fact exist) beyond those that may have occurred when the range improvement was originally constructed.

Alternative 1 – No Action

It is not possible to determine the exact extent and degree of livestock-related trampling impacts on cultural resources across the allotments since the locations and numbers of existing sites are not fully known. However, the greatest impacts would occur to those sites that occur in livestock concentration areas and the aerial extent of these areas can be estimated for the allotments (refer to soils section and Table 17). Approximately 7,630 acres (7.4%) across the five allotments would be most impacted by concentrated livestock use. Areas near natural water sources would continue to have the highest potential for the presence of and impacts to, cultural sites.

Alternative 2 – 50% Reduction in Grazing

Generally, the impacts of livestock trampling on cultural resources would be roughly cut in half compared to the magnitude of effects described under Alternatives 1 and 3. The greatest impacts would occur to those sites that occur in livestock concentration areas and the aerial extent of these areas can be estimated for the allotments (refer to soils section and Table 17). Under this alternative, approximately 5,085 acres (5.1%) across the five allotments would be most impacted by concentrated livestock use. Areas near natural water sources would continue to have the highest potential for the presence of and impacts to, cultural sites.

Alternative 3: Change Livestock Management/Vegetation Treatments

Total ground disturbance associated with concentrated livestock use and proposed vegetation treatments across all five allotments is estimated at 8,130 acres (8.2%; see Tables 17 and 54).

This alternative would extend the grazing season by 7 days in the Round Mountain Allotment. Since the same number of AUMs would be authorized, the total number of livestock allowed on the allotment would be reduced compared to Alternative 1 (see Table 1). Since this grazing extension is proposed in July during a drier time of year, livestock trampling effects on cultural resources would generally be similar to or slightly less than Alternative 1.

In the Rahilly-Gravelly Allotment, the potential effects of livestock trampling would be similar to Alternative 1. The proposed vegetation treatment and fence project areas were surveyed and no National Register quality cultural sites were found. Therefore, these proposed projects would not have any impact on cultural resources.

In the Burro Springs Allotment, the grazing season would be extended further into the spring season, but the total number of livestock grazing would be reduced substantially (see Table 1). Though there would be fewer livestock in the allotment, they would be present for a longer period of time during the wettest time of the year when cultural sites near the surface are most vulnerable to trampling effects. For this reason, it is difficult to predict if the potential trampling effects would be substantially different from Alternative 1.

The potential effects of livestock trampling in the Hill Camp and FRF Cahill Allotments would be similar to Alternative 1.

In addition, those proposed weed treatment sites (all five allotments) that involve application methods that could cause ground disturbance would be surveyed for cultural resources prior to implementation. Any sites found would be avoided or mitigated. For this reason, the proposed weed treatments would not have any impact on cultural resources.

Alternative 4 – No Permit Issued/No Weed Treatment

Under this alternative, the potential effects to cultural resources in the soil profile would be eliminated or substantially reduced across the five allotments. Approximately 2,329 acres (2.3%) in three allotments would still be subject to concentrated livestock use and associated trampling effects (see Table 17), as grazing use under other permits would still occur.

Recreation

Affected Environment:

There are currently no developed recreation sites within the five allotments, nor are there any planned for the future. Recreation along the Highway 140 and County 3-14 corridors (within a half mile) is currently managed for Rural activities, opportunities, and experiences in portions of Round Mountain, Hillcamp, and Rahilly Gravelly Allotments. Opportunities for parking/ pull-outs are available for motorized use and the probability of user interaction is moderate to high. Outside of these corridors, recreation is managed primarily for Semi-Primitive Motorized activities, opportunities, and experiences. The area possesses a moderate probability of experiencing isolation, closeness to nature, and self-reliance in outdoor skills. User interaction is low, but there is evidence of other users (see Map R-3 in BLM 2003b). Use of motorized vehicles on roads, trails, and cross-country travel is allowed across the majority of the area (see Map R-7 of BLM 2003b). However, OHVs are Limited to Designated Roads and Trails within Twelvemile Creek, Spanish Lake and High Lakes ACECs. As well as Limited to Existing Roads and Trails within Rahilly Gravelly ACEC (see Map R-7 in BLM 2003b).

Pockets of vegetation and topographic screening provide opportunities for some degree of solitude across these allotments where a visitor could avoid the presence of others. In addition, high quality opportunities for solitude can be found within the western half of Sucker Creek and the eastern third of Rahilly pastures. The primary recreation activities in these allotments are upland game bird (e.g., chukar and quail) and big game (e.g., elk, mule deer, and pronghorn antelope) hunting, along with trout fishing along Twelvemile and Fifteenmile Creeks. Other recreation activities may occasionally occur in these allotments including: wildlife viewing, photography, camping, hiking, backpacking, horseback riding, ATV riding, and target shooting.

Environmental Consequences:

<u>Alternative 1: No Action</u>

The No-Action Alternative would continue to have minimal effects to recreation opportunities across the allotments. Current levels of recreation activities, opportunities and experiences would remain constant.

<u>Alternative 2: 50% Reduction in Grazing</u>

Alternative 2 would enhance recreational experiences and opportunities across the allotments. Users seeking isolation and naturalness, as well as hunters and wildlife viewers, would slightly benefit due a slight decrease in the sights and sounds of cattle and from the increased potential to watch and hunt wildlife associated with more available wildlife forage.

<u>Alternative 3: Change Livestock Management/Vegetation Treatments</u>

Alternative 3 would moderately degrade some recreational experiences and opportunities across the Burro Spring and Round Mountain Allotments. Although the number of cattle would be substantially decreased on the Burro Springs Allotment, there would be a 264% increase in the length of the season of use. Overall, Alternative 3 would result in 94 less days a year (7 in Round Mountain and 84 in Burro Springs) the public could recreate within these allotments free of the sights and sounds of cattle.

The proposed seeding would negatively impact experiences for those users seeking naturalness as the resulting vegetative monoculture and seeding rows would be moderately unnatural to the casual observer over the life of the permit. However, in the long run (20+ years) as the shrub community re-establishes and planting rows disappear, the naturalness of the seeding area would slowly be restored.

In addition, the proposed mile of fence within in the Coleman Lake Pasture would create a deterrent for users traversing across the allotment (e.g., hunters, hikers, and horseback riders). This impact would be further magnified due to the natural funneling effect of the area's topography.

Alternative 4: No Permit Issued/No Weed Treatment

This alternative would enhance some recreation activities, opportunities, and experiences in the allotments, while possibly diminishing others. Naturalists and primitive recreationists experiences in these areas would be moderately enhanced by the removal of livestock grazing due to the permanent absence of the sights and sounds of cattle, the eventual improved ecological condition of the allotment (particularly associated with cattle trails and impacts around watering/gathering areas), and the potential for facilities to be deemphasized and begin to blend into the landscape due to lack of use. Conversely, this alternative may reduce opportunities and experiences for wildlife viewers and hunters if waterholes and reservoirs become less effective at trapping and holding water for wildlife due to lack of maintenance over the life of the plan.

Visual Resources

Affected Environment:

The visual setting of the Round Mountain Allotment is topographically dominated by Round Mountain (6,125 ft.), sloping to Big Lake/South Warner Rim plateau to the north, Long Canyon and Fifteenmile Creek Canyon to the West, and Twelvemile Creek Canyon (4,715 ft.) to the south and east. The area possess a strong riparian component with the above the mentioned creeks and numerous natural and developed springs. Vegetation is comprised of western juniper, low and mountain big sagebrush, antelope bitterbrush, Sandberg bluegrass, Thurbers's needlegrass, and various other species along riparian areas (see Upland Vegetation and Table 29 for a full description). Observable developments in the area include 13 miles of gravel county routes, 35.5 miles of BLM motorized routes, 0.5 miles of closed routes, 0.5 miles of motorized trails, 8 miles of BPA 500 kilovolt (kV) transmission line, 37 miles of fence, 4,512 acres of recent prescribed burning, 2,811 acres of felled juniper (scheduled to be burned), 8 cattle guards, 4 culverts, 6 reservoirs, 5 waterholes, 4 developed springs, 1 water trough, and 1 mineral pit.

Topographically, Rahilly Gravelly Allotment is dominated by an upshifted plateau, sloping from the Nevada border north (6,390 ft.) to the Warner Valley, with a half dozen uplifted, stepped, ridges running north to south. While, the eastern quarter of the allotment is dominated by the flatlands of Coleman Lake (4,460 ft.). Sucker Creek flows the length of the plateau, while Horse Creek begins in Nevada and runs through the southwestern edge of the allotment into Twelvemile Creek. The allotment is primarily dry with dull hues, however a there are small pockets of green riparian areas near several natural and developed springs in the southeastern corner. Vegetation consists of juniper dominated inclusions, low sagebrush, big sagebrush, shadscale saltbrush, spiney hopsage, greasewood, and various grass species (see Upland Vegetation and Table 32 for a full description). Observable developments in the area include 7 miles of gravel county routes, 68 miles of BLM motorized routes, 0.5 miles of closed routes, 1.5 miles of BPA 500 kilovolt (kV) transmission line, 47 miles of fence, 8 mineral pits, 3 culverts, 2 cattle guards, a quarter mile of pipelines, 12 waterholes, 9 developed springs, 6 reservoirs, 1 well, 1 water tank, and 1 water trough.

The visual setting of Burros Springs Allotment is topographically dominated by Coleman Rim (6,520 ft.), which culminates down slope at Coleman Valley (4,461 ft.) in the southwest. To the north, the allotment completely encompasses Spanish Lake. Overall, the area is very dry, with the exemption of a green strip of vegetation running along the Burro Springs drainage. Vegetation consists of western juniper, low sagebrush, big sagebrush, greasewood, shadscale, saltbrush, and various grass species (see Upland Vegetation and Table 36 for a full

description). Observable developments in the area include 12 miles of BLM motorized routes, 7.5 miles of fence, 500 ft. of pipeline, 481 acres of prescribed burning, 3 abandoned mining site disturbances, 2 waterholes, 1 developed spring, and 1 water trough.

The Hill Camp Allotment consists of a variety of visual settings. The northeast corner of the allotment includes the MC Reservoir and Greaser Basin, surrounded by Greaser Rim and Greaser Ridge, sloping to the southwest into Greaser Canyon. The western boundary of the allotment is formed by Coleman Rim, a massive fault scarp with a west facing slope, and Coleman Valley (4,471 ft.). The central portion of the allotment consists of numerous minor and moderate sized fault scarps rising to over 6,400 feet in elevation, with a couple dozen scattered springs, small playas and reservoirs. Several drainage forks of Piute Creek drain to the east, converging four miles east of the allotment at Piute Reservoir. The southeast corner of the allotment flattens out into Antelope Flat forming the northern end of larger Macy Flat playa to the south in northern Nevada. Vegetation consists of western juniper, basing big sagebrush, mountain sagebrush, low sagebrush, greasewood, antelope bitterbrush, green rabbitbrush, and various grass and forbs species (see Upland Vegetation and Table 36 for a full description). Observable developments within the allotment include 3 miles of Highway 140, 3 miles of gravel county routes, 76.5 miles of BLM motorized routes, 3 miles of closed routes, 6.5 miles of BPA 500 kilovolt (kV) transmission line, 41.5 miles of fence, over 1 mile of pipelines, 10,822 acres of prescribed burning, 1,664 acres of seeding, 6 cattle guards, 4 culverts, 2 abandoned mine disturbances, 29 reservoirs, 11 waterholes, 7 developed springs, and 1 water trough.

The FRF Cahill Allotment is dominated by the flats of Warner Valley on the edges of Crump and Warner Lakes (4,480 ft.). The area is primarily comprised of green riparian areas and marshlands. Vegetation is comprised of greasewood, inland saltgrass, basin wildrye, creeping wildrye, squirreltail, alkaili sacaton, hardstem bulrush, and meadow barley (see Upland Vegetation and Table 30). Observable developments within the allotment include 2 miles of BLM motorized routes, 7 miles of fence, and 1 water trough.

Views looking out from the allotments include Cow Head, Coleman, and Macy Flat valleys to the South; Guano Valley and Doherty Slide to the east; Warner Valley, Sage hen Butte, and Fish Creek Rim to the North; and the Warner Mountains to the east.

The five allotments are managed according to Visual Resource Management classes VRM II, VRM III, and VRM IV (Table 53).

Table 53. Visual Resource Management Classes in the Allotments

Allotment	VRM II** (acres/%)	VRM III*** (acres/%)	VRM IV**** (acres/%)	Scenic Corridor (acres/%)
Round Mountain	2,281 / 14	3,087 / 18	11,576 / 68	0 / 0
Rahilly Gravelly	904 / 3	23,114 / 68	9,882 / 29	1,985 / 6
Burro Springs	0 / 0	1,783 / 25	5,220 / 75	3,936 / 56
Hillcamp	0 / 0	14,792 / 46	17,235 / 54	15,703 / 49
FRF Cahill	0 / 0	571 / 100	0 / 0	286 / 50

**VRM II is managed to "retain the existing character of the landscape. The level of change to landscape characteristics should be low. Management activities can be seen, but should not attract the attention of the casual observer."
***VRM III is to "partially retain the existing character of the landscape, moderate levels of change are acceptable."
****VRM IV is managed to allow for "major modifications to the landscape," though "every effort should be made to … minimize disturbances and design projects to conform to the characteristic landscape" (BLM 2001, page 290).

Additionally, portions of the Rahilly Gravelly, Burro Springs, Hill Camp, and FRF Cahill Allotments are within the 3 mile scenic corridor along State Highway 140. The RMP/ROD management direction requires "all developments, land alterations, and vegetation manipulations within a 3 mile buffer… of all major routes and recreation use

areas to be designed to minimize visual impacts (unseen areas within these zones will not be held to this standard)… All projects will be designed to maximize scenic quality and minimize scenic intrusions" (BLM 2003b, page 88.)

Environmental Consequences:

Alternative 1: No Action

The No-Action Alternative would continue to have negligible effects to existing visual quality. Current visual objectives for VRM classes II, III, and IV would continue to be achieved.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would utilize the same grazing period and developed infrastructure to manage livestock within these allotments. Nonetheless, this alternative would marginally enhance visual resources by reducing the occurrence of viewing non-native animals within the landscape. Overall, Alternative 2 would have negligible effects to visual quality. Visual objectives for VRM classes II, III, and IV would continue to be achieved.

