

FINDING OF NO SIGNIFICANT IMPACT

Harman Grazing Permit Renewal for Hickey Individual (00202), Sagehen (00208), Fisher Lake (00222) and Hickey FRF (00223) Allotments DOI-BLM-OR-L050-2012-0027-EA

The Bureau of Land Management, Lakeview District, Lakeview Resource Area (BLM), has analyzed several alternative proposals related to renewing at 10-year term grazing permit number 3600173 for the Hickey Individual (00202), Sagehen (00208), Fisher Lake (00222), and Hickey FRF (00223) Allotments. The allotments are located about 7-13 miles east of Lakeview, Oregon, and encompass approximately 22,600 acres of BLM-administered and private lands. An environmental assessment (EA) was prepared that analyzed the potential direct, indirect, and cumulative environmental impacts of four alternatives (attached). The alternatives analyzed included No Action (continue current grazing), a 50% reduction in grazing, Adjust Grazing Season on Fisher Lake Allotment and Create FRF Pasture in Sagehen Allotment, and No Grazing (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 geographic extent of the four 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, low income or minority populations, paleontology, wild horse management areas, wild and scenic rivers, significant caves, designated wilderness areas, lands with wilderness characteristics, or hazardous waste sites located in the project area. No measureable impacts would occur to climate, air quality, floodplains, land tenure, or mineral and energy resources (Tables 12 and 13).

The potential impacts to soils, biological soil crusts, water quality and hydrology, wetland and riparian areas, upland vegetation, noxious weeds, wildlife, special status species, livestock grazing management, native American concerns, cultural resources, recreation, visual resources, social and economic values, ACEC/RNAs, and wilderness study areas 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 (Table 12). Further, there are no known hazardous waste sites in the project area (Table 13). There would be no measureable impacts to air quality (Table 12). There are no municipal drinking water sources located in the area.

- 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, wild and scenic rivers, significant caves, designated wilderness areas, located in the project area (Tables 12 or 13). None of the alternatives analyzed in detail would have significant impacts on wetlands or riparian areas, ACEC/RNA values, or wilderness study areas (Chapter 3 of

attached EA).

4) Would any of the alternatives have highly controversial effects (40 CFR 1508.27(b)(4)? Yes 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 and hydrology, wetland and riparian areas, upland vegetation, noxious weeds, wildlife, special status species, livestock grazing management, native American concerns, cultural resources, recreation, visual resources, social and economic values, ACEC/RNA values, and wilderness study areas can be reasonably predicted based on existing science and professional expertise. The attached EA analyzed these impacts in detail in Chapter 3. The nature of these impacts is not highly controversial, nor is there substantial dispute within the scientific community regarding the nature of these effects.

The public has been given an opportunity to review and comment on the analysis of effects. The BLM is not currently aware of any potential highly controversial effects, as defined under 40 CFR 1508.27(b)(4), but will review any comments received and address any substantive comments prior to signing this FONSI.

5) Would any of the alternatives have highly uncertain effects or involve unique or unknown risks (40 CFR 1508.27(b)(5)? Yes 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 and hydrology, wetland and riparian areas, upland vegetation, noxious weeds, wildlife, special status species, livestock grazing management, native American concerns, cultural resources, recreation, visual resources, social and economic values, ACEC/RNA values, and wilderness study areas can be reasonably predicted based on existing science and professional expertise. The attached EA analyzed these impacts in detail in 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 No

Rationale: The BLM has extensive expertise planning, analyzing impacts, and implementing range management actions such as those proposed by the alternatives addressed in Chapters 2 and 3 of 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 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 (Chapter 3 of attached EA).

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 No

Rationale: There are no known areas of native American religious or other traditional uses in the project area. Potential impacts to cultural resources have been analyzed in Chapter 3 of the attached EA and found not to be significant (Chapter 3 of attached EA).

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 No

Rationale: There are no Federally-listed threatened or endangered plant or animal species or designated critical

habitat within any of the allotments. However, habitat for the federally threatened Warner Sucker is located downstream of the allotments and impacts to this species were analyzed in the Special Status Species section of the EA and were not significant. Impacts to the Greater Sage-grouse, a Federal candidate species, were analyzed in the Special Status Species section of the EA and were not significant. Impacts to other special status species were also analyzed and were not significant (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 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 requirements of the National Environmental Policy 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 that were 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), the *Greater Sage-Grouse Conservation Strategy and Assessment for Oregon* (ODFW 2005), the *Greater Sage-Grouse Interim Management Policies and Procedures* (BLM 2011c), and the grazing regulations (43 CFR Part 4100) in varying degrees (Chapter 1). Conformance with this direction will be addressed in more detail within the proposed decision as it represents an important decision factor that must be considered in making the final decision (EA page 2).

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 of the alternatives analyzed would constitute a major federal action which would have significant adverse or beneficial impacts on the quality of the human environment. Therefore, an Environmental Impact Statement (EIS) is unnecessary and will not be prepared.

Thomas E. Rasmussen, Field Manager
Lakeview Resource Area

Date

Harman Grazing Permit Renewal for
Hickey Individual (00202), Sagehen
(00208), Fisher Lake (00222) and Hickey
FRF (00223) Allotments

ENVIRONMENTAL ASSESSMENT

DOI-BLM-L050-2012-0027-EA

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

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CHAPTER 1—PURPOSE AND NEED FOR ACTION

A. 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 Hickey Individual (00202), Sagehen (00208), Fisher Lake (00222), and Hickey FRF (00223) Allotments. This EA 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 Hickey Individual, Sagehen, and Hickey FRF Allotments are located approximately 13 miles east of Lakeview, Oregon. The Fisher Lake Allotment is located approximately 7 miles north east of Adel, Oregon (Map 1). The Hickey Individual Allotment totals about 10,996 acres which is mostly public land except for 90 acres of private land. The Sagehen Allotment totals about 5,870 acres with 3,820 acres of public land and 2,050 acres of private land. The Fisher Lake Allotment is 4,886 acres with 4,230 acres of public and 656 acres of private land. The Hickey FRF Allotment is about 851 acres with 412 acres of public land and 439 acres of private land (Map 2).

B. Purpose and Need for Action

The grazing permit for the allotments expired in 2008 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 under the authority of Section 325, Public Law 108-108, until such time as the permit could be fully processed. The primary purpose of this analysis is to respond to the permittee's permit renewal application and consider whether to reissue, modify, or not reissue the 10-year term livestock grazing permit #3600173 associated with the Hickey Individual, Sagehen, Fisher Lake and Hickey FRF Allotments, 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).

C. Decisions to Be Made

The authorized officer will decide whether or not to renew the 10-year Term Grazing Permit, and if so, under what terms and conditions.

D. Decision Factors

Decision factors are additional criteria used by the decision maker to choose the alternative that best meet the purpose and need for the proposal. These include:

- 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 habitat guidelines?
- e) How well does the decision conform with IM 2012-043 regarding interim sage-grouse management?

E. Conformance with Land Use Plan

The Lakeview RMP/ROD (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:

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

The Hickey Individual, Sagehen, Fisher Lake and Hickey FRF Allotments are currently open or allotted to grazing use and allocated for 519 AUMs, 266 AUMs, 781 AUMs and 64 AUMs of livestock forage, respectively. There are 210 AUMs of wildlife forage on the Hickey Individual Allotment, 90 AUMs of wildlife forage on the Sagehen Allotment, 50 AUMs of wildlife forage on the Fisher Lake Allotment and 76 AUMs of wildlife forage on the Hickey FRF Allotment (Page 46, Table 5; Map G-3).

“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).

“Rangeland improvement projects will be implemented to meet resource objectives... Range improvement projects that do not enhance resource values and meet management objectives will be abandoned and rehabilitated” (Page 53).

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 Specific Management Direction – Hickey Individual Allotment (Page A-18)

Range Livestock Management – *Continue livestock management practices under the 1975 allotment management plan. Revise the following objectives as needed to meet multiple use objectives.*

1. To reduce accelerated and potential accelerated gully soil erosion in the several short side drainages along Camas Creek and moderate sheet erosion on the table land in the Fish Creek Rim area by increasing litter accumulation, vegetative cover, and vigor by 50% from that recorded in photo plots 475, 477-479 and 484-485.
2. To increase the availability and the amount of forage for deer in the months of January-March in Seeding Pasture of the allotment by maintaining the crested wheatgrass seeding, yet not allowing crested wheatgrass wolf plants to develop, and increase the density of Idaho fescue and bluebunch wheatgrass and composition of Idaho fescue and bluebunch wheatgrass from that recorded in photo trend plot 474 and indicated by observance of photo trend station 475. To have available for deer use in those 3 months 80% of the current year’s growth of bitterbrush in the allotment.
3. Increase vegetative cover and vigor of Idaho fescue, bottlebrush squirreltail and bluebunch wheatgrass from that recorded in photo trend plots 473-474, 476, 509A and indicated by observance of photo stations 475, 477-479, 484-485 and 510A.

The key species are crested wheatgrass, Idaho fescue and bluebunch wheatgrass.

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.*

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.

Continue maintenance of existing exclosures to comply with/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*

Intensively 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 Management Areas –*Fish Creek Rim ACEC/RNA and Fish Creek WSA occurs within the Allotment*

Adjust allotment management, including levels and areas of authorized use, season of use, and grazing system, if required by future ACEC management plan.

Manage grazing to protect wilderness values.

Appendix E1 – Allotment Specific Management Direction – Sagehen Allotment (page A-26)

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 (Page A-35).*

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.

Continue maintenance of existing exclosures to comply with/implement biological opinion for Warner sucker.

Wildlife/Wildlife Habitat - Intensively 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.

Implement recovery plan for other listed fish in the Warner Basin

Appendix E1 – Allotment Specific Management Direction –Fisher Lake Allotment (Page A-40)

Range Livestock Management – *Continue livestock management practices under the 1975 allotment management plan*

The key species are crested wheatgrass, saltgrass and bottlebrush squirreltail in Fisher Lake.

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.*

Continue to manage for forage production in seeded areas through season of use adjustments, possible vegetation treatments, fencing, water developments, and/or other actions.