Alternative 3: Change Livestock Management/Vegetation Treatments

Alternative 3 would have low to moderate impacts to visual quality across the affected allotments.

Although the occurrence of viewing non-native animals within the landscape would be decreased on the Burro Springs Allotment, a 264% increase in in the season of use would nullify any benefit, resulting in low to moderate negative visual impacts to some visitors within the allotment.

The proposed 500-acre seeding and associated mile of fencing would have moderate to high negative impacts to visual quality in the immediate vicinity of the projects, as the area's natural appearing landscape characteristics would be altered in the form of shape, color, lines, and texture. However, due to topographic screening and relative small size of the canyon, these impacts would only be seen from within the canyon, on approximately 2,000 acres or 6% of the Rahilly Gravelly Allotment. Both projects are located just outside the 3-mile scenic corridor along state Highway 140 and are thus not held to scenic corridor visual standards. In addition, the proposed projects fall within VRM Class III and IV and would meet VRM objectives for such areas.

Overall, under Alternative 3, visual objectives for VRM classes II, III, and IV, as well as scenic corridor standards, would continue to be achieved.

Alternative 4: No Permit Issued/No Weed Treatment

The No-Grazing Alternative would moderately enhance visual resources in the allotments by eliminating the occurrence of viewing non-natives animals within the landscape and by the improvement in esthetically pleasing upland plant ecosystem (e.g. naturally recovering cattle trails and trampled areas around water sources). Furthermore, the visual impacts of observable developments (motorized routes, fences, and water developments) scattered across these allotments would likely remain indefinitely until such time that they either deteriorate or funds and resources are made available to facilitate their removal. Visual objectives for VRM classes II, III, and IV would continue to be achieved.

Areas of Critical Environmental Concern (ACEC)/Research Natural Areas (RNA)

Affected Environment:

High Lakes ACEC

About 5,000 acres of the 38,942-acre High Lakes ACEC lies within the northeast corner of the Hill Camp Allotment (Map 7). The area contains cultural, wildlife, and natural system values which include: cultural plants, special status plant species, greater sage-grouse habitat, and a high concentration of prehistoric rock art sites (BLM 1999c, 2001, 2003a). (*Note:* The special status plant species are located in the northern portion of the ACEC outside of the Hill Camp Allotment).

Rahilly-Gravelly ACEC/RNA

The majority of the 19,632-acre Rahilly-Gravelly ACEC/RNA falls within the Rahilly Gravelly Allotment (Map 7). The area contains cultural, wildlife, and natural system values which include: a high density and variety of prehistoric and historic sites, greater sage-grouse habitat, one special status plant, and meeting the Oregon Natural Heritage Program (ONHP) plant community cell needs for Basin and Range Ecosystem: (6) western juniper/big sagebrush-bitterbrush, (21) mountain brush (mountain big sagebrush-bitterbrush-squawapple), (40) bitterbrush-sagebrush/ mountain snowberry/Thurber needle grass (BLM 1999c, 2001, 2003a).

Spanish Lake ACEC/RNA

Most of the 4,695-acre Spanish Lake ACEC/RNA falls within the Burro Springs Allotment (Map 7). The area contains natural system values which include: a diversity of salt desert scrub communities with limited distribution in the Lakeview Resource Area and Northern Great Basin and meets the ONHP plant community cell needs for Basin and Range Ecosystems: (19) black greasewood-shadscale/bunchgrass/playa margin (73) playa with greasewood/Great Basin wildrye, (34) shadscale-budsage/bunchgrass/salt desert shrub (BLM 1999c, 2001, 2003a).

Environmental Consequences:

Alternative 1: No Action

The potential environmental effects to the relevant and important ACEC values (cultural, wildlife, natural systems) that would result from continuing existing livestock management on the 3 allotments (Rahilly Gravelly, Burro Springs, and Hill Camp) which overlap the ACEC or ACEC/RNAs, would be the same as those already described for Alternative 1 in the cultural and historic resources, native American traditional uses, wildlife, upland vegetation, wetland, and special status plant sections of this EA. The reader should refer to those sections of the document for details.

Alternative 2: 50% Grazing Reduction

The potential environmental effects to the relevant and important ACEC values (cultural, wildlife, natural systems) that would result from grazing reductions on the 3 allotments (Rahilly Gravelly, Burro Springs, and Hill Camp) which overlap the ACEC or ACEC/RNAs, would be the same as those already described for Alternative 2 in the cultural and historic resources, native American traditional uses, wildlife, upland vegetation, wetland, and special status plant sections of this EA. The reader should refer to those sections of the document for details.

Alternative 3: Change Livestock Management/Vegetation Treatments

The potential environmental effects to the relevant and important ACEC values (cultural, wildlife, natural systems) that would result from grazing management changes and vegetation treatments on the 3 allotments (Rahilly Gravelly, Burro Springs, and Hill Camp) which overlap the ACEC or ACEC/RNAs, would be the same as those already described for Alternative 3 in the cultural and historic resources, native American traditional uses, wildlife, upland vegetation, wetland, and special status plant sections of this EA. The reader should refer to those sections of the document for details.

Alternative 4: No Permit Issued/No Weed Treatment

The potential environmental effects to the relevant and important ACEC values (cultural, wildlife, natural systems) that would result from not issuing the permit or conducting vegetation treatments on the 3 allotments (Rahilly Gravelly, Burro Springs, and Hill Camp) which overlap the ACEC or ACEC/RNAs, would be the same as those already described for Alternative 4 in the cultural and historic resources, native American traditional uses, wildlife, upland vegetation, wetland, and special status plant sections of this EA. The reader should refer to those sections of the document for details.

Wilderness Study Areas and Lands with Wilderness Characteristics

Affected Environment:

No wilderness study areas (WSAs) are present, as BLM's original wilderness inventory did not find wilderness characteristics to be present within the five allotments (BLM 1979a, 1979b, 1979c, 1980a, 1980b, 1989a, and 1991).

In 2005, ONDA reported wilderness characteristics to be present within portions of the Rahilly Gravelly, Burro Spring, and Hill Camp Allotments as part of their Sucker Creek, Coleman Rim, and Hart Mountain WSA proposals (ONDA 2005, pages 47-55, 87-120, and 224-232). BLM hereby incorporates all of ONDA's inventory findings by reference herein their entirety, in accordance with 40 C.F.R. § 1502.21.

Since 2007, the BLM has been conducting wilderness inventory updates following current inventory guidance (BLM 2007a, 2008a, 2012a). In this process, an inter-disciplinary team reviewed the existing wilderness inventory information contained in the BLM's wilderness inventory files, previously published inventory findings (BLM 1979a, 1979b, 1979c, 1980a, and 1980b), and citizen-provided wilderness information (e.g. ONDA 2005, 2007). BLM subsequently conducted field inventory, took additional photos, created a photo log and photo point dataset, updated its road (GTRN) and other datasets (fences, water developments, pipelines, utility lines, seedings and vegetation treatments, rangeland improvement project system, mining disturbances, etc.) related to human-caused activities, completed route analysis forms, made inventory unit boundary determinations, and subsequently evaluated wilderness characteristics within each inventory unit within the area (BLM 2012g).

Generally, ONDA's (2005) inventory information documented fewer inventory unit boundary roads and larger overall inventory units than BLM's field inventory. In addition, ONDA's inventory information documented fewer unnatural features within their proposed WSA boundaries and ultimately concluded, with limited supporting rationale, that these areas were in a predominantly natural condition, and contained outstanding opportunities for either solitude or primitive and unconfined recreation.

In contrast, BLM's inventory update documented the presence of more inventory unit boundary roads, more smaller inventory units, many more unnatural features present, and all of the requisite wilderness characteristics present only in the western half of the Rahilly Gravelly Allotment (BLM 2009a; Map 7). In

summary, BLM found the Coleman Rim South inventory unit (OR-015-120A) is currently about 7,143 acres in size, is predominantly in a natural condition, and offers an outstanding opportunity for solitude (BLM 2009a). BLM determined that the remainder of the allotments continue to lack wilderness characteristics (BLM 2009b, 2009c, 2009d, 2009e, 2009f and 2012c; all available at http://www.blm.gov/or/districts/lakeview/plans/inventas.php). BLM hereby incorporates all of these inventory findings by reference herein their entirety, in accordance with 40 C.F.R. § 1502.21.

For these reasons, the environmental effects analysis which follows only addresses potential impacts to lands with wilderness characteristics in the Coleman Rim South inventory unit in the Rahilly Gravelly Allotment.

Environmental Consequences:

Alternative 1: No Action

Continuing grazing under the No-Action Alternative would continue to have minimal effects to those lands with wilderness characteristics present within the Rahilly Gravelly Allotment. This alternative would have no impacts on unit size and no additional impacts to natural condition or outstanding opportunities for solitude beyond those that were noted during the BLM (2009a) inventory update.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would have minor positive impacts to those lands with wilderness characteristics present within the Rahilly Gravelly Allotment. The reduction in grazing AUMs would slightly improve the natural condition of the inventory unit, as the size or footprint of concentration areas around watering and trailing areas would be slightly reduced over time. However, this benefit would likely go unnoticed by the casual observer.

Alternative 3: Change Livestock Management/Vegetation Treatments

The potential effects of continuing grazing in the Rahilly Gravelly Allotment under Alternative 3 would be similar to Alternative 1. Since the proposed 500-acre vegetation treatment and fence are located outside of lands with wilderness characteristics, these projects would have no effects on such values.

Alternative 3 could potentially have both positive and negative impacts to lands with wilderness characteristics within in the Rahilly Gravelly Allotment due to herbicide application. Application of herbicides using ATVs/UTVs and trucks could potentially have moderate negative impacts to the natural condition of the area if tracks through vegetation develop from repeated motorized use during treatment. However, these impacts could be mitigated by either not using the same route more than once or twice, or by hand raking vehicle tracks after treatment to discourage future use from other vehicles and to promote regeneration of vegetation.

Conversely, herbicide treatment could have low positive impacts to the natural condition of the inventory unit by eradication of noxious and invasive weeds, provided the treatment is successful and native plants re-establish. However, in most cases, the casual observer would not be able to differentiate a weed from a native plant and therefore, the presence of noxious and invasive weeds would have little to no impact on the apparent natural condition of the area. Except for a short period of time when treatments are actually being applied, outstanding opportunities for solitude would remain over the long-term.

Alternative 4: No Permit Issued/No Weed Treatment

Alternative 4 would have positive impacts to those lands with wilderness characteristics found within the Rahilly Gravelly Allotment. The removal of cattle would moderately enhance the natural condition of the area due to

the rehabilitation of high concentration areas around waterholes and cattle trails. Additionally, the potential for facilities to be deemphasized and begin to blend back in the landscape due to lack of use/maintenance would further benefit naturalness. The no weed treatment aspect of Alternative 4 would have similar impacts to Alternative 1 and thus, would likely have minimal impacts to wilderness character. Outstanding opportunities for solitude would remain.

Wild and Scenic Rivers

Affected Environment:

The Twelvemile Creek corridor was recommended suitable for potential designation by Congress as a wild and scenic river based on the presence of one outstandingly remarkable value (ORV): fish habitat and populations (Warner suckers). This 6.6 mile study corridor sits in the southeast corner of the Round Mountain Allotment and flows from northeastern California to southern Oregon to northwestern Nevada and back into southern Oregon (Map 7). The 4.4 miles of this river corridor in Oregon was formally recommended as suitable in 2003 (BLM 2003b), with a tentative classification as "recreational." The 2.2- mile corridor in northeastern California and northwestern Nevada was formally recommended as suitable in 2008 with a tentative classification as "recreational" (BLM 2008e).

Environmental Consequences:

Effects Common to Alternatives 1-4:

Since livestock grazing has already been removed from the Twelvemile Creek corridor (and none of the alternatives propose allowing grazing in this area), the effects Alternatives 2-4 would be exactly the same as Alternative 1 within the corridor. Based upon analyses within the aquatic/fisheries section of this EA and the existing biological opinion (USFWS 1997), grazing outside the corridor under Alternatives 1-3 would have no significant effects on the one recognized ORV (Warner sucker populations and habitat) within the corridor.

Social and Economic Values

Affected Environment:

The economy of Lake County is based primarily on agriculture, timber, livestock, and government sectors. Livestock grazing and associated feed production industries are major contributors to the economy of Lake County. The most common is the raising of cattle and calves for beef. In 2012, an estimated 54,000 cow/calves were in Lake County Oregon (Pete Schreder, Personal Communication, Lake County Agricultural Extension Agent, 10/15/2013). In 2012, Lake County ranchers sold an estimated $38,000,000 worth of cattle and calves or related beef products. The permittee uses five allotments, combined for 4,633 AUMs for about 6 months of the year. This calculates out to forage for about 790 cows for 6 months. The 790 cows would produce about 638 calves for market, assuming 40 bulls and an 85% calf crop.

Environmental Consequences:

Effects Common to Alternatives 1-3

The same permittee uses all five allotments at during the year, so the economic benefits or impacts would occur to a single permittee.

Public lands in and around the allotment would continue to contribute social amenities such as open space and recreational opportunities. These amenities encourage tourism in the surrounding region and provide economic benefits to nearby communities such as Lakeview, Plush and Adel, though the specific contribution of the allotment cannot be accurately estimated.

Alternative 1

Under this alternative, the Federal Government would continue to collect grazing fees (4,633 AUMs @ $1.35/AUM = $6,254.55. This commodity use of public lands would continue to generate revenues for the Federal Government on an annual basis.

The rancher/permittee would continue to produce approximately 638 calves each year associated with the 5 allotments under the Cahill Permit, providing continued economic stability for the permittee and contributing approximately 1.2% to the total county-wide cattle production. Based on the current price of a 600-pound stocker calf at $160/cwt (100 lbs. of live weight) (Stockman's Journal, 2013) the permittee would generate a gross annual income of approximately $612,480. This is an estimate that would vary every year depending on the price of beef and the weight/condition of the calves at the time of sale.

Alternative 2: 50% Reduction in Grazing

Government would collect 50% less grazing fees from the 5 allotments, reducing the grazing fees collected by $3,128.95, assuming 2,317AUMs @ $1.35/AUM.

Under this alternative the permittee could either reduce his herd size by 50% or find alternative forage. If the permittee chose to reduce number of cows and calves by 50%, then gross revenue would be reduced by 50%. Using the same assumptions as alternative 1 the gross income for the permittee would be (600-pound stocker calf at $160/cwt) (319 calves) approximately $306,240. This would be a loss of gross income compared to Alternative 1 of approximately $306,240. This is an estimate that would vary every year depending on the price of beef and the weight/condition of the calves at the time of sale.

The permittee could chose to find alternative forage and assuming the permittee did so for 50% of the herd, the estimated costs would be $166,196 to feed hay for 6 months. This is based on the current cost of hay, approximately $153/ton (Oregon-Washington weekly hay report, 2013) and assuming feeding 30lb/day/cow for all 6 months. If the permittee could lease private land the estimated cost for 50% of the herd would be approximately $34,284.20, assuming (4,633 AUMs)(50%)($14.80). The average pasture rate for private land forage in Oregon is $14.80 Per AUM.

The permittee could do a combination of private land leasing and feeding hay so the additional cost would be between $34,284 and $166,196

If the rancher could not secure other suitable pasture land or could not afford these increased costs, then approximately 319 calves would no longer be produced in Lake County, resulting in a 0.6% annual reduction in county-wide cattle production. Based on the current price of a 600-pound stocker calf at $160/cwt (100 lbs. of live weight) (Stockmans Journal, 2013), this could result in an economic gross loss to the permittee and counties economy of about $306,240 per year.

Alternative 3: Change Livestock Management/Vegetation Treatments

The grazing fees collected by the BLM would be the same as under alternative 1 for all allotments.

In the Round Mountain Allotment extending the grazing season by one week would benefit the permittee by increasing the period of time allowed to gather stray cows off the West Pasture and put on the National Forest. In the Burro Springs Allotment extending the end of the grazing season from March 5th to May 31st would benefit the permittee by providing more flexibility in the grazing rotation and allowing spring use in a pasture where annual cheatgrass is a major forage component. The creation of an FRF Allotment for the Pederson Pasture of the Rahilly Gravelly allotment would have no practical or economic effect on the permittee. It would make the administrative tracking and billing of the Pederson Pasture easier.

The treatment of 500 acres in the Coleman Lake pasture will cost the permittee in the short term some still undetermined amount of money (estimated ($5,000-$10,000) for the permittee contribution to the cost for the treatment. The benefit to the permittee in the long term is more forage production and the new pasture will increase flexibility in the pasture rotation. The capability to rotate between the new pasture and the Coleman Lake pasture combined with greater forage production in the seeded acres will improve individual animal performance.

Alternative 4 No Permit Issued/No Weed Treatment

A minimum loss of (4,633 AUMs @ $1.35/AUM) $6,254.55 would occur to the Federal Government due to the loss of grazing fees collected from this permittee. This would also result in the loss of suitable grazing land for the local rancher/permittee. The rancher would then have to find suitable pasture to graze his livestock elsewhere in the surrounding region or feed additional hay, resulting in additional production costs. The current cost of hay is approximately $153/ton (Oregon-Washington weekly hay report, 2013) and assuming feeding 30lb/day/cow. This would result in approximately $329,975 in additional costs to feed the permittee's 790 cows for 182 days, not including transportation costs of moving the hay to the ranch. The average pasture rate for private land forage in Oregon is $14.80 Per AUM. The additional annual cost to the rancher for renting private pasture land would be approximately $62,314 (4,633 AUMs * $14.80) - $6,254.55).

The permittee could potentially do a combination of private land leasing and feeding hay to make up for the lost forage on public lands, so the additional cost would be between $63,314 and $329,620.

If the permittee could not secure other suitable pasture land or could not afford these increased costs, then approximately 638 calves would no longer be produced in Lake County, resulting in a 1.2% annual reduction in county-wide cattle production. Based on the current price of a 600-pound stocker calf at $160/cwt (100 lbs. of live weight) (Stockmans Journal, 2013), this could result in an economic gross loss to the permittee and counties economy of about $612,480 per year.

The permittee would be responsible for the cost of fencing off the public land in the Rahilly Gravelly and Cahill FRF Allotments. The cost in the Rahilly Gravelly Allotment would be about $21,000-$24,000 (7-8 miles) and about $9,000 (3 miles) in the Cahill FRF Allotment.

The previous analysis assumes that permittee would fence off the public land in the Rahilly Gravelly and Cahill FRF Pastures and continue grazing on the private lands. If the permittee chose not to fence off the private land in the Rahilly Gravelly Allotment, the additional costs to the permittee would be for 176 AUMs produced on private land or $12,118 for hay and $2,640 for private pasture. The Cahill FRF has 280 AUMs on the public land which was included in the 1,296 acres already analyzed. The number of AUMs on the private land in the Hickey FRF can only be estimated at about 280 AUMs, so the cost of not being able to graze the private land would be $19,278 for hay or $4,200 to rent private pasture. If the rancher could not secure other suitable pasture land or could not afford these increased costs, the combined loss from the private land on these two allotments Rahilly Gravelly and the Cahill FRF would be approximately 456 AUMs. To replace those AUMs would cost about $31,396 for hay or $6,840 to rent private pasture.

Cumulative Effects

Analysis Scale and Timeframe

For the purposes of this analysis, cumulative impacts are addressed at the collective allotment scale. The reasons for choosing this analysis scale include the fact that issuing a permit is a decision that affects all five allotments, and BLM has a good idea of other potential reasonably foreseeable actions that may occur within the pastures due to management direction identified in the Lakeview RMP/ROD (Appendix E, BLM 2003b). The timeframe of analysis is defined as the same 15-20 year expected life of the *Lakeview RMP/ROD*. The reason for choosing this timeframe is because this represents the same analysis timeframe considered in the *Lakeview Proposed RMP/Final EIS* (BLM 2003a) and portions of that analysis may be appropriate for tiering purposes.

Known Past Activities

The Council on Environmental Quality (CEQ) issued cumulative impact guidance on June 24, 2005, that states the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the proposed action." Use of information on the effects of past action may be useful in two ways: one is for consideration of the proposed action's cumulative effects, and secondly as a basis for identifying the proposed action's direct and indirect effects.

The CEQ stated that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment (ie. affected environment section) inherently includes the effects of past actions. Further, the "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions." Information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in "illuminating or predicting the direct and indirect effects of a proposed action. The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects".

The Department of Interior issued some additional guidance related to past actions which state, "when considering the effects of past actions as part of a cumulative effects analysis, the Responsible Official must analyze the effects in accordance with 40 CFR 1508.7 and in accordance with relevant guidance issued by the Council on Environmental Quality, such as ''The Council on Environmental Quality Guidance Memorandum on Consideration of Past Actions in Cumulative Effects Analysis'' dated June 24, 2005, or any superseding Council on Environmental Quality guidance (see 43 CFR 46.115)".

Based on this guidance, BLM has summarized known disturbances that have occurred within the allotments as part of past or on-going management activities. These include: livestock grazing and management, road construction and maintenance, operation of borrow pits associated with road construction and maintenance prescribed fire, wildlife suppression, wildlife rehabilitation and seeding, juniper treatment, and range improvement project construction and maintenance.

The allotments have historically been grazed by cattle. Prior to the Taylor Grazing Act of 1935, grazing on public lands was essentially uncontrolled. After the Taylor Grazing Act, allotments were established, tied to private base property owned by a permittee, and were initially under the management responsibility of the Grazing Service. Under the Grazing Service and then under the new BLM in 1946, the number of grazing livestock was generally higher and the pattern of grazing use was generally more intense than what occurs today.

Based on a GIS analysis of current data, approximately 204.8 miles of single-lane constructed roads, 3.4 miles of double-lane highway (totaling about 339 acres of road disturbance) exist within the allotments. Five pipelines totaling about 1.9 miles exist representing about 1.8 acres of ground disturbance. Four borrow pits are also present in the Rahilly Gravelly allotment and represent about 18.7 acres of disturbance. Approximately 14,039 acres have been treated in the past via wildfire, prescribed fire, sagebrush removal using herbicide, chaining, and/or seeding across the allotments. An estimated 7,630 acres of concentrated livestock disturbance currently occurs across the allotments that is associated with trailing along fence lines and congregating near constructed water developments and natural water sources (Maps 3A-3D). These represent an estimated total of about 22,028 acres of past or on-going ground disturbance (Tables 17 and 54).

All of these past activities have affected or shaped the landscape within the allotment into what it is today. Current resource conditions are described further in the "Affected Environment" portions of Chapter 3 earlier in this document, as well as in the Rangeland Health Assessment(s) for the allotment (BLM 1999a, 1999b, 2004a, 2004d, 2004e, 2013a, 2013b, 2013c, 2013d, and 2013e).

Reasonably Foreseeable Future Actions

Foreseeable future actions in these allotments under all four alternatives would include continued road and range improvement maintenance comparable to what has gone on in the recent past. Hunting, and other dispersed recreation activities may also occur. In addition, up to 529 AUMs of forage would continue to be grazed in the Round Mountain, Hill Camp, and Burro Springs Allotments under other livestock grazing permits issued to other permittees, regardless of which alternative is selected as the final decision for the Cahill permit.

Environmental Consequences:

Alternatives 1–4

For purposes of this analysis, total acres of ground surface disturbance or potential ground surface recovery served as the main indicator of cumulative impacts on soils and BSCs, upland vegetation, lentic wetland, perennial streams and riparian areas, cultural resources, and wildlife and special status species habitat.

Road and range improvement maintenance activities would occur as needed and would not generally cause additional surface disturbance beyond what currently exists on the ground. Further, such activities are considered to be so minor as to be categorically excluded from NEPA analysis (BLM 2008b). Road-related ground disturbances under all alternatives would be similar and is estimated to remain at about 339 acres (Table 54).

BLM biologists are not aware of, nor have ODFW biologists identified any specific areas where existing roads pose a problem to wildlife passage, including big game ungulate species in any of the allotments. Road densities within the allotments are very low when compared to other federal and private lands within the region. High road densities have been known to have negative effects to mule deer (Cox *et. al.* 2009). Main roads have the greatest impact while primitive roads the least impact. The majority of the BLM-administered roads in the allotments are primitive, natural-surface routes with only occasional vehicle use (1-2 trips per week; spring-fall) and where vehicle speeds are typically low. These roads pose little risk of vehicle/wildlife collisions, wildlife

mortality, or harassment for most wildlife species. Some studies have found that road densities of 3 miles of road per section (640 acres) can reduce habitat effectiveness by about 30 percent (Cox *et. al.* 2009, BLM 1997b). Current road densities within these allotments are 1.4 miles of road per section. This could account for some reduced habitat effectiveness, but the primitive nature of these roads and the sporadic vehicle traffic would have little impact of Mule Deer and Pronghorn antelope. For these reasons, continued road maintenance activities and vehicle use within the five allotments would have little to no impact on wildlife movement patterns or population levels.

The amount and location of future dispersed recreational activities are difficult to estimate, but are not expected to result in any additional, measurable long-term surface disturbance in the allotments. While there is a risk of a future wildfire within the allotment, it is impossible to predict how much area would likely burn, how intensely the area would burn, how much fire suppression would be employed, and how much area may need to be actively rehabilitated after the fire. For this reason, fire disturbances are not considered further in this analysis.

Table 54. Cumulative Acres of Ground Disturbance by Alternative

	Alternative 1 – No Action	**Alternative 2 –** 50% Reduction	**Alternative 3 –** Livestock Management Changes/Vegetation Treatments	**Alternative 4 –** No Permit Issued/No Weed Treatment
Past/Present Actions:				
Highways and roads	339	339	339	339
Borrow Pits	18.7	18.7	18.7	18.7
Pipelines	1.8	1.8	1.8	1.8
Vegetation treatments	14,039	14,039	14,039	14,039
New Vegetation Treatments				
Mow and seed				
Weed treatments	0 0	0 0	500 282**	0 0
Concentrated Livestock Disturbance*	7,630	5,085	7,630	2,329
Cumulative Total	22,028	19,483	22,810	16,727

* Includes areas around constructed water developments, near natural water sources, and trailing along fences; see Table 17.
** See Tables 31-35.

None of the alternatives would have any measureable or substantial incremental cumulative effects on climate, greenhouse gas emissions, carbon storage, water quality, Native American traditional practices, recreation, or visual quality, as the analysis for these values/issues earlier in this chapter revealed that there would be little or no direct or indirect effects on these values/issues.

Table 54 lists the total acres of ground disturbance associated with livestock grazing management and other activities associated with each alternative. Alternative 1 represents the amount of ground disturbance associated with past and present management activities. Alternative 2 would incrementally reduce concentrated livestock related disturbance on about 2,545 acres compared to Alternative 1. Alternative 3 would incrementally increase total ground disturbance by about 782 acres compared to Alternative 1. Alternative 4 would incrementally reduce concentrated livestock related disturbance on about 5,301 acres compared to Alternative 1.

CHAPTER 4 – CONSULTATION AND COORDINATION

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Review Opportunity

The EA and FONSI were made available for review on BLM's website. A legal notice was also published in the *Lake County Examiner* announcing the availability of the documents for review and the comment period end date. Agencies, native American Tribes, permittees, and members of the public with a known interest in grazing management activities within the allotments were notified by mail of the availability of the EA for review. This mailing list is contained in the project file.