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

Appendix E1 – Allotment Specific Management Direction – Hickey FRF Allotment (Page A-41)

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 .*

Wildlife/Wildlife Habitat –

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

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

E. Consistency with Other Authorities

This EA has been prepared in conformance with the National Environmental Policy Act (1969). Grazing permits are subject to renewal 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 this allotment 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.

F. 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.

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) – 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:

Permit Renewals

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.

CHAPTER 2—ALTERNATIVES

Alternatives Analyzed in Detail

A total of four alternatives were analyzed in detail within this EA. Table 1 includes a summary of these alternatives for each allotment. The alternatives are described in more detail in the following section.

Table 1. Alternative Summary for each Allotment

Allotment	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Hickey Individual (00202)	No Action – Continue current grazing	Reduce Grazing by 50%	Same as Alternative 1	No Grazing
Sagehen (00208)	No Action – Continue current grazing	Reduce Grazing by 50%	Create Deep Creek FRF Allotment	No Grazing
Fisher Lake (00222)	No Action – Continue current grazing	Reduce Grazing by 50%	Extend grazing season 21 Days	No Grazing
Hickey FRF (00223)	No Action – Continue current grazing	Reduce Grazing by 50%	Same as Alternative 1	No Grazing

Alternative 1: No Action

The No Action Alternative would renew the existing livestock grazing permit (#3600173) in the Hickey Individual, Sagehen, Fisher Lake, and Hickey FRF 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 2). This definition for the No Action Alternative is consistent with BLM (2000) guidance.

Table 2. Specified Grazing Use for Alternative 1

Alternative by Allotment	LIVESTOCK		GRAZING PERIOD		TYPE USE	% Public Land	AUMs
	Number	Kind	Begin Date	End Date			
Hickey Individual (00202)	100	CATTLE	04/16	9/20	Active	100	519
Sagehen (00208)	132	CATTLE	06/15	10/05	Active	57	267
Fisher Lake (00222)	215	CATTLE	11/20	2/28	Active	100	714
	205	CATTLE	3/01	3/10		100	67
Hickey FRF (00223)	65	CATTLE	4/20	5/19	Active	100	64

Grazing Management System for Hickey Individual Allotment (00202)

The current rest rotation grazing system would be applied to all grazing alternatives. There are 5 pastures in the allotment grazed as part of the grazing system. The two riparian pastures in the grazing system are grazed every other year, as agreed to under consultation with Fish and Wildlife Service in the Biological Opinion for Warner Suckers (USFWS 1997). The other three pastures will be grazed two years and rested one year. The term deferment refers to grazing after grass species have completed most of their growth cycle. The Fish Creek Rim Pasture is deferred during the grazing years because the higher elevation makes accessibility difficult in the spring. The typical growth cycle for the Lakeview Resource Area is 4/15 for start of growth through 7/15 seed set. The five pastures are grazed, deferred and rested as shown in Table 3.

Table 3. Rest Rotation Grazing System for Hickey Individual Allotment (00202)

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
Camas Creek	REST	Graze 4/16-5/31 45 AUMs	Rest	Graze 4/16-5/31 45 AUMs	REST	Graze 4/16-5/15 45 AUMs
Parsnip Seeding	REST	Graze 4/16-5/15 90 AUMs	REST	Graze 4/16-5/31 90 AUMs	REST	Graze 4/16-5/15 90 AUMs
West Joes Lake	Graze 4/16-5/15 170-200 AUMs	Graze 6/ 15-8/15 200-230 AUMs	Rest	Graze 4/16-5/15* 50-70 AUMs	6/15- 8/15 200-230 AUMs	REST
East Joes Lake	REST	Graze 4/16-5/16* 50-70 AUMs	Graze April16-May 15 170-200 AUMs	REST	Graze 4/16-5/15 170-200 AUMs	Graze 4/16-5/15 50-70 AUMs
Fish Creek Rim	Defer Graze 6/15-9/26 329-349 AUMs	REST	Defer Graze 6/15-9/26 329-349 AUMs	Defer Graze 6/15- 9/26 314-334 AUMs	REST	Defer Graze 6/15-9/26 314-334 AUMs

*During the years the riparian pastures are grazed with the permitted 120 AUMs in the spring the additional 50-70 AUMs will be grazed on one of the Joes Lake Pastures. During the years the riparian pastures are rested the Joes Lake Pastures will carry the full 170-200 AUMs.

The period between May 15 –June 15th the livestock would use the private land and BLM FRF Pasture to facilitate breeding success.

The schedule allows for grazing in Fish Creek Rim Pasture from June 15- September 26, but the number of permitted AUMs (519) and/or grazing utilization levels would determine how long

the livestock can remain in the pasture. The September 26 date allows for flexibility and a later turnout date, if conditions warrant it.

Grazing Management System for Sagehen Allotment (00208)

The current permit allows for grazing to begin in the summer (6/15) and some years this may be necessary, but generally the grazing plan is to use the allotment later in the summer with the permanent water sources and ample forage. The plan is to graze the Butte Pasture two out of three years (Table 4). In the second year the use begins in July so the Fish Creek Rim Pasture in the Hickey Allotment can be rested. The use will be 3-4 weeks depending on the water availability and utilization levels. Then the livestock will be moved south into the Deep Creek Riparian Pasture and remain 3- 5 weeks depending on the stubble height and willow use levels. The pasture is managed in consultation with the Fish and Wildlife Service under a Biological Opinion for the Threatened Warner Sucker (USFWS 1997). Most of this pasture is private land with the key monitoring areas on public occurring at the west and east ends of the pasture. The west end now contains a drift fence which allows for control of the utilization levels on the public land there.

Table 4. Deferred Grazing System Sagehen Allotment (00208)

Pasture	Year 1 in Rotation	Year 2 in Rotation	Year 3 in Rotation
Butte	8/15-09/5	7/16-8/5	REST
Deep Creek	09/06-10/05*	08/06-09/15*	8/15-9/15*

Grazing management system for Fisher Lake Allotment (00222)

The current grazing system for Fisher Lake is winter grazing with 10 days in the spring (March). There are three main pastures of which two are crested wheatgrass seedings (north and South) and one small (Neck) pasture which is a gather pasture (Table 5). The current system rotates the cattle through the 3 pastures using each one in the early spring (growing season) one out of three years. The Lake Pasture is used during February so that calving can be done in a level pasture with shrub cover and some protection from the wind. The typical growth cycle for grass in the Lakeview Resource Area begins 4/15, but in a crested wheatgrass seeding the growing can begin in March. The four pasture schedule is shown in Table 5.

Alternative 2: 50% Reduction in Grazing

Under this alternative, permitted AUMs in the livestock grazing permit (#3601210) would be reduced from 1,631 AUMs to 849 AUMs, but the grazing period and the grazing schedule would remain the same. This reduction would occur in three allotments, but not in the Hickey FRF Allotment for the reasons explained in the section, Allotments considered but eliminated from

Table 5. Winter Deferred Grazing System Fisher Lake Allotment (00222)

Pasture	Year 1 in Rotation	Year 2 in Rotation	Year 3 in Rotation
South	11/20-12/15	2/16-3/5	11/20-12/15
North	12/16-1/15	11/20-12/15	2/16-3/5
Lake	1/16-3/5	Graze 12/ 16-2/15	12/16-2/15
Neck	3/6-3/10	3/6-3/10	3/6-3/10

further analysis. 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 6).

Table 6. Specified Grazing Use for Alternative 2

Allotment	LIVESTOCK		GRAZING PERIOD		TYPE USE	% Public Land	AUMs
	Number	Kind	Begin Date	End Date			
Hickey Individual (00202)	50	CATTLE	04/16	9/20	Active	100	260
Sagehen (00208)	66	CATTLE	06/15	10/05	Active	57	134
Fisher Lake (00222)	107	CATTLE	11/20	2/28	Active	100	357
	103		3/01	3/10		100	34
Hickey FRF (00223)	65	CATTLE	4/20	5/19	Active	100	64

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

A 10-year term livestock grazing permit would be issued that adjusts the grazing season in the Fisher Lake Allotment and in excludes public land portions of Deep Creek, creating a new FRF allotment within the Sagehen Allotment. In the Hickey Individual and Hickey FRF Allotments the 10- year term livestock grazing permit would continue the current grazing management outlined in the No Action Alternative. The 10-year livestock permit would adjust the season of use in the Fisher Lake Allotment by extending the grazing season from March 3rd to March 31st. The number of AUMs permitted will remain the same so the number of livestock would have to be reduced with this longer season. This extended grazing season was requested by the permittee to reduce the number of days between his grazing permits and facilitate the transition from one allotment to another. In the Sagehen Allotment the permittee has suggested that he would fence off the east end of the allotment to exclude the public land portions of Deep Creek Pasture. That would leave only about 540 acres (39 AUMs) of public

land in the Deep Creek Pasture, essentially creating an FRF Pasture (Map 3). This remaining 540 acres of public land in the Deep Creek Pasture is primarily on the slopes and ridge tops above Deep Creek. The result of this enclosure and the FRF Pasture would be two allotments, a new Deep Creek FRF Allotment and the old Sagehen Allotment with only the one (Butte) pasture. The adjustments in the Fisher Lake and Sagehen Allotments and continuation of the current permit for Hickey and Hickey FRF are shown in Table 7.

Table 7. Specified Grazing Use for Alternative 3

Allotment	LIVESTOCK		GRAZING PERIOD		TYPE USE	% Public Land	AUMs
	Number	Kind	Begin Date	End Date			
Hickey Individual (00202)	100	CATTLE	04/16	9/20	Active	100	519
Sagehen (00208)	90	CATTLE	06/15	10/05	Active	70	234
Deep Creek FRF	39	CATTLE	8/15	9/14	Active	100	39
Fisher Lake (00222)	180	CATTLE	11/20	2/28	Active	100	598
	180		3/01	3/31			183
Hickey FRF (00223)	65	CATTLE	4/20	5/19	Active	100	64

Alternative 4: No Grazing

Under this alternative, the current grazing permit would not be renewed and livestock grazing would not be authorized on public lands within the Hickey Individual, Sagehen, Fisher Lake, and Hickey FRF Allotments. However, grazing could still occur on private lands within the Sagehen or Hickey FRF Allotments, if the landowner decides to invest in the substantial amount of fencing that would be required to keep livestock off of the public land parcels in these allotments. This alternative is being considered to provide a full range of alternatives and comply with current grazing management permit renewal guidance (BLM 2000, 2008b).