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STREAM PHOTOS

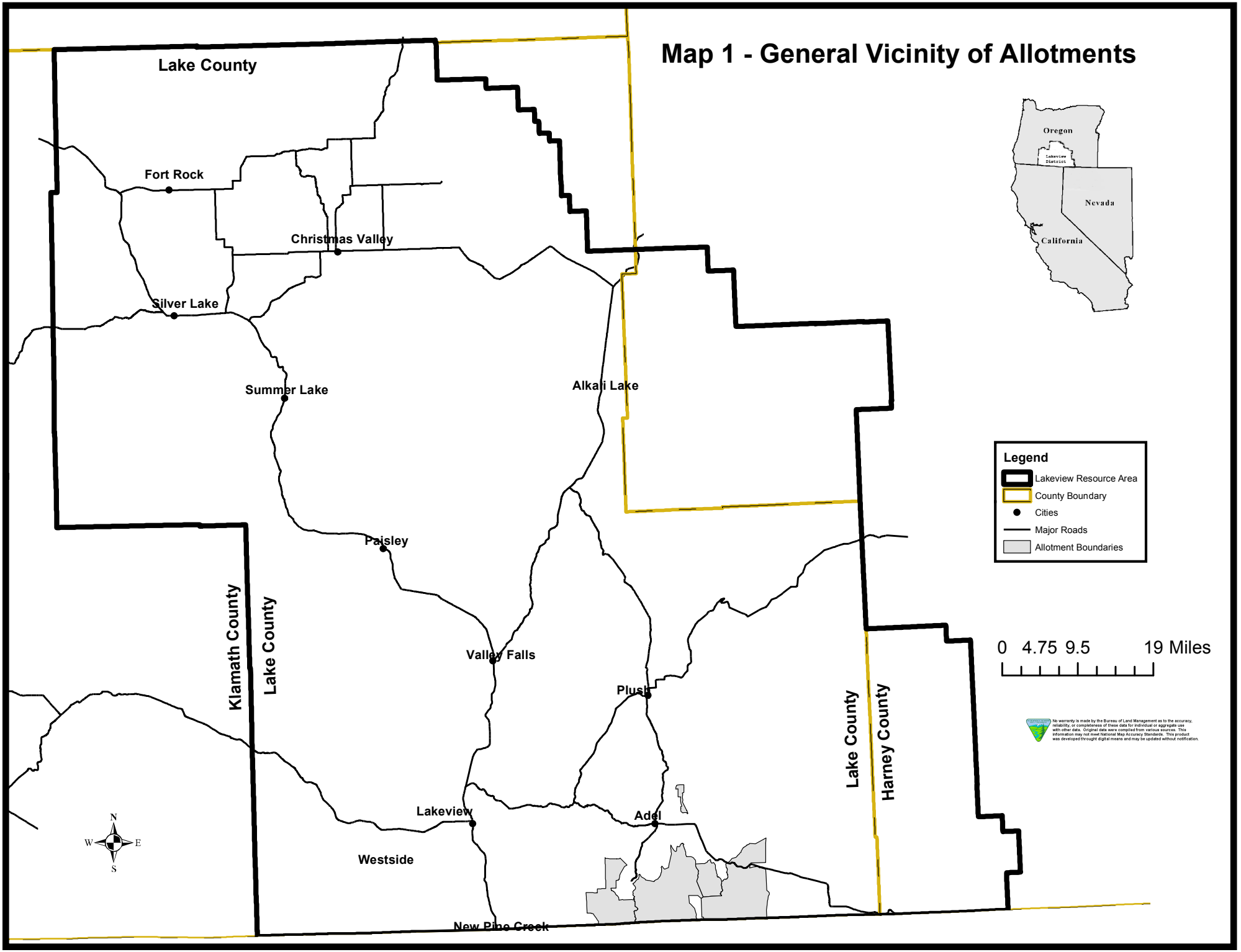
Photo 1 – Condition of Camas Creek in 1981.

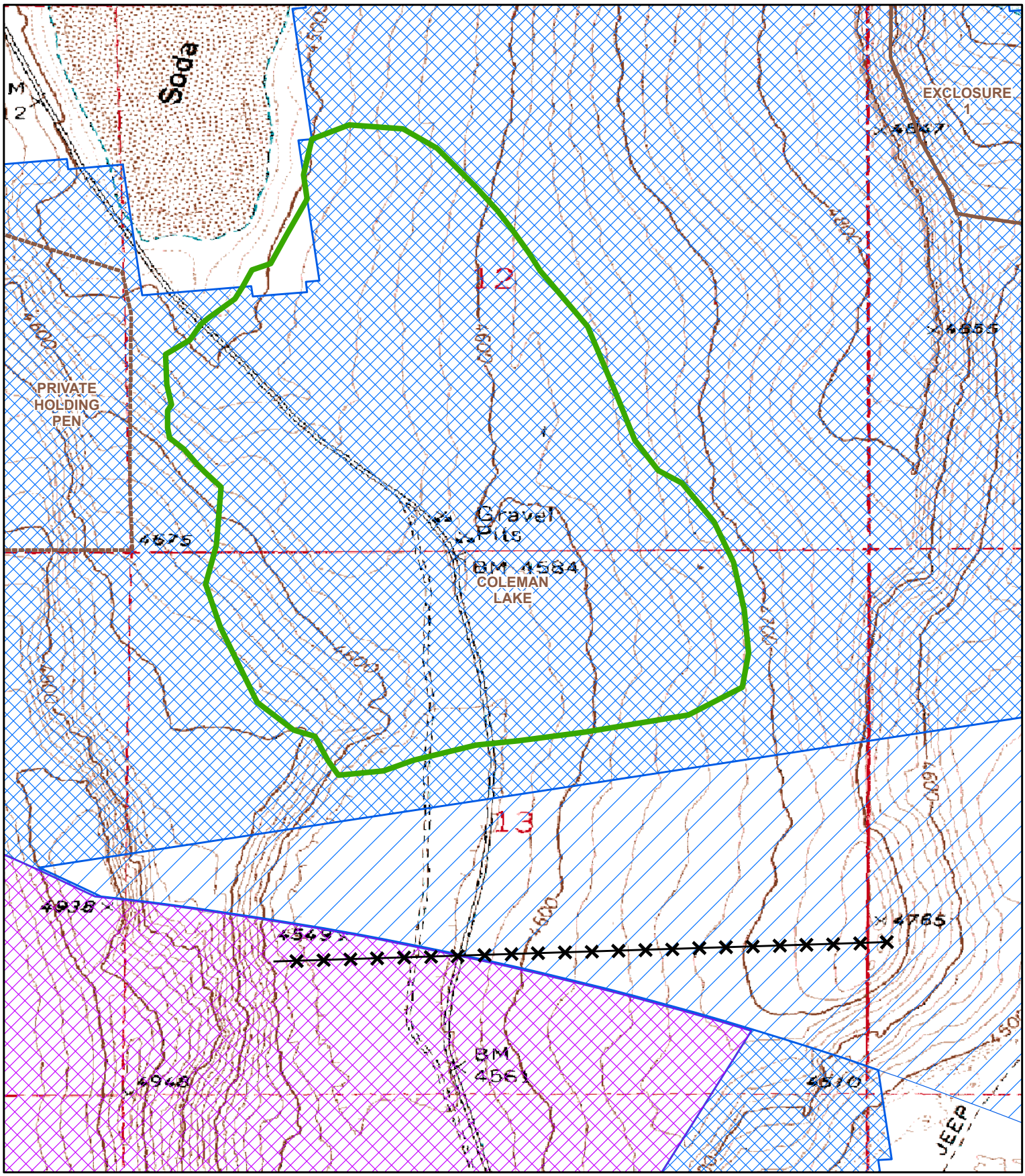
Photo 2 – Condition of Camas Creek in 2009.

Photo 3. Condition of Deep Creek in 1994.

Photo 4. Condition of Deep Creek in 2009.

Map 1 - General Vicinity of Allotments





Legend

- Pastures
- Proposed Fence
- Proposed Coleman Lake Reseeding
- PGH / Other Sagebrush Habitat
- PPH / Core Habitat
- PGH / Low Density Habitat

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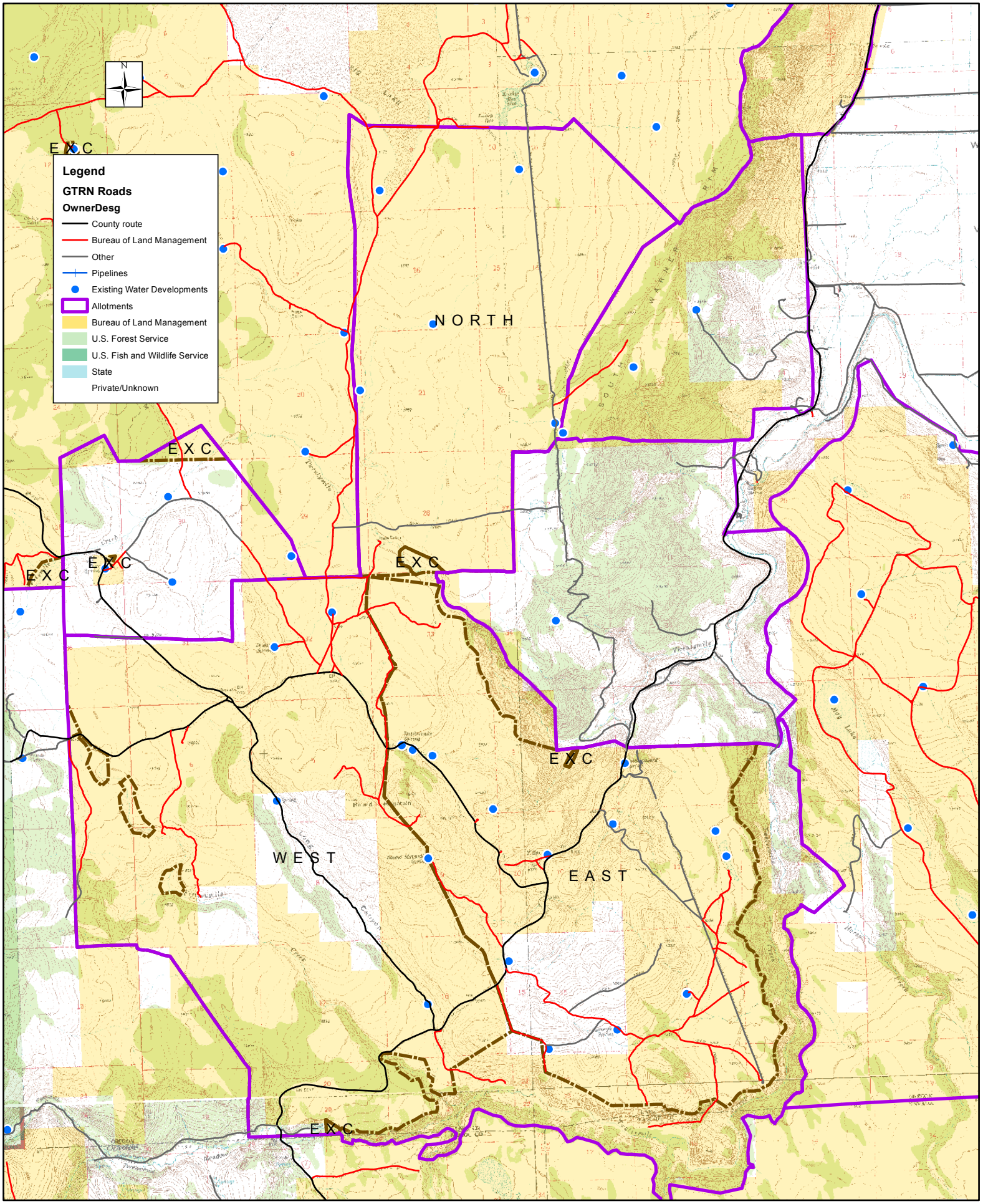
NORTH

Map 2 - Proposed Vegetation Treatment, Reseeding, and Fence in Coleman Lake Pasture



0 0.275 0.55 1.1 Miles

Map 3A - Round Mountain Allotment

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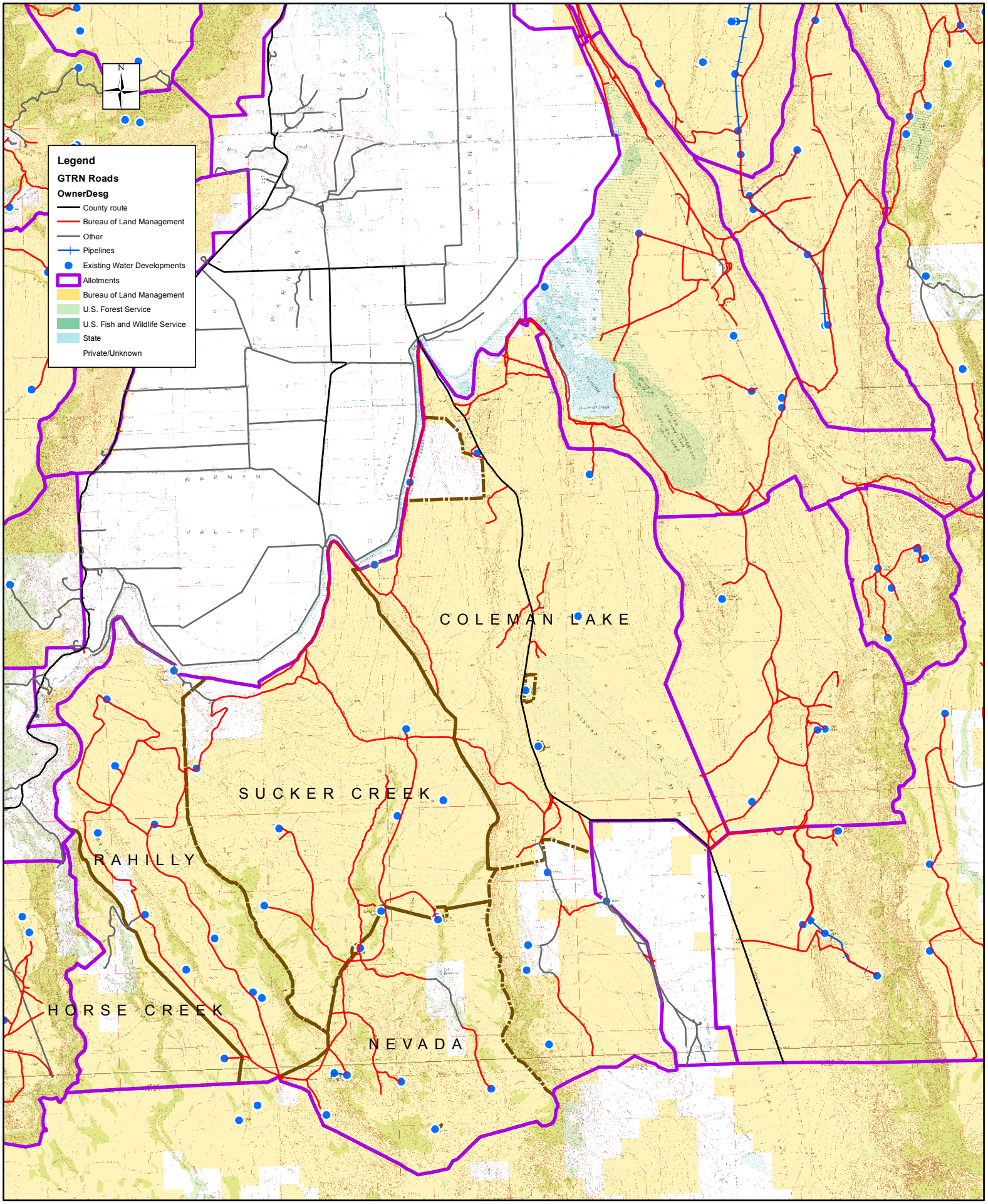

0 0.45 0.9 1.8 Miles

Map 3B - Rahilly Gravelly Allotment 00212

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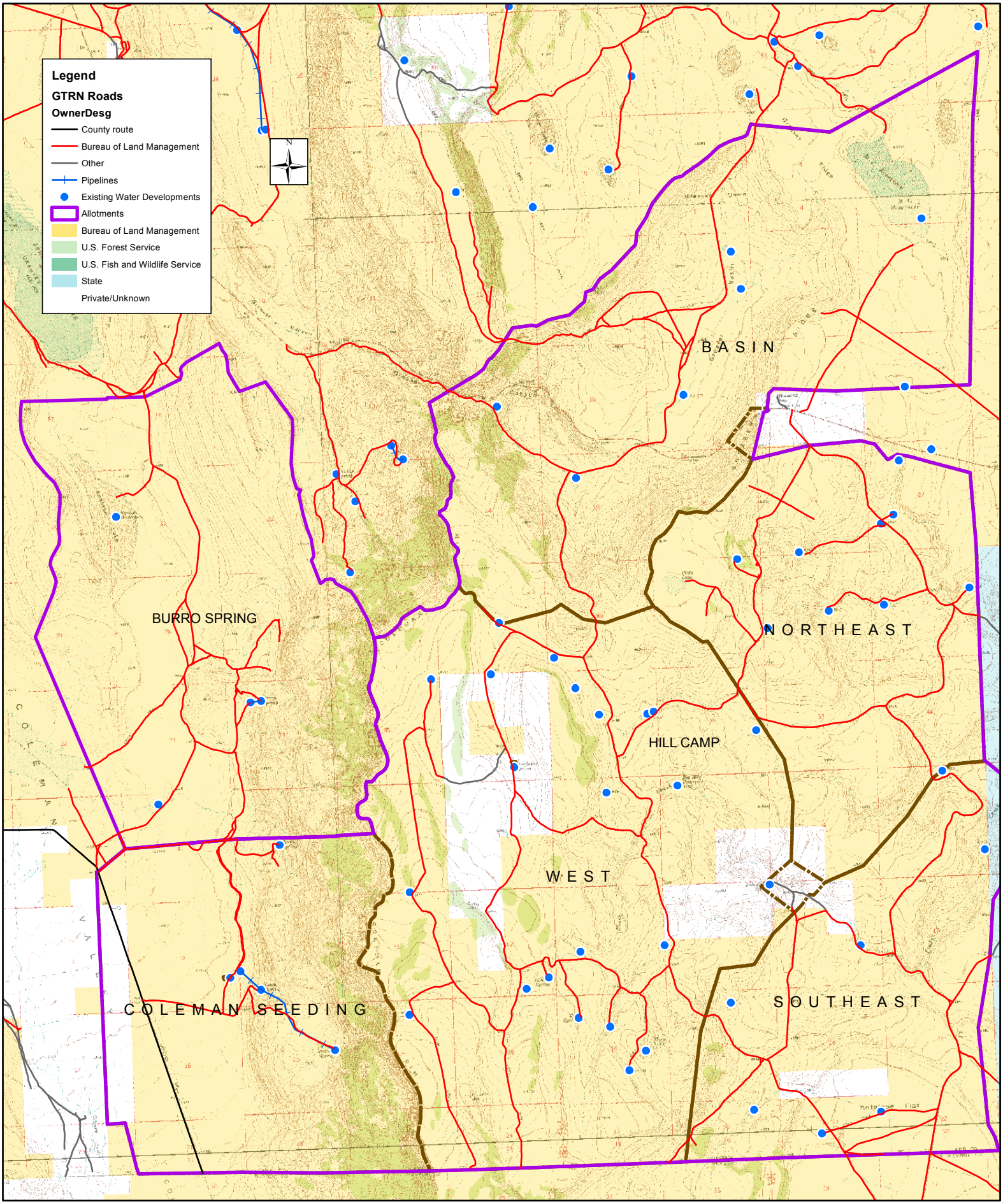

0 0.325 0.65 1.3 Miles

Map 3C - Burro Springs and Hill Camp Allotments

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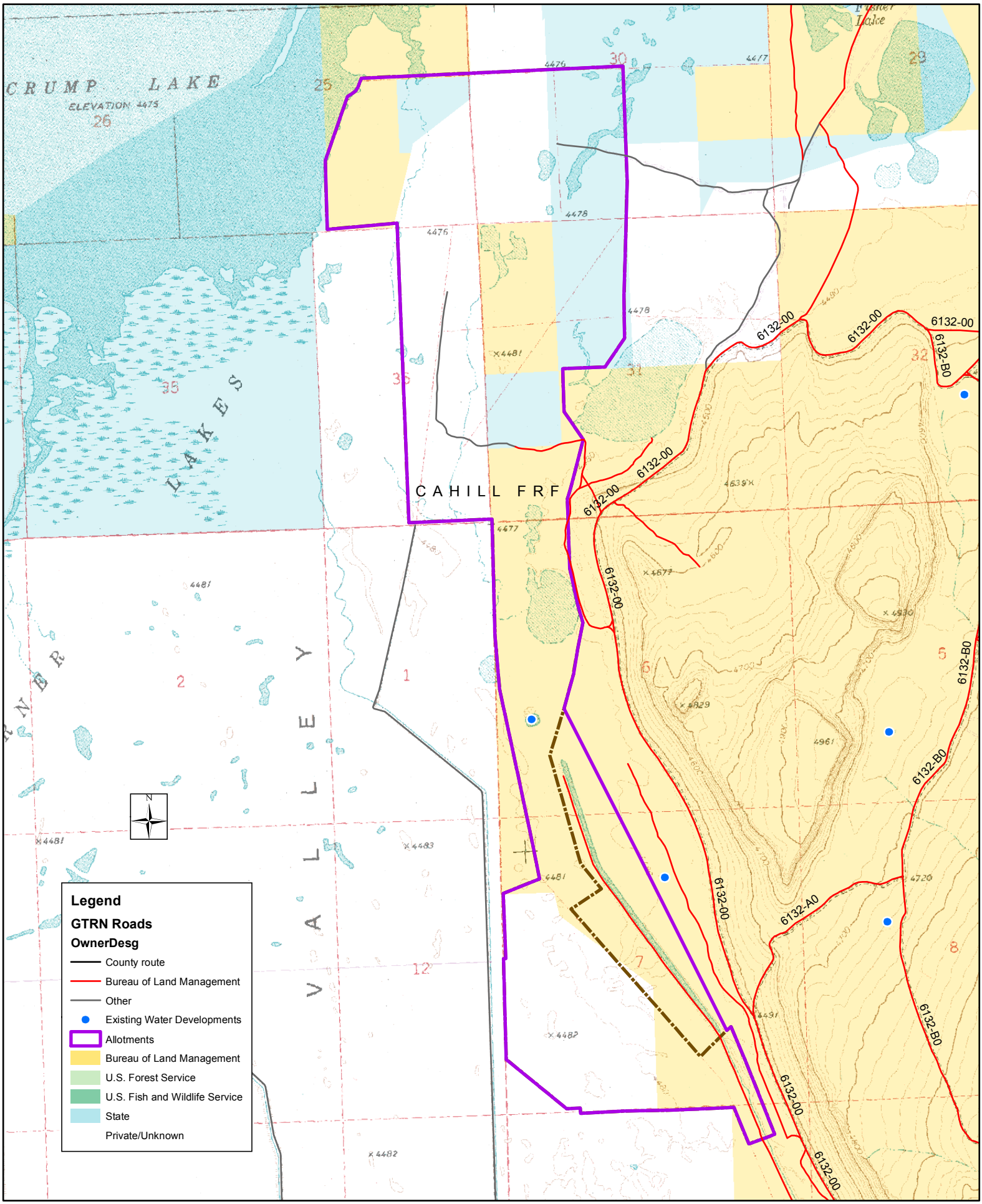

0 0.1 0.2 0.4 Miles

Map 3D - Cahill FRF Allotment

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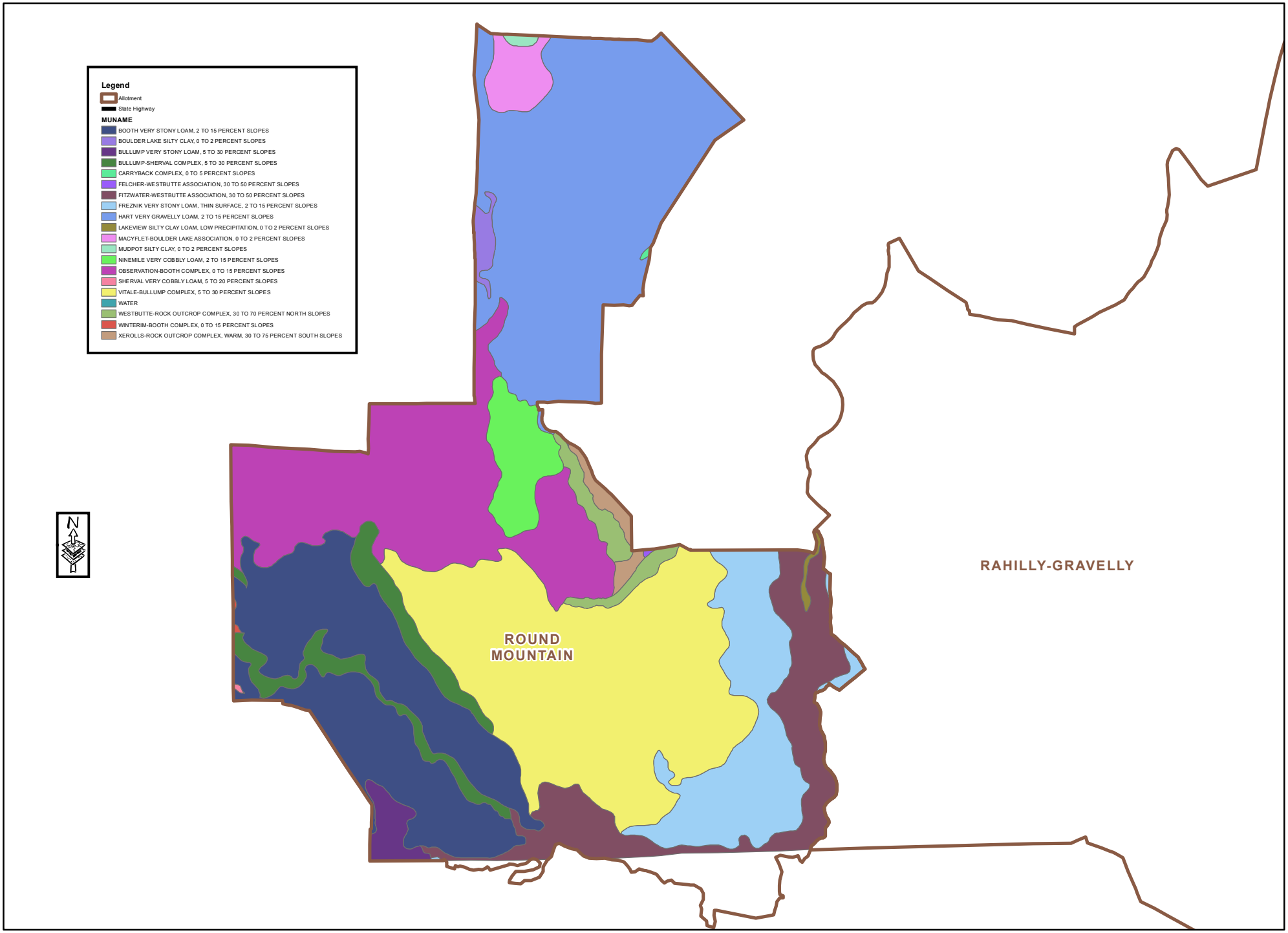