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 8-11 describe the key species and utilization targets identified for each allotment.

Table 8. Key Species and Target Utilization Levels for Pastures within the Hickey Individual Allotment (00202)

Pasture	BLM Acres	Trend Plot ¹	Key Species	Utilization Target %
Camas Creek	296	PS-478 HI-04 HI-05	Riparian areas	70*
Parsnip Seeding	470	HI-01 PS-475 PS-550	Crested Wheatgrass (<i>Agropyron cristatum</i>) Idaho Fescue (<i>Festuca idahoensis</i>) Squirreltail (<i>Elymus elymoides</i>)	70*
West Joes Lake	1,050	HI-03A	Idaho Fescue (<i>Festuca idahoensis</i>) Squirreltail (<i>Elymus elymoides</i>) Sanderg's bluegrass (<i>Poa Sandbergii</i>)	50
East Joes Lake	1,070	HI-03B PS-477	Idaho Fescue (<i>Festuca idahoensis</i>) Squirreltail (<i>Elymus elymoides</i>) Sanderg's bluegrass (<i>Poa Sandbergii</i>)	50
Fish Creek Rim	8,198	HI-02 PS-484 PS-485	Idaho Fescue (<i>Festuca idahoensis</i>) Squirreltail (<i>Elymus elymoides</i>) Sanderg's bluegrass (<i>Poa Sandbergii</i>)	50

Table 9. Key Species and Target Utilization Levels for Pastures within the Sagehen Allotment (00208)

Pasture	BLM Acres	Trend Plot ¹	Key Species	Utilization Target %
Sagehen Butte	2,400	SA-01	Idaho Fescue (<i>Festuca idahoensis</i>) Squirreltail (<i>Elymus elymoides</i>) Thurbers Needlegrass (<i>Achnatherum thurberianum</i>), Basin Wildrye (<i>Elymus cinereus</i>)	50
Deep Creek Pasture	880	SA-02 SA-03	Riparian areas	35*

Table 10. Key Species and Target Utilization Levels for Pastures within the Fisher Lake Allotment (00222)

Pasture	BLM Acres	Trend Plot ¹	Key Species	Utilization Target %
South seeding	697		Crested Wheatgrass (<i>Agropyron cristatum</i>)	50*
North seeding	891		Crested Wheatgrass (<i>Agropyron cristatum</i>)	50*
Lake	2,164	FL-01 FI-02 FL-03 FI-04	Inland Saltgrass (<i>Distichlis stricta</i>) Crested Wheatgrass (<i>Agropyron cristatum</i>)	50
Neck	569		Inland Saltgrass (<i>Distichlis stricta</i>)	50

Table11. Key Species and Target Utilization Levels for Pastures within the Hickey FRF Allotment (00223)

Pasture	BLM Acres	Trend Plot	Key Species	Utilization Target %
FRF	324	NA	Idaho Fescue (<i>Festuca idahoensis</i>) Squirreltail (<i>Elymus elymoides</i>)	NA

Grazing Permit Terms and Conditions and Management Flexibility 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.

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 this need.

Dry years that limit water availability; An example would be resting a pasture that had low water and shifting livestock use to the pasture that had water. Conversely on wet years, livestock could be moved to areas near more dependable water sources.

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, 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.

CHAPTER 3—DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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. The resources identified as “not affected” or “not present” are listed in Table 12 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 12. Critical Elements of the Human Environment 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.
Wild and Scenic Rivers	Not Present	There are no wild or scenic rivers within the allotments.

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 the Hickey Individual, Sagehen, Fisher Lake, and Hickey FRF Allotments, 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 30-59° F, with average lows in December ~18° F, and average highs in July ~82° F; the coldest and warmest months, respectively (PRISM Climate Group, 2012). The soil regime

Table 13. Other Resources and Uses that Would not be Affected

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.
Lands with Wilderness Characteristics	Not Present	BLM's original wilderness inventory did not find wilderness characteristics to be present within these allotments (USDI-BLM 1979f, 1979g, 1979h, 1980a, and 1980b). Since 2007, the BLM has been conducting wilderness inventory updates following current inventory guidance (BLM 2007c, 2008c, 2012a). In this process, an interdisciplinary team reviewed the existing wilderness inventory information contained in the BLM's wilderness inventory files, previously published inventory findings, and citizen-provided wilderness information (ONDA 2005). BLM conducted field inventory, completed route analysis forms, made unit boundary determinations, and subsequently evaluated wilderness character within each inventory unit within the South Warner Rim, Fish Creek Rim Addition, and Hart Mountain South areas, which collectively cover allotments 00202, 00208, 00222, and 00223. While ONDA reported wilderness characteristics to be present within portions of allotments 00202 and 00222 (ONDA 2005, p. 79-120), BLM did not find wilderness characteristics to be present in any of these areas (BLM 2009a, 2009b, 2012c). Documents are available at http://www.blm.gov/or/districts/lakeview/plans/inventas.php . BLM hereby incorporates these findings by reference in their entirety. Based upon the results of these inventory updates, such values are not present in the allotments. Therefore, there would be no impacts to such values.
Wild Horses (Wild Horse and Burro Act)	Not Present	The allotments are located outside of designated wild horse herd management areas.

within Hickey Individual, Sagehen, Fisher Lake and Hickey FRF Allotment 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.

Based upon analyses in similar permit renewal environmental assessments (BLM 2012d, 2012e, 2012f), BLM has determined that authorizing or not authorizing 1,631 AUMs of grazing use on the four allotments would represent an extremely small incremental contribution to total national and global greenhouse gas emissions. The level of emissions would be so small that it would not merit reporting under current EPA rules related to mandatory annual reporting of greenhouse gases from industrial and agricultural sectors (reporting threshold is 25,000 metric tons of carbon dioxide equivalent; 40 CFR 98.2). Further, 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 would not result in any substantial change in total carbon storage. For these reasons, the potential effects of the alternatives on greenhouse gas emissions, carbon storage, or climate change will not be addressed further.

Soils and Biological Soil Crusts

Affected Environment: Hickey Individual Allotment (00202)

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 11 soil map units in the Hickey Individual allotment (Map 4). The prominent soil type is the Carryback-Rock Outcrop complex 5-15% slope, (64% of Allotment) found on the tablelands of the Fish Creek Rim Pasture. The Carryback soil occupies 70% of the area and rock outcrop is 30%. The Carryback very cobbly loam, 2-15 percent slopes, without the rock outcrop association is 19% of the allotment and is common across all pastures. The carryback soil is a very cobbly loam, moderately deep to bedrock (20-40 inches) and very shallow to shallow (4-10 inches) to the claypan. This soil is well drained with slow permeability and available water capacity of about 4 inches. The erosion hazard by water is moderate and the shrink swell potential is high between the depths of 8 and 15 inches.

The Westbutte-Ninemile complex, 30-50 percent slopes occupies the north facing slopes and is about 5% of the allotment. The Westbutte soil is 50% of the association and is an extremely stoney loam and moderately deep (20-40 inches) to bedrock. The soil is well drained with moderate permeability and about 3 inches of available water capacity. The hazard of erosion by water is severe. The Ninemile soil series is 40% of the association and is an extremely gravelly loam, thin surface and shallow (10-20 inches) to bedrock, very shallow (3-7 inches) to claypan. The Ninemile soil is well drained with very slow permeability and available water capacity of about 2 inches.

Seven of the remaining eight soil types occupying about 5% of the allotment are very gravelly loams or very stoney loams with similar characteristics the soils described above. About 1% of the allotment contains the Delgarmo –Welch complex 0-2 percent slopes. The Delgarmo is a very deep black silt loam and the Welch soil is a very deep black silty clay loam. Both soils are poorly drained with moderately slow permeability.

The Rangeland Health Assessment found that soils in the Hickey Individual Allotment 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). This assessment examined soil surface factor (SSF) data for the allotment 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.

Nine percent of the allotment was rated stable and 67% percent of the allotment was rated in the slight erosion condition class with 1 percent in the moderate class (Table 14).

Table 14. Soil Surface Factor for Hickey Individual Allotment (00202)

	Erosion Condition Classes*			Rockland or Playa	Unknown**
	Stable	Slight	Moderate		
Acres	1,040	7,376	75	2001	504
Percent of Allotment	9%	67%	1%	18%	5%

* 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. The unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

Observed apparent trend (OAT) data (Table 15) 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 77% of the Hickey Allotment; i.e. the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes. There is 5% of the allotment rated as unknown and 1% in downward trend with 18% in rockland or rock outcrop inclusions. However in the site with a downward trend along Camas Creek, a change in grazing management has reversed the trend. The Rangeland Health Assessment (BLM 1999a) and the more recent trend photos indicate that this erosion has been stabilized and there is now an upward trend in this area.

Table 15. Observed Apparent Trend in Hickey Individual Allotment (00202)

	Upward	Observed Apparent Trend*			Rockland or Playa	Unknown**
		Static to Upward	Static	Downward		
Acres	1,131	5,814	1,487	59	2001	504
Percent of Allotment	10%	53%	14%	1%	18%	5%

* 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. An example of how the rating is determined can be seen in Appendix B.

** 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 unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

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). BSC cover data was not collected

during the South Lake Ecological Site Inventory (ESI) process. In the Hickey Individual Allotment the 7 vegetation transects done in 2012 did not record any BSCs. BSCs are present in the allotment, but occupy a very small percentage of the ground cover. There are 3 long-term transects in the Hickey Allotment that measure ground cover and the average during the last 10 years was 1.7% moss cover. BLM assumes the condition of the BSCs would be similar to the condition of the soils, litter, and vegetation with which they exist.

Environmental Consequences: Hickey Individual Allotment (00202)

Effects Common to Alternatives 1 and 3

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 (Table 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 both Alternatives 1 and 2. The use pattern maps, the small size of four pastures and the low livestock density 36 acres/AUM) in the large fifth pasture (Fish Creek Rim) indicate that cattle tend to concentrate within about a tenth of a mile around existing water sources (a tenth of a mile buffer around a water source represents approximately 25 acres). There are 26 constructed waterholes with 22 being in the Fish Creek Rim Pasture, mostly in the southwest and south portion of the pasture. There is one spring and water trough in Fish Creek Rim Pasture and about 2 miles of perennial stream along Camas and Parsnip Creeks combined (Map 5A). Approximately 675 acres (27 x 25 acres) around water sources would be impacted by concentrated grazing use.

The amount of concentrated use on the Camas and Parsnip Creeks is different because of the limited grazing in these riparian areas. The area assumed to be impacted would be a 100 foot buffer along 2 miles of creek and impact about 24 acres. However, the grazing management in these pastures and in the riparian zones mitigates much of the disturbance by only allowing grazing about 1 month out of every 24 months. The trend photos (1-4) and the vegetation transects along the creeks show steady improvement in stream condition, vegetation cover, and willow recruitment during the last 10 years. The bare banks have re-vegetated and the channel as narrowed while the floodplains have widened and are functioning properly. Therefore the impacts of livestock trampling on soils along these creeks appear to be largely mitigated.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. There are about 15 miles of fence located within the allotment representing another 9 acres (25 mi. x 5 ft. x 5,280 ft. per mi./ 43,560 ft.² per acre) 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 is 708 acres and equals about 6% of the allotment. This alternative would maintain slight to moderate forage utilization across 94% 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.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 260 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 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 354 acres or 3% 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.

Effects of Alternative 4: No Grazing

Under the No Grazing Alternative, little change to soils would occur on the allotment as a whole in the short-term (up to 5 years). Most of the concentrated livestock use areas (708 acres) associated with existing water sources and the cattle trails 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, the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Affected Environment: Sagehen Allotment (00208)

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 11 soil map units in the Sagehen Allotment (Map 4). The most prominent soil type is the Fitzwater complex, 30-50 percent south slopes (34% of the allotment) found on the south slopes of mountainsides. This complex is 50 percent Fitzwater soils, thin surface and 35 percent Fitzwater soil. The difference is the thin surface is an extremely stony loam 0-3 inches deep and the Fitzwater soil is 0-10 inches deep. Both soils are very deep (60 inches or more) to bedrock

and well drained. The permeability is moderately rapid and the available water capacity is about 2 inches. Erosion hazard by water is severe.

The north slopes of the allotment are dominated by the Lambring-Rock outcrop complex, 5-30 percent slopes (16% of allotment) with Lambring soil, thin surface 45 percent, Lambring soil 25 percent and rock outcrop 15 percent. The difference is the Lambring with a thin surface is a very gravelly loam 0-5 inches deep and the Lambring soil is 0-10 inches deep. Both soils are deep (40-60 inches) to bedrock and are well drained. The permeability is moderate and the available water capacity is about 4 inches. Erosion hazard by water is moderate or severe.

On the tablelands and some mountainsides is the Pearlwise loam, 2-30 percent slope (13% of the allotment). The Pearlwise loam is moderately deep (20-40 inches) to bedrock and well drained with moderate permeability. The available water capacity is about 5 inches and the erosion hazard by water is moderate or severe and by wind is moderate.

On the foot slopes and less sloping areas of hills and mountains is the Booth-Nuss-Royst association, 15 to 40 percent south slopes (10% of the allotment). The Booth soil is 40 %, the Nuss is 30% and the Royst is 20% of the association. The Booth soil occupies the foot slopes and less sloping areas, while the Nuss soil is on the convex areas and ridges and the Royst soil is in the concave areas of the hills. All these soils are stoney loams but the Royst soil also has a 2 inch duff layer of pine needles or sagebrush leaves. The Booth and the Royst soils are moderately deep (20-40 inches) to bedrock but the Nuss soil is shallow (12-20 inches to bedrock). All three soils are well drained and the permeability of the Booth and Royst soil are slow and the Nuss soil is moderate. The available water capacity is about 2-3 inches and the hazard of erosion by water is severe for all three soils.

The Carryback Very Cobbly Loam, 2-15 percent slopes, is 10% of the allotment and is found on the table lands in the northern part of the allotment. The carryback soil is a very cobbly loam, moderately deep to bedrock (20-40 inches) and very shallow to shallow (4-10 inches) to the claypan. This soil is well drained with slow permeability and available water capacity of about 4 inches. The erosion hazard by water is moderate and the shrink swell potential is high between the depths of 8 and 15 inches.

About 5% of the allotment along deep creek is the Delgarmo –Welch complex 0-2 percent slopes. The Delgarmo is a very deep black silt loam and the Welch soil is a very deep black silty clay loam. Both soils are poorly drained with moderately slow permeability.

The remaining 12% of the allotment includes 4% Rubbleland and 4% of the Lambring and Booth Associations already described, only on steeper slopes (40-70%). The 4% of the allotment that is dominated by ponderosa pine and juniper is mostly Winterim gravelly loam 15 to 40 percent north slopes. This soil is deep (40-60 inches) to bedrock, well drained with slow permeability. The available water capacity is about 5 inches and the hazard of erosion by water is severe.

The Rangeland Health Assessment found that soils in the Sagehen Allotment exhibit infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land

form. Root occupancy for the soil is appropriate, and therefore, Standard 1 is being met (BLM 1999b). This assessment examined soil surface factor (SSF) data for the allotment 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. The SSF rating for the Sagehen Allotment had 82 percent of the allotment rated in the slight erosion condition class with 4 percent in Rubbleland and 14 percent unknown (Table 16).

Table 16. Soil Surface Factor in Sagehen Allotment (00208)

	Erosion Condition Classes*				
	Stable	Slight	Moderate	Rockland or Playa	Unknown**
Acres	0	4,829		219	822
Percent of Allotment	0%	82%	0%	4%	14%

* 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. The unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

Observed apparent trend (OAT) data (Table 17) was used to determine trend indicators correlated to soil stability. These indicators are: surface litter, pedestals, and gullies. OAT data collected indicates 21% in upward trend, 61% of the Sagehen Allotment with stable soils and 4% are Rubbleland; i.e. the majority of litter is collecting in place, there is little evidence of pedestalling, and gullies are absent from the slopes. There is 14% of the allotment rated as unknown. The recent trend photo and transect continues to indicate that the soils are stable and there is an upward trend in this allotment.

TABLE 17. Observed Apparent Trend in Sagehen Allotment (00208)

	Observed Apparent Trend*				
	Upward	Static	Downward	Rockland or Playa	Unknown**
Acres	1,252	3,577	0	219	822
Percent of Allotment	21%	61%	0	4%	14%

* 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. An example of how the rating is determined can be seen in Appendix B.

** 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 unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

BSCs are present in the allotment, but occupy a very small percentage of the total ground cover. The long-term transect in the Sagehen Allotment that measures ground cover was read 3 times during the last 12 years recording 1.2% moss cover during 1 year. BLM assumes the condition of the BSCs would be similar to the condition of the soils, litter, and vegetation with

which they exist. The ground cover of perennial vegetation as measured at the monitoring transect has been stable, at about 37% over the last 12 years.

Environmental Consequences: Sagehen Allotment (00208)

Effects of Alternative 1: No Action

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 deferred grazing system (Table 4) would 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 Alternative 1. Allotment monitoring and the configuration of the pastures indicate that cattle tend to concentrate within about a quarter of a mile around existing water sources (springs and waterholes) and within 100 yards along Deep Creek on both sides. There is one constructed waterhole and 2 developed springs on the allotment, all in the Butte Pasture (Map 5A). The impacted areas around the waterhole and springs are a 1/4 mile buffer representing approximately 126 acres/water source. Approximately 378 acres (3 x 126 acres) around water sources would continue to be impacted by concentrated grazing use.

The concentrated use on the Deep Creek is estimated to a 300 foot wide zone along 5 miles of the creek and would impact about 181 acres. However, the grazing management in these pastures and in the riparian zone mitigates much of the disturbance by only allowing grazing for about 1 month late in the season after the vegetation is fully grown. The trend photos (1-4) and vegetation transects along the creek show steady improvement in stream condition, vegetation cover, and willow recruitment during the last 10 years. The bare banks have re-vegetated and the channel has narrowed while the floodplains have widened and are functioning properly. Therefore, the impact of livestock trampling on the soils along Deep Creek appears to be largely mitigated. The trend photo and transect in the uplands of the Butte Pasture have also shown an increase in vegetation cover and range condition since 1989.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. There are about 12 miles of fence located within the allotment representing another 7 acres (12 mi. x 5 ft. x 5,280 ft. per mi. / 43,560 ft.² per acre) 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 566 acres or about 10% of the allotment. This alternative would maintain slight to

moderate forage utilization across 90% 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.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, reducing grazing level by 50% (to 133 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 283 acres or 5% 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.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The impacts to soils would be similar to Alternative 1 for the Butte Pasture as the grazing use would be about the same around the waterhole, springs, and along fences. The total acres of soil impacted would be about 383 acres or about 10% of the Butte Pasture.

An FRF Pasture would be created by fencing the off the east end of the Deep Creek Pasture, which would exclude the remaining public land along the creek. This would reduce the acreage of public land within the pasture to about 550 acres or about 28% of the current acreage in the pasture and about 20% of the AUMs. Most of the public land in the pasture under this alternative is located on a slope away from the creek and meadow areas. Therefore, the impacts to soils would be on approximately 20 acres of public land inside the 300-foot impact zone along the creek identified in Alternative 1. The public land acres impacted (20 acres) would be about 4% of the public land in the pasture and 1% of the total pasture.

While wind and water erosion and wildlife use would still have an on-going negative impact on soils and BSCs, most of the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Effects of Alternative 4: No Grazing

Under the No Grazing 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 403 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, much of the allotment is private land and could still be grazed. The severity of impacts to soils and BSCs on private lands would depend on how intensively the area is grazed, but would likely fall within the range of impacts described for Alternative 3.