Map 4A - Soils in the Round Mountain Allotment

0 0.5 1 2 Miles

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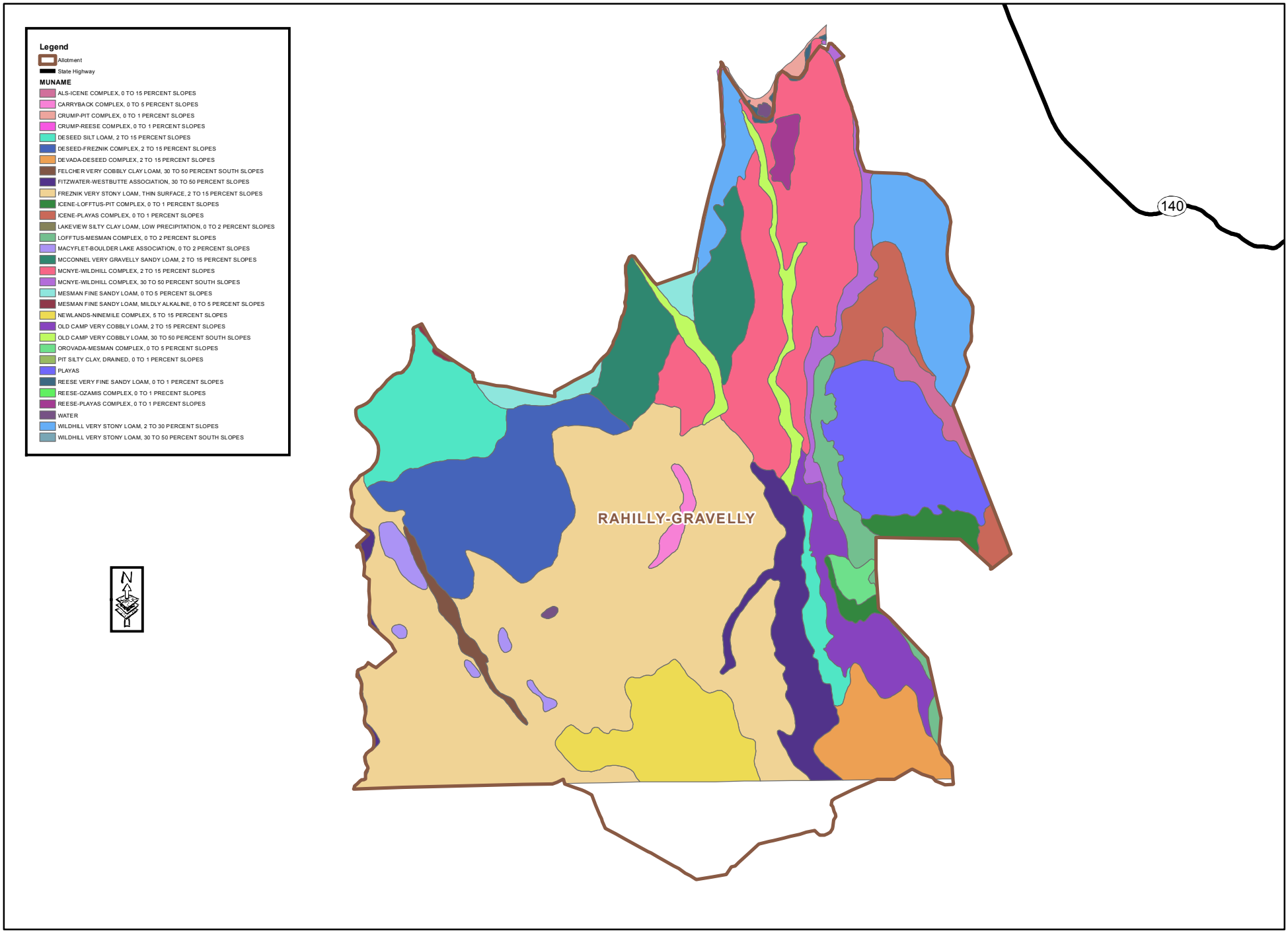

Map 4B - Soils in Rahilly Gravelly Allotment

0 0.75 1.5 3 Miles

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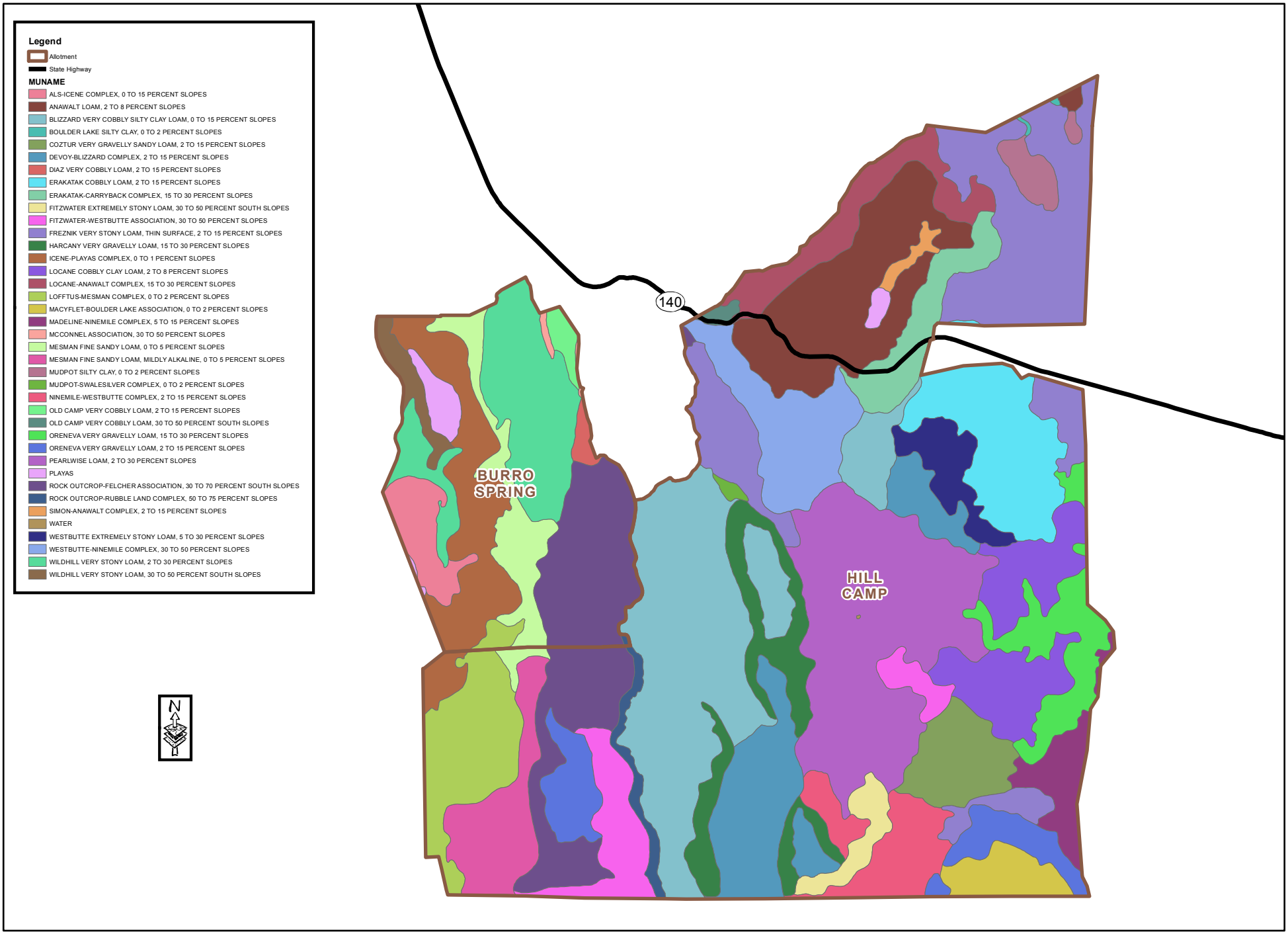

Map 4C - Soils in the Burro Springs and Hill Camp Allotments

0 0.75 1.5 3 Miles

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Map 4D - Soils in the Cahill FRF Allotment

0 0.25 0.5 1 Miles

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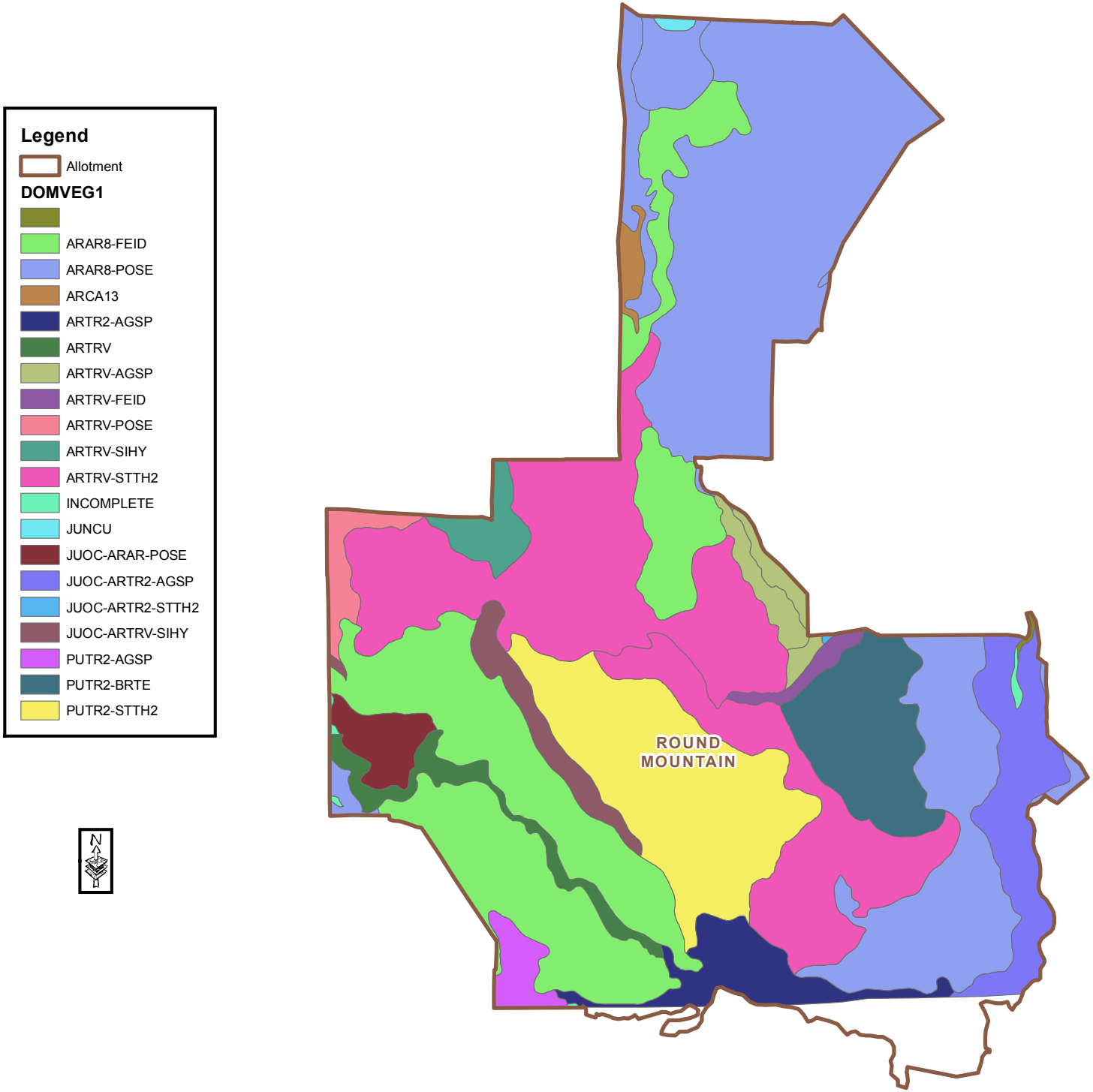

0 0.5 1 2 Miles

Map 5A - Dominant Vegetation in Round Mountain Allotment

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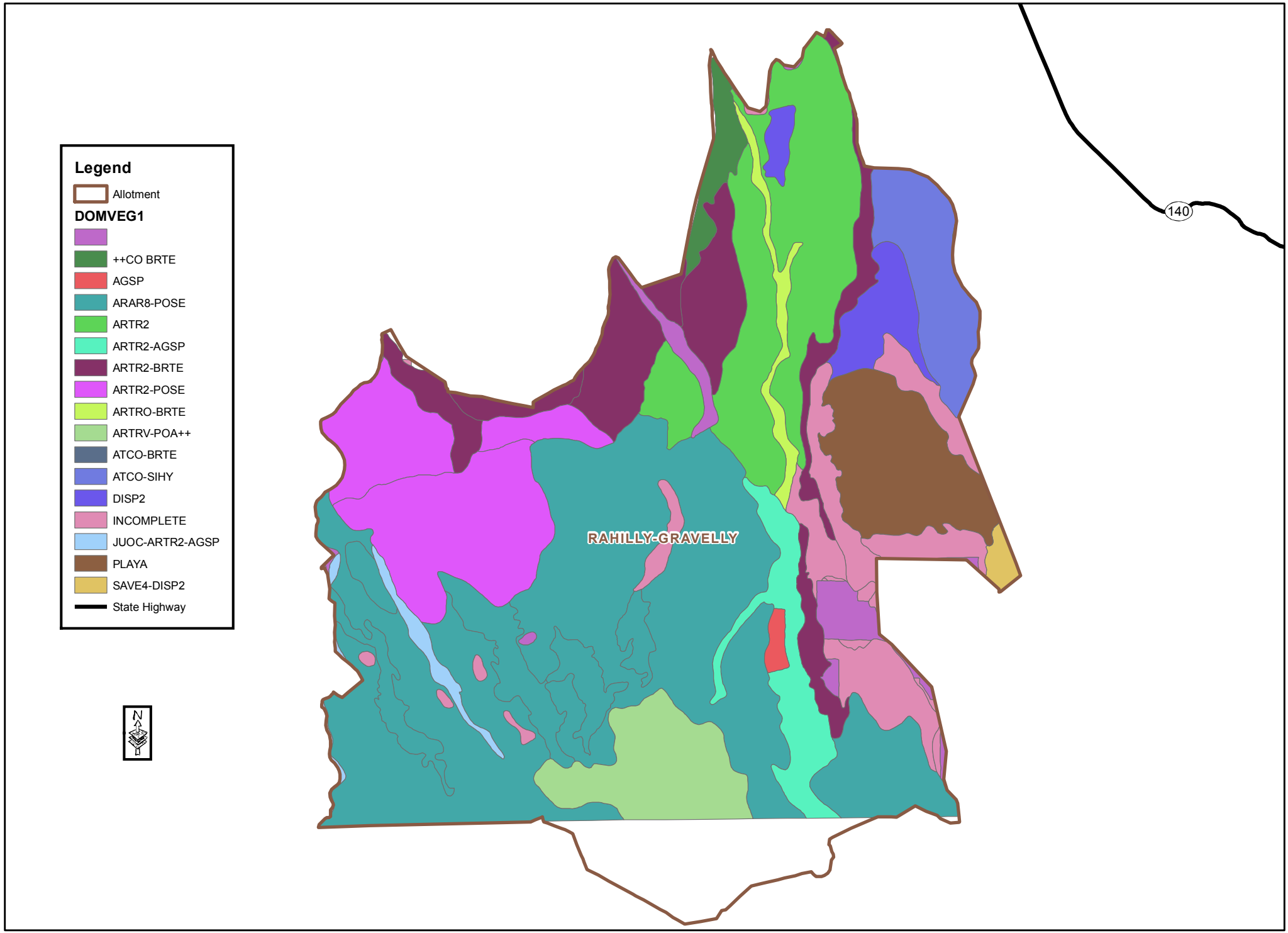