Affected Environment: Fisher Lake Allotment (00222)

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 9 soil map units in the Fisher Lake Allotment (Map 4). The most prominent soil type is the Diaz Very Cobbly Loam, 2-15 percent slopes (31% of the allotment) found on tablelands in the Lake and South Pastures. This soil is moderately deep (20-40 inches) to bedrock and well drained with moderate permeability. The available water capacity is about 4 inches and the erosion hazard by water is moderate.

The fans and lake terraces along the boundary between the Seeding Pastures (North and South) and the Lake Pasture are occupied by the McConnel very gravelly sandy loam, 2-15 percent slopes (23% of the allotment). This soil is very deep (more than 60 inches) to bedrock and shallow or moderately deep to sand and gravel. This soil is excessively drained and permeability is moderately rapid over very rapid with an available water capacity of about 2 inches. Erosion hazard by water is slight and by wind slight or moderate.

On the Alluvial flats in the Lake and Neck Pastures is the Reese very fine sandy loam, 0-1 percent slope (18% of the allotment). This soil is very deep (more than 60 inches) to bedrock and poorly drained with slow permeability. The available water capacity is about 1 inch and the erosion hazard by water is none or slight and by wind is moderate. The depth to the high water table is 12-36 inches, March to July, and more than 36 inches the rest of the year. This soil is strongly saline in the upper 10 inches and strongly sodic in the upper 33 inches.

In the Lake Pasture around the playas is the Alvodest-Playas complex, 0-1 percent slopes (14% of the allotment). The Alvodest soil is about 55% of this complex and a silty loam down to 14 inches and then a silty clay loam to 32 inches. The soil is very deep (more than 60 inches) to bedrock and moderately well drained with slow permeability. The available water capacity is about 2 inches and the erosion hazard by water is none or slight and by wind is moderate. The depth to the high water table is 6 inches above the surface to 36 inches below the surface, December through April, and more than 36 inches the rest of the year. This soil is strongly saline and strongly sodic. There is a high shrink-swell potential between the depths of 14 and 60 inches. About 30% of the Alvodest-Playas complex is playas and they occupy the basin floor. The playas are silty clay loam to 6 inches and then stratified silty clay and silty clay loam to 60

inches. This soil is very deep (more than 60 inches) to bedrock and poorly drained with very slow permeability and the erosion hazard by wind is none to severe depending on the time of year. The depth to the high water table is 12 inches above the surface to 12 inches below the surface, December through April, and more than 12 inches the rest of the year. This soil is moderately to strongly saline and strongly sodic. There is a high shrink–swell potential.

About 2% of the allotment is mapped separately as lake playas and they are described above. The remaining 13% of the allotment is occupied by a mixture of extremely stoney McConnell loam and silty clay loams.

The Rangeland Health Assessment found that soils in the Fisher Lake Allotment exhibit infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil is appropriate, and therefore, Standard 1 is being met (BLM 2002a). This assessment examined soil surface factor (SSF) data for the allotment 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. The SSF rating for the Fisher Lake Allotment had 60 percent of the allotment rated in the slight erosion condition class with 3 percent in Playa or rockland and 37 percent unknown (Table 18).

Table 18. Soil Surface Factor in Fisher Lake Allotment (00222)

	Erosion Condition Classes*			Rockland or Playa	Unknown**
	Stable	Slight	Moderate		
Acres	0	2,736	0	122	1,711
Percent of Allotment	0%	60%	0%	3%	37%

* 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. The unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

Observed apparent trend (OAT) data (Table 19) was used to determine trend indicators correlated to soil stability. These indicators are: surface litter, pedestals, and gullies. The OAT data collected indicates 35% in upward trend, 6% of the Fisher Lake Allotment with stable soils, 18% downward trend and 3% are Playa; i.e. the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes. There is 37% of the allotment rated as unknown. There are 4 photo trend plots in the allotment and they continue to indicate that the soils are stable and there is a static or upward trend in this allotment. Two of trend photos are in the areas rated in downward trend by the ESI in 1988. However, the photos taken during 5 different years since 1988, show a static trend with stable vegetation cover and no change in plant composition.

Table 19. Observed Apparent Trend in Fisher Lake Allotment (00222)

	Observed Apparent Trend*				
	Upward	Static	Downward	Rockland or Playa	Unknown**
Acres	1,608	285	843	122	1,711
Percent of Allotment	35%	6%	18%	3%	37%

* 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.. An example of how the rating is determined can be seen in Appendix B.

** 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 unknown also includes acres of types for which the SWA transect was run in a different allotment and

In the Fisher Lake Allotment, two vegetation transects were done in 2012 and did not record any BSCs. BSCs are present in the allotment, but occupy a very small percentage of the ground cover. 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 4 long-term trend plots in the allotment and photos were taken 5 separate times since 1988. The ground cover of perennial vegetation seen in these photos shows the vegetation, litter, and soils to be stable).

Environmental Consequences: Fisher Lake Allotment (00222)

Effects of Alternative 1: No Action

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 winter grazing system (Table 8) 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 Alternative 1. The use pattern maps and the abundance of water sources in the small pastures indicate that cattle tend to concentrate within a tenth of a mile around existing water sources (troughs, springs and lakes). There is a well and about 3 miles of pipeline with 4 troughs in the allotment, one constructed waterhole, 1 developed spring, and several lakebeds associated with over flow from Fisher Lake that may contain water depending on precipitation (Map 5B). The impacted areas around the troughs, waterhole and spring would be 1/10 mile buffer representing approximately 25 acres/water source. Approximately 150 acres (6 x 25 acres) around water sources would be impacted by concentrated grazing use.

The concentrated use around Fisher Lake and lakebeds to the south of Fisher Lake are difficult to quantify and would be depend upon precipitation in the preceding months. The average

heavy use area around Fisher Lake in the last 10 years was about 80 acres and ranged from 400 acres to 0 acres when the area was under water. Adding average impacts areas together, the total area impacted around water sources for the allotment would be 230 acres. However, the current grazing management in these pastures and winter use mitigates much of the disturbance as grazing is done when the vegetation is dormant.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. There are about 18.25 miles of fence located within the allotment representing another 11 acres (18.25 mi. x 5 ft. x 5,280 ft. per mi. / 43,560 ft.² per acre) 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 241 acres or about 5% of the allotment. The average utilization measured across the entire allotment over the last ten years was 44%. 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.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% (to 391 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 122 acres or 3% 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.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The impacts to soils would be similar to Alternative 1 for the Fisher Lake Allotment, as the number of AUMs would be the same. The number of cows would be reduced, but allowed to stay 21 days longer. Therefore, the acreage impacted in the Fisher Lake Allotment would be around the troughs, waterhole, spring, and Fisher Lake and along the fences. The total acres of soil impacted would be about 241 acres or about 5% of the Fisher Lake 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.

Effects of Alternative 4: No Grazing

Under the No Grazing Alternative, little change to soils would occur on the allotment as a whole in the short-term (up to 5 years). Most of the existing concentrated livestock use areas (241 acres) associated with water sources and the cattle trails 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, the allotment would be expected to continue to meet rangeland health Standard 1 into the foreseeable future.

Affected Environment: Hickey FRF Allotment (00223)

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 3 soil map units in the Hickey FRF Allotment (Map 4). The most prominent soil type is the Carryback very cobbly loam, 2-15 percent slopes, is found on the table lands in the north central part of the allotment. This soil occupies 132 acres of public land (16% of allotment) and 399 acres of private land (47% of allotment). The carryback soil is a very cobbly loam, moderately deep to bedrock (20-40 inches) and very shallow to shallow (4-10 inches) to the claypan. This soil is well drained with slow permeability and available water capacity of about 4 inches. The erosion hazard by water is moderate and the shrink swell potential is high between the depths of 8 and 15 inches.

The Fitzwater extremely stoney loam, 2 to 30 percent slopes occupies the ridgetops and occupies 260 acres of public land (31% of allotment) and about 40 acres of private land (5% of allotment). The Fitzwater extremely stoney loam is very deep (more than 60 inches) to bedrock and well drained with moderately rapid permeability. The available water capacity is about 3 inches and the erosion hazard by water is moderate or severe.

There is 20 acre of Westbutte extremely stoney loam, 5 to 30 percent slopes found on public land on the east edge of the allotment above Camas Creek. This soil is an extremely stoney loam and moderately deep (20-40 inches) to bedrock. The soil is well drained with moderate permeability and about 3 inches of available water capacity. The hazard of erosion by water is severe.

The Rangeland Health Assessment found that soils in the Hickey FRF Allotment exhibit infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil is appropriate, and therefore, Standard 1 is being met (BLM 2002b). This assessment examined soil surface factor (SSF) data for the allotment

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. The SSF rating for the Hickey FRF Allotment had 62 percent of the total allotment rated in the moderate erosion condition class with 38 percent in the slight erosion condition class. There was 132 public land acres rated as (16% of the allotment) moderate and 260 acres rated (31% of the allotment) as slight (Table 20).

Table 20. Soil Surface Factor in Hickey FRF Allotment (00223)

	Erosion Condition Classes*		
	Stable	Slight	Moderate
Total Acres	0	323	528
Percent of Allotment	0%	38%	62%
BLM Acres	0	280	132
BLM Percent of Allotment	0	33%	16%

* 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. The unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

Observed apparent trend (OAT) data (Table 21) was used to determine trend indicators correlated to soil stability. These indicators are: surface litter, pedestals, and gullies. The OAT data collected in the Hickey FRF Allotment indicates 100% of the acres including private and public land acres had a static trend ; i.e. the majority of litter is collecting in place, there is little evidence of pedestalling, and gullies are absent from the slopes.

Table 21. Observed Apparent Trend in Hickey FRF Allotment (00223)

	Observed Apparent Trend*		
	Upward	Static	Downward
Acres	0	851	0
Percent of Allotment	0%	100%	0%
BLM Acres	0	412	0
BLM Percent of Allotment	0%	48%	0%

* 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.. An example of how the rating is determined can be seen in Appendix B.

** 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 unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.

There are no trend plots in the Hickey FRF Allotment, but the location of the public land in the allotment would indicate little or no use from grazing livestock. About 67% of the public land in the allotment is on extremely stoney loam soils, which limit access to livestock grazing due to the rough and rocky surface. The pasture is used in conjunction with private meadows to the south and west. This FRF Pasture receives limited use and the private land in this pasture being more accessible, receives the majority of that use. BLM assumes the condition of the BSCs would be similar to the condition of the soils, litter, and vegetation with which they exist. (The perennial vegetation on the public land is in mid-seral condition and being located on the edges of the pasture in the rougher terrain, the vegetation, litter and soils appear to be stable).

Environmental Consequences: Hickey FRF Allotment (00223)

Effects Common to Alternatives 1 and 3:

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, this FRF Pasture has no water sources on public land and the only expected livestock concentration areas on public land is along a mile of fence where livestock may trail.

Cattle trails tend to be located along fence lines and these trails are typically less than 5 feet wide. The 1.0 mile of fence located on public land within the allotment represents 0.6 acres (1.0 mi. x 5 ft. x 5,280 ft. per mi./ 43,560 ft.² per acre) 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 0.6 acres is the only area on public land in the pasture where livestock might concentrate and this represents only 0.15% of the public land in the allotment.

The pasture is used in conjunction with private meadows to the south and west. Therefore, this pasture receives limited use and the private land in this pasture is more accessible, receiving the majority of that use. There is no utilization data for this pasture, but the BLM assumes the location and topography limits the utilization of the public land to light or slight.

Therefore, this alternative would 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.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, reducing the grazing level by 50% (to 32 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.

Effects of Alternative 4: No Grazing

Under the No Grazing Alternative, the public land would likely be fenced and excluded from grazing. The current concentration area (0.6 acres) on public land resulting from the trailing along the 1 mile of fence would be eliminated and the trail 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.

Hydrology and Water Quality

Affected Environment:

Closed basins typify the BLM-administered lands within the area. Streams within the area respond both geomorphically and hydrologically to the climate, particularly to the amount of precipitation, the form it comes in, and timing of snowmelt. The area has a snow melt driven hydrology with occasional rain-on-snow events occurring in December or January. Normal spring runoff occurs from March through June with May usually producing the highest flows in Deep Creek. The higher elevations (mostly National Forest lands) are a major source of flow for both base flow and spring runoff. The low elevation areas (mostly BLM-administered lands) contribute more towards spring runoff and have less influence on base flow. The floodplains store spring runoff and release base flows (FS and BLM 1998).

Current peak flows with a return frequency of five to 50 years appear to be 10 to 30% higher than historic flows. The gauging records show less change in the 1.5 and 100 year return periods. Deep Creek experienced peak flows exceeding a 100 year event in 1964. Possible causes of increased peak flows are linked to the impacts of high road densities and high levels of compacted soil from logging. The understory forest canopy has generally increased and forested stands now have higher canopy than the mean of historic conditions. However, the forested canopy is within the natural range of variability for the watershed and closer to the

mean than the outside range. Also clearcuts or burn areas are less than 12% of any sub-watershed (FS and BLM 1998).

Base flows in the Deep Creek watershed are estimated to have decreased a small amount as compared to historic conditions. Encroachment of conifers/junipers in meadows and stringers, down-cutting of streams, loss of beaver dams and interception by roads have contributed to conditions of less base flow (FS and BLM 1998). Mean monthly flows have changed little since historic times; however, the duration of flows at bankfull stages have increased (FS and BLM 1998).

In general, National Forest lands are at the headwaters and upper reaches of the watershed, private lands occupy the mid-elevation meadow areas, and BLM-administered lands are found in the lower elevation areas. Water uses in the project area include, irrigation, livestock and wildlife, fisheries habitat, and road dust abatement.

Water temperature is the main water quality parameter that is out of compliance with the State of Oregon, Water Quality Standards (not to exceed 64 degrees F or 17.8 degrees C, 7-day average daily maximum), based on data presented in the Deep Watershed Assessment (FS and BLM 1998). Increased width to depth ratios in stream channels and reduced shading from loss of riparian vegetation are the primary causes of elevated temperatures. None of the perennial streams in the allotments currently meet water temperature standards (Table 22). Juniper trees in the analysis area provide limited effective shade to perennial stream channels due to hydro-geomorphic factors, including seasonally high flows in the larger tributaries that prevent the establishment of conifers near the wetted edge of the channel. Juniper trees that do become established near the wetted channel compete with desirable riparian species such as willow and herbaceous riparian species which would otherwise promote and maintain higher water quality.

Table 22. Major Streams in the Area and 303(d) Listing Criteria

STREAM	MOST LIMITING BENEFICIAL USE	303(D) LISTING CRITERIA	DOMINANT GEOMORPHIC CHARACTERISTICS
Deep Creek	Fish and Aquatic Life	Temperature	Meadow, response, Rosgen C
Camas Creek	Fish and Aquatic Life	Temperature	Meadow, response, Rosgen C
Parsnip Creek	Fish and Aquatic Life	Temperature	Meadow, response, Rosgen C

Lotic Proper Functioning Condition (PFC) assessments, stream survey data, rangeland health assessments, and stream photo monitoring (all on file at the Lakeview BLM office), and recent field reconnaissance generally indicates improving trends in riparian and aquatic habitat conditions throughout the area (refer to Riparian section which follows). These trends in

riparian and stream channel conditions are thought to be resulting in improved water quality in streams within the area, although water quality data is generally limited in these allotments.

Environmental Consequences:

Alternative 1: No action

The current grazing system is resulting in improving trends in both watershed conditions and water quality compared to historic conditions (prior to the time the RHAs were completed). This trend is expected to continue under Alternative 1, as the current grazing system would be continued. However, it is not certain whether State stream temperature standards can be achieved under this alternative or whether this standard could even have been achieved even under natural or reference conditions (prior to settlement).

Alternative 2: 50% Reduction in Grazing

A 50% reduction in AUMs would result in approximately 50% less cattle utilization of riparian vegetation and associated disturbance to stream channels. This reduction would also result in approximately 50% less cattle impact in portions of the affected watersheds. This would improve watershed conditions and water quality in the area at a more rapid rate than Alternative 1. However, it is not certain whether State stream temperature standards would be achieved under this alternative or whether this standard could even have been achieved even under natural or reference conditions (prior to settlement).

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Alternative 3 would have similar effects to watershed condition, riparian vegetation, and stream conditions as Alternative 1 (with the exception of Sagehen Allotment) as the total AUMs utilized would remain the same for all of the allotments.

Fencing off and excluding cattle from the BLM-administered reaches of Deep Creek in the existing Deep Creek Pasture of the Sagehen Allotment would benefit riparian vegetation and stream channel conditions by reducing grazing-related disturbances in this area. This, in turn would benefit watershed conditions and water quality, in the approximately one mile that would be excluded from grazing. Watershed conditions would trend upward in the excluded area at a faster rate than Alternative 1 (even without active restoration).

Conversely, the 3.5 miles of Deep Creek in the new Deep Creek FRF Allotment that are privately owned would no longer be managed in common with the BLM-administered reaches, and would, therefore, no longer have to meet BLM or USFWS grazing standards. The impacts of grazing on these 3.5 miles of Deep Creek would depend on the intensity of grazing that actually occurs. Intensive grazing could potentially degrade watershed, riparian, and stream channel conditions in these reaches, and, therefore, negatively affect water quality.

Alternative 4: No Grazing

Under Alternative 4, no grazing would occur on BLM-administered lands in any of the 4 allotments. This would result in reduced watershed, riparian, and stream channel disturbances. This would promote improved vegetation conditions and result in the most rapid improvement to riparian conditions, stream channels, and surrounding watershed conditions. For these reasons, this alternative has the potential to have the most benefit to water quality out of all the alternatives. However, it is uncertain whether State stream temperature standards can be achieved under this alternative or whether this standard could even have been achieved even under natural or reference conditions (prior to settlement).

Under Alternative 4, the potential exists for the private lands in the Sagehen and Hickey FRF Allotments to be fenced and grazed. The 3.5 miles of Deep Creek that are privately owned would no longer be managed in common with the BLM-administered reaches, and would therefore, no longer have to meet BLM or USFWS grazing standards. The severity of impacts to watershed, riparian, and stream channel conditions and water quality in these reaches 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 areas are intensively grazed, this could potentially degrade watershed, riparian, and stream channel conditions in these reaches, and, therefore, negatively affect water quality.

Riparian and Wetlands

Portions of the allotments include lakebeds that are inundated infrequently and for short durations and seasonal wetlands. Other wetlands in the area are associated with seeps, springs, and streams scattered over the arid landscape. The variety of wetland/riparian shrubs, grasses, and forbs present depends on a number of factors including: the degree and duration of soil moisture, elevation, soil type, and shade at each location.

Riparian ecological site types along streams are defined as a combination of vegetation, soil, and hydrology. Riparian zones buffer the fluvial system from potential impact and disturbances caused by land management activities and natural events. A well-vegetated zone of grasses, sedges, herbs, shrubs, and trees characterize riparian zones. The above ground biomass provides coarseness to the surface and dissipates the energy of flowing water, acting as a filter to catch and hold sediment before it reaches the stream. Below ground biomass (roots and woody structure) holds the soil mantle together and minimizes stream bank erosion.

Riparian vegetation on BLM-administered lands is represented by aspen/silver sagebrush–grass types in drier areas, sedges and rushes in the wetter areas, and elderberry, chokecherry, and red osier dogwood in riparian stringers. Willow communities and shrubs cover the largest portions of the area with herbaceous meadows covering the second largest amount of land. Deciduous trees, including cottonwood, aspen, and alder make up the remainder. Western

juniper is encroaching on some riparian areas replacing riparian vegetation that is better adapted to hold stream banks together and provide more shade.