0 0.75 1.5 3 Miles

Map 5B - Dominant Vegetation in the Rahilly Gravelly Allotment

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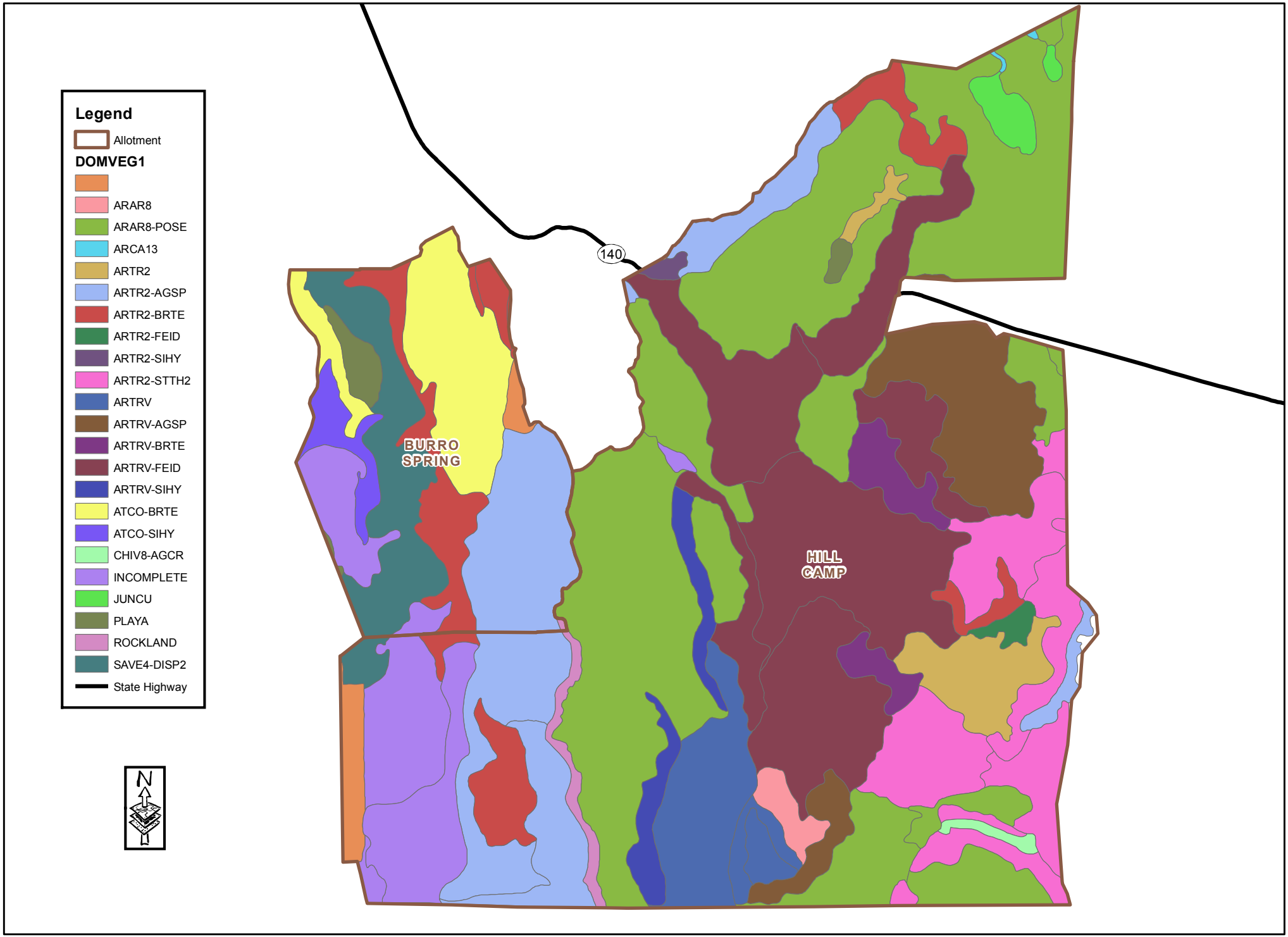

0 0.75 1.5 3 Miles

Map 5C - Dominant Vegetation in Burro Springs and Hill Camp Allotments

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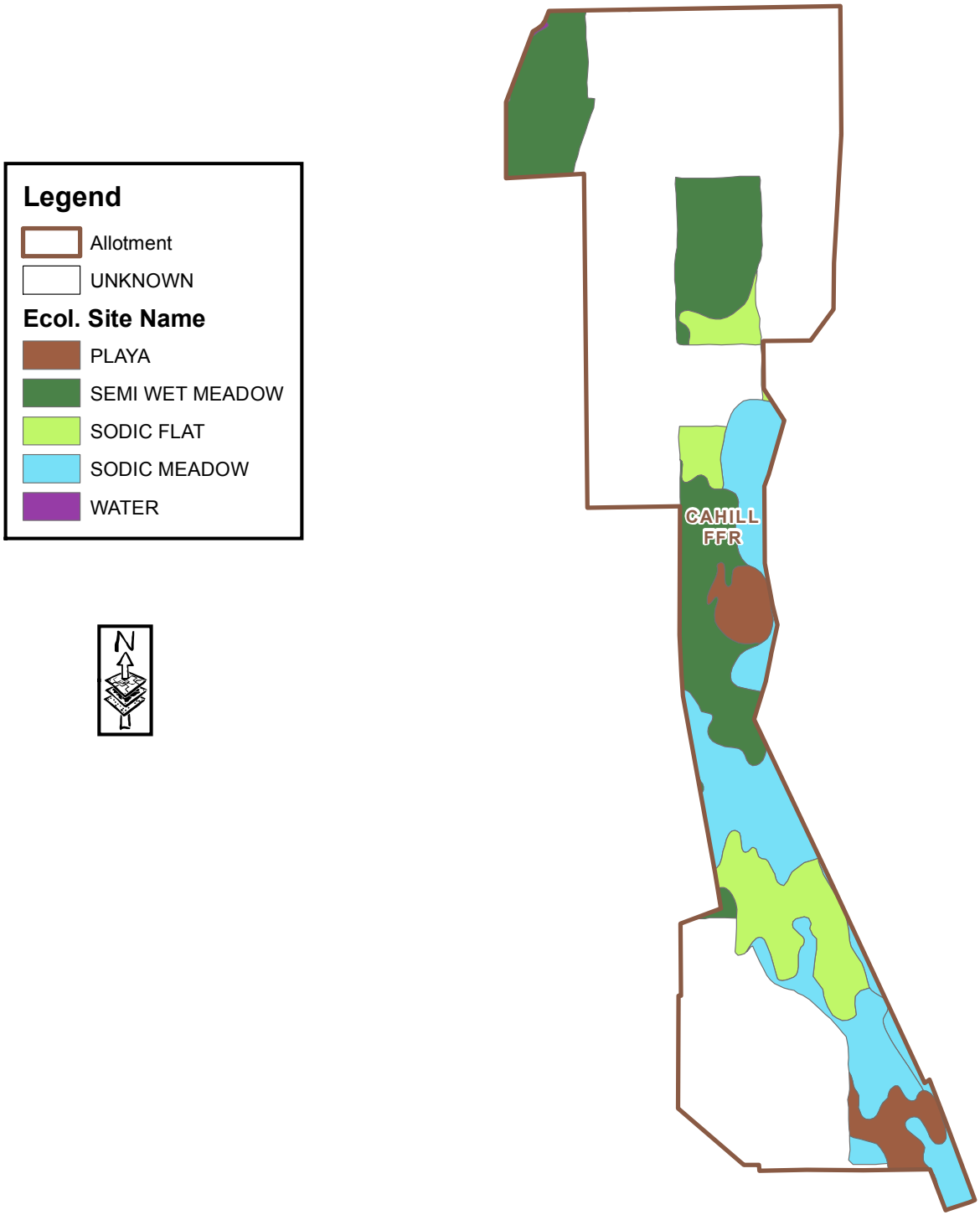

0 0.25 0.5 1 Miles

Map 5D - Ecological Sites in Cahill FRF Allotment

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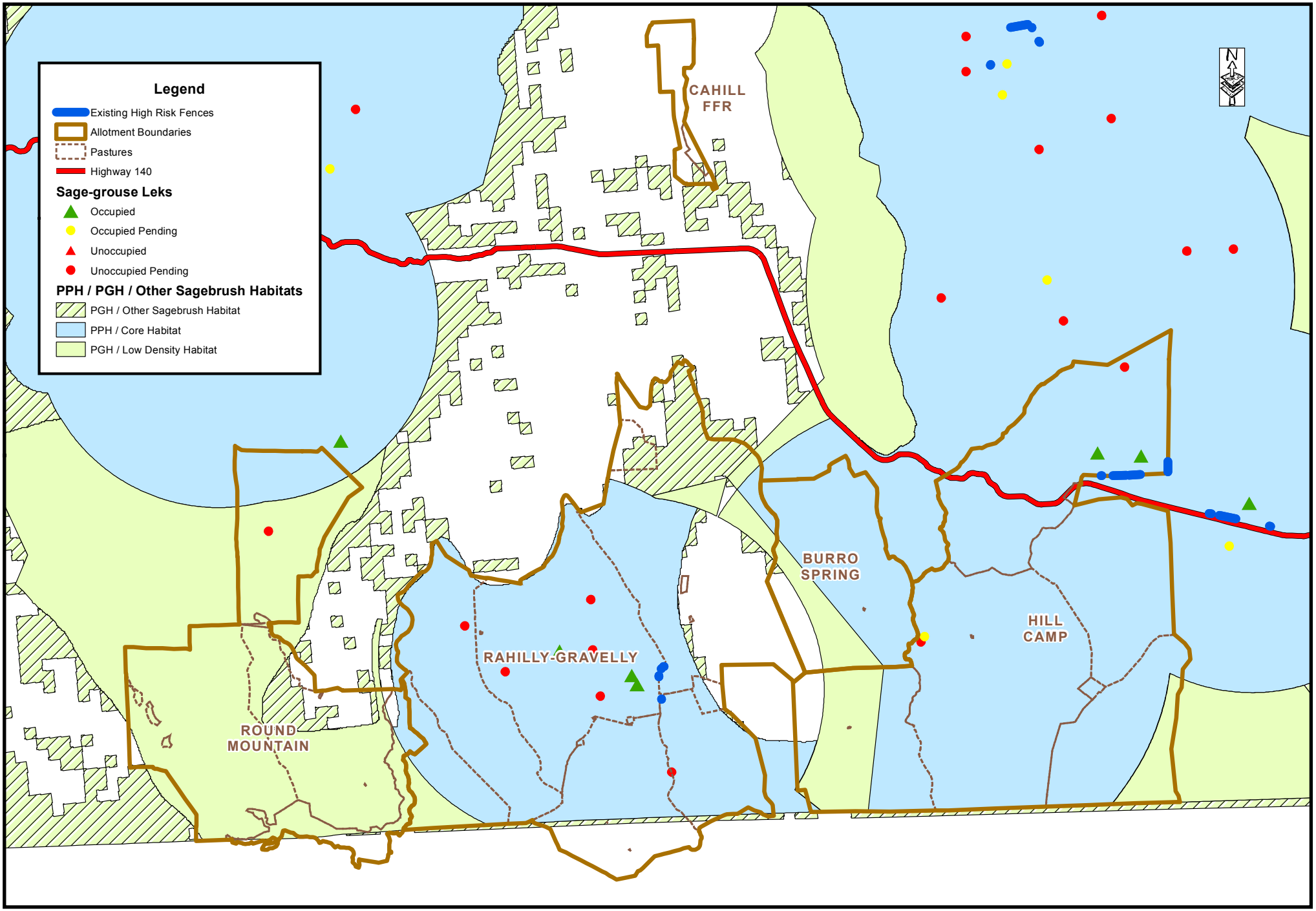
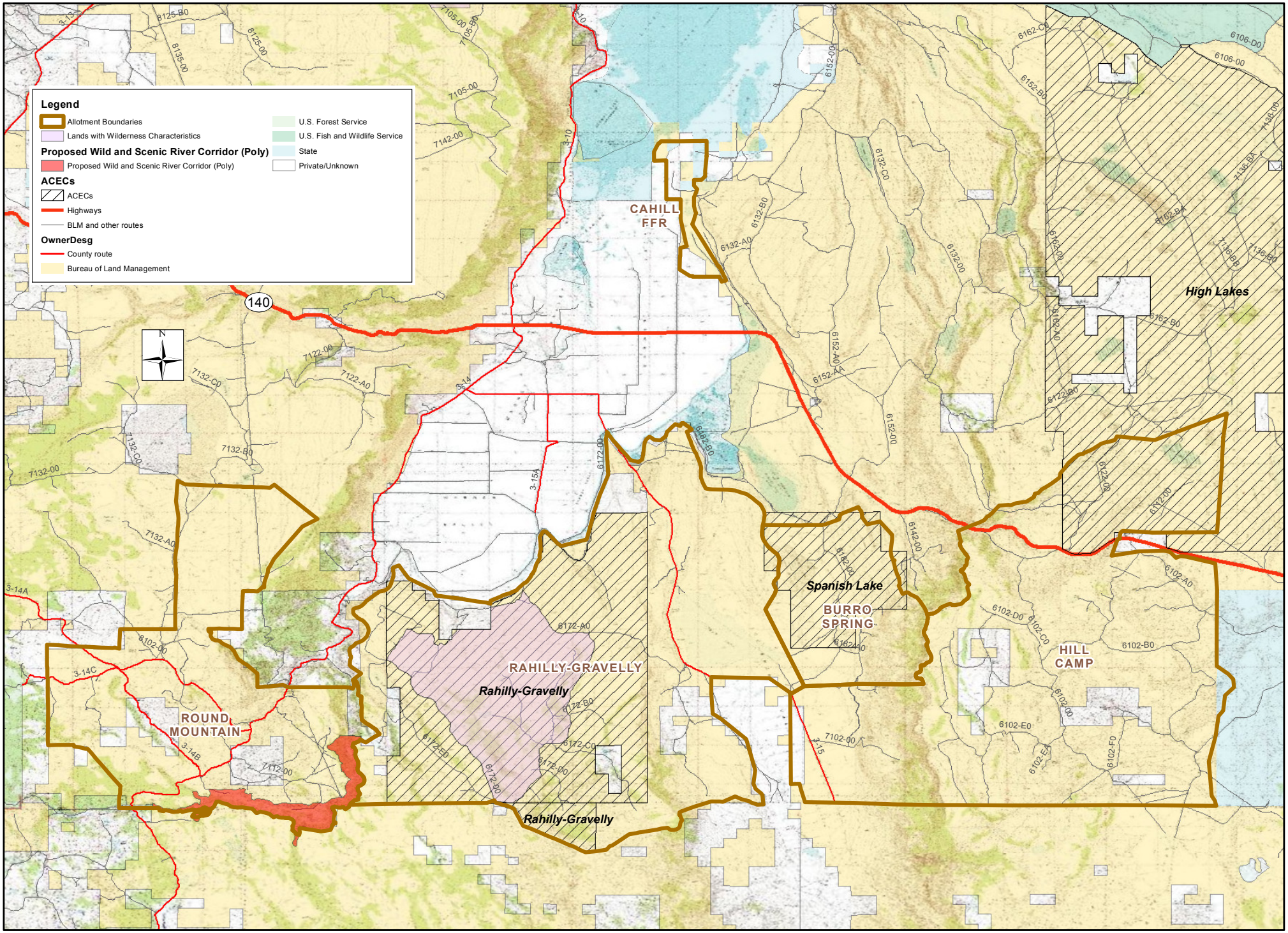