Several actions have occurred in the past that have impacted the proper functioning of the streams and associated riparian zones in the area. Channel down-cutting has lowered the water table. Lowered water tables in riparian zones have changed the vegetative character and impaired floodplain functions. Willows and cottonwood have diminished over the years as water tables have been lowered. Past livestock management has resulted in the loss of bank-holding vegetation. Improper road construction has restricted flood plain function. Past channelization for irrigation has reduced natural sinuosity of some streams. These watershed level changes have increased the severity of peak flows and have shifted flooding to earlier seasons (FS and BLM 1998). While many of the causative factors have been modified or eliminated, the impacts are still apparent. The actions that impact the watershed and stream channels contribute to bank sloughing and erosion. Bank sloughing and erosion can lead to channel down-cutting and further lowering of the water table. Lowered water tables in riparian zones have changed the vegetative character and impaired floodplain function. Soil that is no longer held in place by the vegetative system is then subject to erosion. The eroded material contributes to the total sediment load in the stream.

Past fire suppression has affected the vegetative component of the riparian zones by allowing encroachment of western juniper, into aspen and cottonwood stands. To reflect the magnitude of the juniper encroachment issue in the Northern Great Basin, three-fourths of sampled aspen stands had a juniper component and twelve percent of aspen stands had been completely replaced with juniper (Wall *et al.* 2001, Miller *et al.* 2005).

There are 54 acres of lentic palustrine wetlands and several miles of lotic riparian areas found in the Hickey Individual Allotment. The RHA for the allotment found that the riparian/wetland Standard 2 was not being met because some stream reaches were not in Proper Functioning Condition (PFC) (BLM 1999a, Table 33). The lotic PFC inventories were completed in 1996 on Camas and Parsnip Creeks.

The Camas Creek reach has been in a riparian pasture since 1989. This reach received several years of rest prior to initiation of a grazing system designed to improve riparian conditions. This reach is 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 were largely a result of past grazing practices, the livestock management in place in 1999 was making significant progress towards meeting Standard 2 on Camas Creek. The Parsnip Creek reach receives no licensed livestock use. It is located in the Right-of-Way for Highway 140 and the conditions on this reach were the result of highway maintenance activities, not livestock management (BLM 1999a).

There are 7 acres of lentic palustrine wetlands and several miles of lotic riparian areas found in the Sagehen Allotment. The RHA for the allotment found that the riparian/wetland Standard 2 was not being met because some lotic stream reaches on Deep Creek were not in PFC (BLM

1999b, Table 34). Lotic PFC inventories were completed in 1996 on Deep Creek. In 1995, both reaches were placed in a riparian pasture to better manage the riparian vegetation. Both 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 were largely a result of past grazing practices and upstream channelization, the livestock management in place in 1999 was making significant progress towards meeting Standard 2. This allotment also included 3.5 miles of stream under private ownership that was voluntarily included in the riparian management plan.

There are 206 acres of palustrine wetlands and 60 acres of lacustrine wetlands in the Fisher Lake Allotment and 2 acres of palustrine wetlands in the Hickey FRF Allotment and they were all rated at PFC in 2002. The RHA did not find current livestock grazing to be a factor limiting Riparian/Wetland function (BLM 2002a, 2002b).

Despite these problems from past management, the Proper Functioning Condition (PFC) assessments, stream survey data, rangeland health assessments, and stream photo monitoring (all on file at the Lakeview BLM office), and more recent field reconnaissance indicate improving trends in riparian conditions throughout the allotments. Photos points established in the 1980s and 1990s that were retaken in 2009 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 (see Photos 1-4). Further, the current livestock management along the Camas - Sagehen reach (early use/rest) and Deep Creek (where Deep Creek Upper and Lower reaches have utilization limits) is resulting in significant progress towards meeting Standard 2. In the professional opinion of the BLM ID Team, the upper reach has improved to a functional condition.

Environmental Consequences:

Alternative 1: No Action

The current grazing system would continue under Alternative 1. This would result in continued trend of static (wetlands) or improving (riparian) vegetation and condition in all allotments. Significant progress would continue to be made in meeting Standard 2 over the 10-year life of the permit.

Alternative 2: 50% Reduction in Grazing

A 50% reduction in AUMs would result in approximately 50% less cattle utilization of wetland and riparian vegetation and condition in all allotments. Reducing the utilization of wetland and riparian vegetation would improve wetland and riparian conditions compared to Alternative 1. Significant progress would continue to be made in meeting Standard 2 over the 10-year life of the permit.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Alternative 3 would have similar effects to wetland and riparian vegetation and conditions as Alternative 1 (with the exception of Sagehen Allotment) as the AUMs would remain the same in these allotments.

Fencing off and excluding cattle from the BLM-administered reaches of Deep Creek would benefit riparian vegetation and conditions in the approximately one mile reach that would be excluded from grazing. Riparian conditions would trend upward at a faster rate compared to Alternative 1, even without active restoration.

Conversely, the 3.5 miles of Deep Creek in the new Deep Creek FRF Allotment that are privately owned would no longer be managed in common with the BLM-administered reaches, and would, therefore, no longer have to meet BLM or USFWS grazing standards. Unregulated grazing on these 3.5 miles of Deep Creek has the potential to degrade stream channel and associated riparian conditions.

Alternative 4: No Grazing

Under Alternative 4, no grazing would occur on BLM-administered lands in the 4 allotments. This would result in the greatest benefit or improvements to wetland and riparian vegetation and condition. Wetland and riparian vegetation and conditions would trend upward at the fastest rate possible, even without active restoration.

Under Alternative 4, the potential exists for the private lands in the Sagehen and Hickey FRF Allotments to be fenced and grazed. The 3.5 miles of Deep Creek that are privately owned would no longer be managed in common with the BLM-administered reaches, and would therefore, no longer have to meet BLM or USFWS grazing standards. The severity of impacts to riparian and stream channel conditions in these reaches would depend on how intensively the area is grazed, but would likely fall within the range of impacts described for Alternatives 1-3. Intensive grazing could negatively affect riparian conditions in these private reaches.

Upland Vegetation

Affected Environment: Hickey Individual Allotment (00202)

The Hickey Allotment is divided into two separate areas. The area south of highway 140 that occupies a ridge and plateau bordered on the west and southwest by Camas creek, on the north by Parsnip creek and on the east by Drake Creek. The ridge is dominated by low sagebrush *Artemisia arbuscula* (ARAR8) (65% of the area)), mountain big sagebrush *Artemisia tridentata vaseyana* (ARTRV) on the slopes, with inclusions of juniper dominated sites and riparian vegetation found along the creeks. The area of the allotment north of highway 140 known as Fish Creek Rim Pasture occupies 75% of the acres in the allotment and the dominant

vegetation is low sagebrush *Artemisia arbuscula* (ARAR8) with a grass understory of either Idaho fescue *Festuca idahoensis* (FEID) or Sandberg's bluegrass *Poa sandbergii* (POSA). The low sagebrush occupies about 93% of this pasture but there are pockets dominated by Juniper, (*Juniperus occidentale*) and/or curlleaf Mountain Mahogany *Cercocarpus montanus* (CEMO). About 30% of this low sagebrush community is considered rockland and accounts for most of the rockland found in allotment. The plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at <http://www.plants.usda.gov>).

Table 23 describes the composition of the plant communities within the allotment as summarized from the range site data in the South Lake Ecological Site Inventory (ESI) which is hereby incorporated by reference. Several indicators of plant community health are described. These include soil surface factors (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 9% (Table 14) of the allotment being stable and 67% 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 15. In 1987, the OAT recorded that 10% of the allotment was in upward condition and 1% was in downward trend. The 59 acres in downward trend was a silver sagebrush community in what is now the Camas Creek Pasture. The grazing system now rests this pasture area every other year and the trend plot photos in these areas show dramatic improvement in the condition and an upward trend over the last 10 years. Most of the allotment (85%) was in a static to upward trend.

The ESI compares the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. Using the 1987 ES data, the percent of the allotment in each seral stage or ecological condition is summarized in the Table 24.

About 7% of the allotment is in the early seral stage and included the Mountain big sagebrush type (ARTRV) with no grass understory and the Silver sagebrush/bluegrass (ARCA-POA) found along Camas Creek. The Camas Creek type has been documented to be in upward the last ten with a change in the grazing management. The area occupied by the Mountain big sagebrush has been stable as excluding Parsnip creek below this area has reduced the livestock utilization levels on this area. About 26 % of the allotment is in the mid-seral condition and 34% is in the late seral condition. Most of the late seral acreage is in the low sagebrush/Idaho fescue community found in Fish Creek Rim Pasture. About 18 % of the allotment is Rockland and 15% is unknown inclusions.

Table 23. Vegetation Types in Hickey Individual Allotment (00202)

Vegetation Type	Acres	Percent of Allotment
Tufted hairgrass-Carex	38	T
ARTRV Mountain big sagebrush	386	4%
Shrubs/Grasses		
ARCA-POA Silver Sagebrush/bluegrass	45	T
CEMO-ARTRV-POA Curleaf Mountain Mahogany/ Mountain Big Sagebrush/bluegrass	203	2%
Shrub/Grass TOTAL	248	2%
Low sagebrush/Grass		
ARAR-FEID Low sagebrush/fescue	4889	44%
ARAR-POSE Low sagebrush/Sandberg bluegrass	1932	18%
ARAR-SIHY Low sagebrush/ bottlebrush squirreltail	308	3%
Low sagebrush/Grass TOTAL	7129	65%
Mountain Sage/Grass		
ARTRV-AGCR Mountain big sagebrush/crested wheatgrass	80	1%
ARTRV-BRTE Mountain big sage/cheatgrass	148	1%
ARTRV-FEID Mountain big sage/Idaho fescue	31	T
ARTRV-SIHY Mountain big sagebrush/bottlebrush squirreltail	58	1%
Mountain Sagebrush/Grass TOTAL	317	3%
Western Juniper/Sagebrush/Grass		
JUOC-ARAR-SIHY Western Juniper/ low sagebrush/ bottlebrush squirreltail	125	1%
JUOC-ARTRV-AGSP Western Juniper/ Mountain big sagebrush/blue bunch wheatgrass	63	1%
JUOC-ARTRV-STTH Western Juniper/ Mountain big sagebrush/ Thurber's needlegrass	73	1%
Western Juniper/Sagebrush/Grass TOTAL	261	3%
TOTAL VEGETATION	8,379	76%
Playa		
Rockland/ Rubble	2001	18%
Inclusions*	616	6%
ALLOTMENT TOTAL	10,996	

**Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities.*

Table 24. Ecological Conditions in Hickey Individual Allotment (00202) from ESI 1987

	Ecological Condition Classes					
	Early	Mid	Late	Climax	Rockland or Playa	Unknown*
Acres	725	2,868	3,730	0	2001	1,672
Percent of Vegetation	7%	26%	34%	0	18%	15%

** 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 unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.*

There are 13 long-term trend photo plots (Table 25) with six starting in 1969 and the others established at various times since. Vegetation data was collected at three of these trend plots between 1985 and 2012. In addition at 4 of the photo trend plots in riparian areas, stubble height and browse data was collected various years between 2001 and 2011. In 2012 new vegetation transects were established at three of the long-term photo plots.