0 0.5 1 2 3 Miles

Map 6 - Sage-Grouse PPH/PGH/Other Sagebrush Habitats and Leks within the Allotments



Map 7 - Land Status and Special Management Areas within the Permit Renewal Area

Miles
0 1.5 3 6

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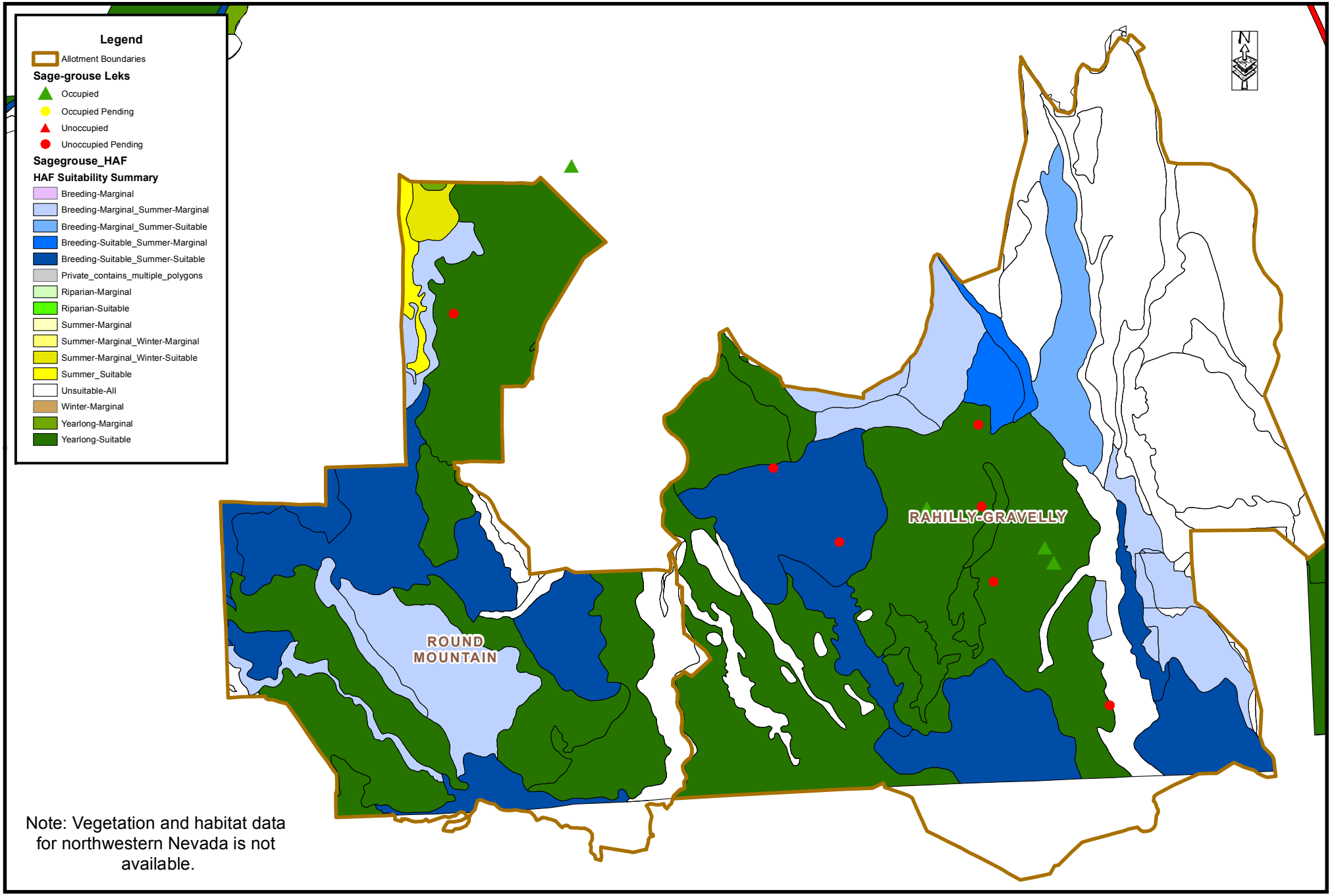

0 0.5 1 2 3 Miles

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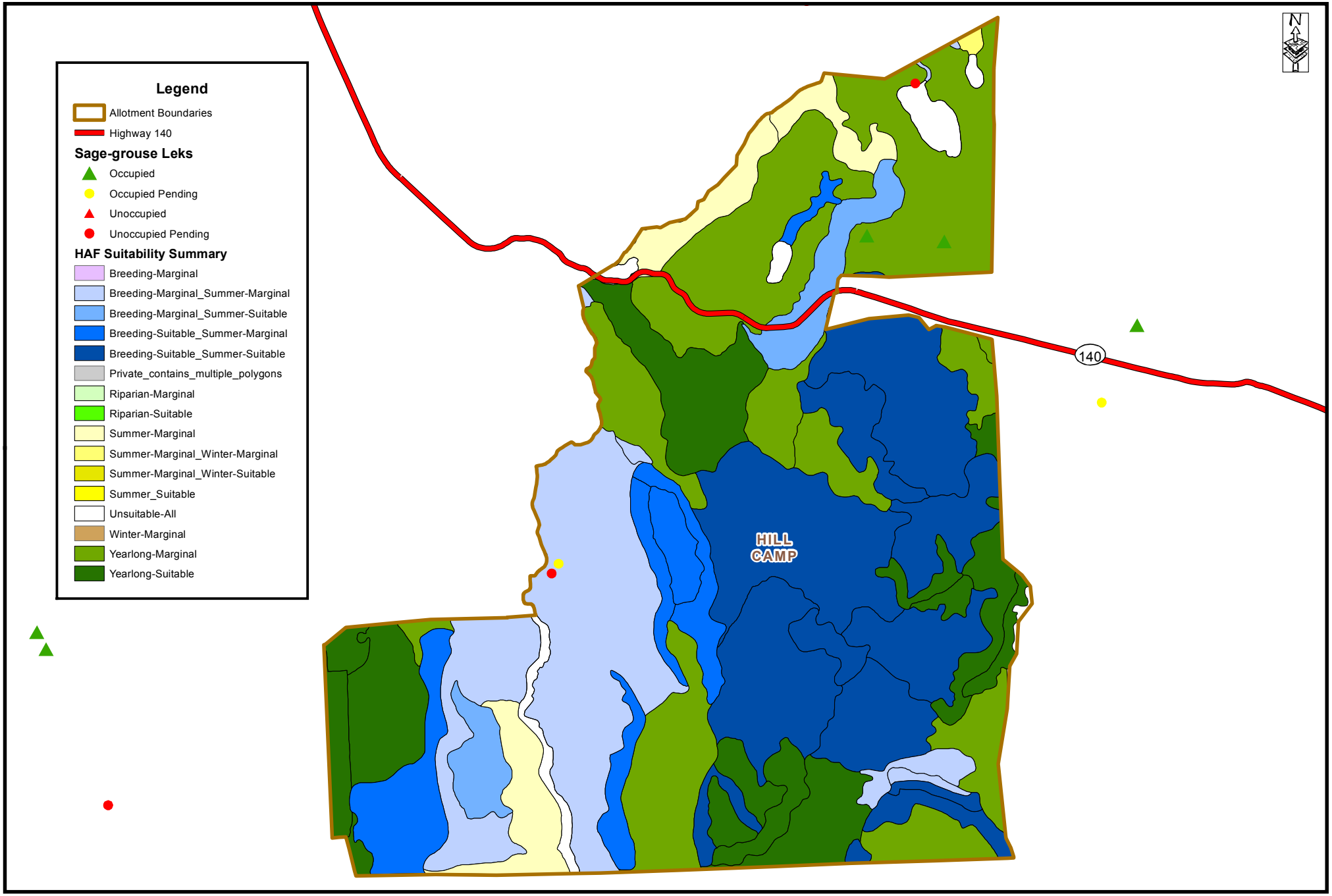
Map 8 - Sage-grouse Habitat Suitability in the Round Mountain and Rahilly-Gravelly Allotments



0 0.5 1 2 3 Miles

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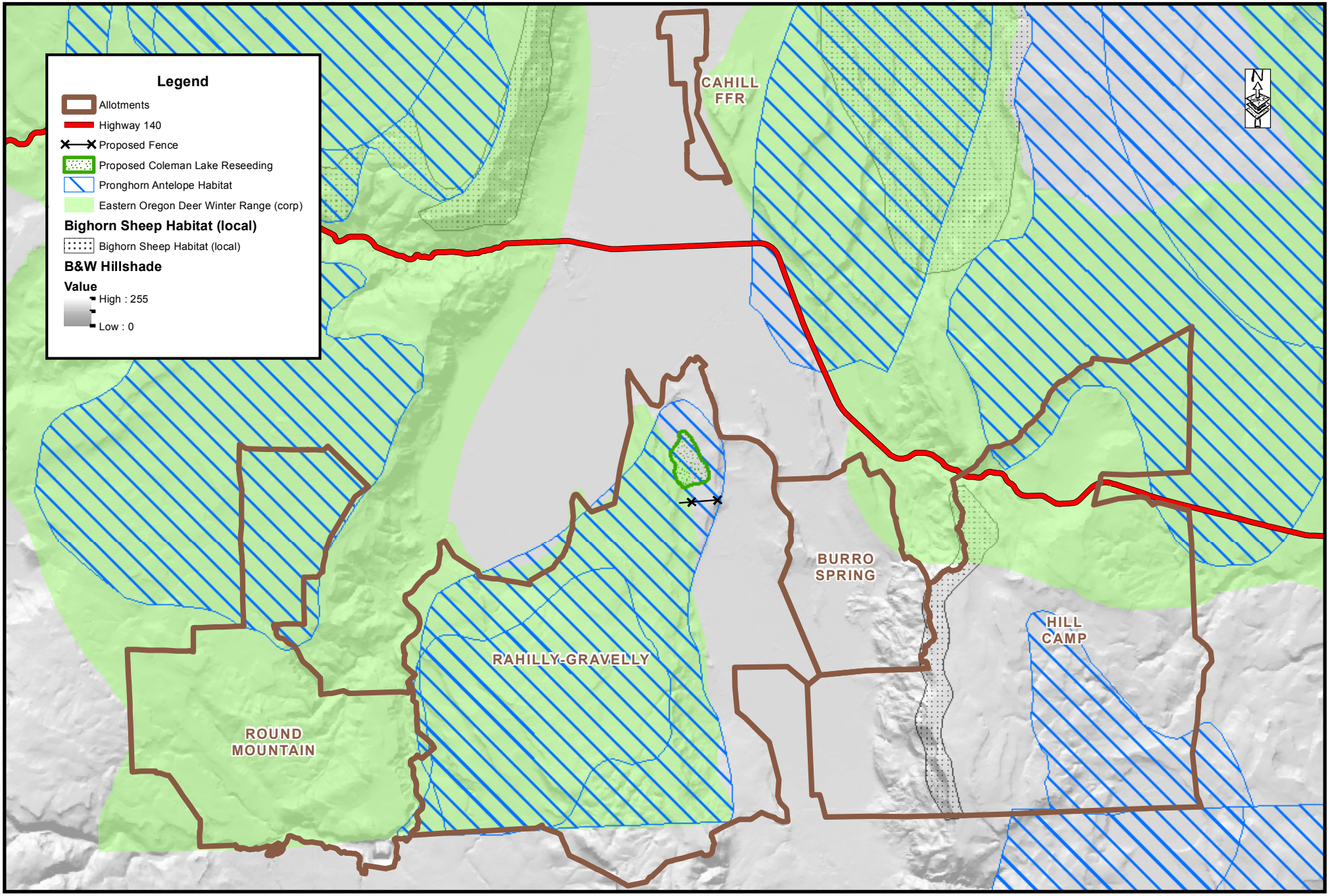
Map 9 - Sage-Grouse Habitat Suitability in the Hill Camp Allotment



0 0.5 1 2 3 Miles

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Map 10 - Big Game Habitat within the Allotments