In the two riparian pastures, Camas Creek and Parsnip Seeding, the trend photos and the one vegetation plot illustrate an upward trend in these pastures over the past 40 years. Since 1996 when the current grazing management was started, there has been steady improvement in the condition of the riparian areas in these pastures. The vegetation cover along the creeks has increased, the channels have narrowed and the number and productivity of the willow communities has noticeably increased. The trend photos and plots for the Fish Creek Rim Pastures and the Joes Lake Pastures, have shown a static trend thru the years. The vegetation transect in the Fish Creek Rim Pasture did illustrate an increase in the vegetation cover but differences in the photos were less obvious. The improvement in the cover was not a significant change in species composition but an increase in production as the result of high precipitation. It appears the plant communities in these pastures are stable and able to produce a significant increase in the ground cover of perennial grasses when the precipitation levels are favorable.

The plant communities represented by HI-01 (Parship Seeding Pasture) and HI-03B (East Joes Lake Pasture) were rated by the ESI (BLM, 1989) in mid-seral condition. The trend plot information indicates no change from mid-seral range condition. The vegetation community which includes the trend plot (HI-02) in the Fish Creek Rim Pasture was rated in good condition by the ESI inventory and the trend plot information indicates it is still in good condition.

At trend plots PS-475 (Parship Seeding) and PS-485 (Fish Creek Rim) there appeared to be an increase in the size and density of the juniper trees.

Environmental Consequences: Hickey Individual (00202)

Effects Common to Alternatives 1-3

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*

Table 25. Ecological Trend per Pasture Based on Long-term Monitoring Photos and Plots

Pasture	Monitoring plot#	Photo Trend Years Taken	Transect Method Years	Trend
Parsnip Seeding	HI-01	Upward	Step toe 7 years 1985-2010	Upward Vegetation cover 41% to 56%
Fish Creek Rim	HI-02	Static 7 years 1985-2012	Step toe 6 years 1985-2010	Upward Vegetation cover 28%-52%
West Joes Lake	HI-03A	Static 11 years 1969-2012	N/A	N/A
East Joes Lake	HI-03B	Static 9 years 1969-2012	Step toe 7 years 1985-2012	Static Vegetation Cover 31%-70%
Camas Creek	HI-04 Riparian	Upward 5 years 2002-2012	N/A	N/A
Camas Creek	HI-05 Riparian	Upward 5 Years 2002-2012	N/A	N/A
Parsnip Seeding	PS-475	Upward 10 years 1970-2009	N/A	N/A
Camas Creek	PS-478	Upward 11 Years 1970-2012	N/A	N/A
Fish Creek	PS-484	Static 10 years 1970-2012	N/A	N/A
Fish Creek	PS-485	Static 6 years 1969-2012	N/A	Juniper increasing
Parsnip Creek	PS-550 Riparian	Upward 11 Years 1976-2012	N/A	N/A
Parsnip Creek	East Riparian	Upward 5 years 2004-2012	N/A	N/A
Parsnip Creek	West Riparian	Upward 4 years 2004-2012	N/A	N/A

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.

Effects of Alternatives 1 and 3:

Vegetation would continue to be negatively impacted in livestock concentration areas near water sources and cattle trails under Alternative 1. The use pattern maps, the small size of four pastures and the low livestock density (36 acres/AUM) in the fifth large pasture (Fish Creek Rim) indicate that cattle tend to concentrate within a tenth of a mile around existing water sources (a tenth of a mile buffer around a water source represents approximately 25 acres). There are 26 constructed waterholes with 22 being in the Fish Creek Rim Pasture, mostly in south west and south portion of the pasture. There is one spring and water trough in Fish Creek Rim pasture and about 2 miles of live stream along Camas Parsnip Creeks combined (Map 5A). Approximately 675 acres (27 x 25 acres) around water sources would be impacted by concentrated grazing use under Alternatives 1. The concentrated use on the Camas and Parsnip Creeks is different because of the limited grazing in these riparian areas. The area assumed to be impacted would be a 100 foot buffer along 2 miles and impact about 24 acres. However the grazing management in these pastures and in the riparian zones mitigates much of the disturbance by only allowing grazing about 1 month out of every 24 months. The trend photos (1-2) and the vegetation transects along the creeks show steady improvement in stream condition, vegetation cover and willow recruitment during the last 10 years. The bare banks have re-vegetated and the channel has narrowed while the floodplains have widened and are functioning properly. Therefore the impacts of livestock grazing and trampling on the vegetation along these creeks appear to be largely mitigated.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. There are about 15 miles of fence located within the allotment representing another 9 acres (15 mi. x 5 ft. x 5,280 ft. per mi. / 43,560 ft.² per acre) 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 assumed to be impacted by livestock concentration is 708 acres and this equals about 6% of the allotment. This alternative would maintain slight to moderate forage utilization across 94% of the allotment resulting in the maintenance of existing plant community and species composition. The utilization levels on the riparian pastures (Camas and Parsnip Seeding) have been mitigated the last ten years because the summer long rest after spring grazing has resulted in complete regrowth and five of the ten years the pastures were completely rested. The average utilization in the upland pastures in years they were grazed was East Joes Lake 33%, West Joes Lake 52%, and Fish Creek Rim 35%. The upland pastures also were completely rested different years during the last 10 years. Fish Creek Rim was rested 5 separate years. West Joes Lake received 4 years of rest and East Joes Lake received 2 years of rest.

Table 8 lists the timing of grazing in relation to growing seasons of key grass and forb species (April-July). 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 and may be grazed during the late summer would also be completely rested one of three 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.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 292 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 354 acres or 3% of the allotment. This compares with 708 acres or 5% 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 reduced utilization will vary between pastures depending on vegetation type and topography, but the utilization levels would be approximately one half those of alternative 1. Using the previous average utilization levels by pasture, the future estimated average utilization levels in the Fish Creek and East Joes Pasture would be less than 20% and in West Joes Lake Pasture approximately 25%. Most if this decrease would be seen in and around the heavy use areas. 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. The use levels in Camas Creek and Parsnip Seeding Pastures would also be lower than in under Alternative 1, but the impact would be negligible since these pastures have significant regrowth following grazing.

Under the current grazing system (Rest Rotation) the differences in the impacts between Alternatives 1 and 2 would not apply to each pasture every third year (rest year).

Effects of Alternative 4: No Grazing

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 the No Grazing 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). One

review of literature confirming this statement is *Grazing Impacts on Rangeland Vegetation: What We Learned* (Holecheck *et al.* 2006).

Over the long-term (5-10 years) the grass plants in the 6% of the allotment (708 acres) that receive significant use during grazing would instead reach their full growth potential every year. Some of this disturbance may persist due to continued use by wildlife such as antelope and deer. The majority of the allotment (95%) receives moderate to no use so any changes in vegetation would be slow and insignificant. In long-term studies of exclosures, it was determined there was no significant difference between moderately grazed sagebrush communities and the 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 34% of the allotment that is in the late seral state (South Lake ESI, BLM 1988) which varies only slightly from the potential natural community for these vegetation types. The early seral stage (7% of the allotment) is found in the Camas Riparian Pasture and the condition of this pasture has improved dramatically since the ESI inventory was done. About 33% of the allotment is either rockland or identified as unknown inclusions. Therefore only in the 26% 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 than 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.

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.

Affected Environment: Sagehen Allotment (00208)

The Sagehen Allotment is divided into two pastures. The southern portion of the allotment along Deep Creek is the riparian pasture and the northern part dominated by Sagehen Butte is the Butte Pasture. The ridges are dominated by low sagebrush/grass *Artemisia arbuscula* (ARAR8) (37% of the allotment), mountain big sagebrush/grass *Artemisia tridentata vaseyana* (ARTRV), on the slopes with inclusions of juniper dominated sites and riparian vegetation found along the creeks. There are pockets dominated by White Fir *Abies concolor* (ABCO) and curlleaf Mountain Mahogany *Cercocarpus montanus* (CEMO). Plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at <http://www.plants.usda.gov>).

Table 26 describes the composition of existing plant communities within the allotment as summarized from the range site data in the South Lake Ecological Site Inventory (ESI) which is hereby incorporated by reference. Several indicators of plant community health are described. These include current dominant vegetation, observed apparent trend (OAT), condition rating, and seral stage.

Table 26. Existing Vegetation Types in Sagehen Allotment (00208)

Vegetation Type	Acres	Percent of Allotment
Shrubs/Grasses		
CEMO-ARTRV-BRTE Curleaf Mountain Mahogany/ Mountain Big Sagebush/cheatgrass	116	2%
ARCA-POA++ Silver Sagebrush/blugrass	149	3%
Shrub/Grass TOTAL	265	5%
Low sagebrush/Grass		
ARAR-FEID Low sagebrush/fescue	689	12%
ARAR-POSE Low sagebrush/Sandberg bluegrass	1,497	25%
Low sagebrush/Grass TOTAL	2,186	37%
Mountain Big Sage/Grass		
ARTRV-AGSP Mountain big sagebrush/blue bunch wheatgrass	699	12%
ARTRV-FEID Mountain big sagebrush/Idaho fescue	577	10%
ARTRV-POSE Mountain big sagebrush/ Sandberg bluegrass	648	11%
Mountain Sagebrush/Grass TOTAL	1,924	33%
TREE		
ABCO White Fir	255	4%
JUOC- ARTRT-FEID Western Juniper/Mountain big sagebrush/Idaho fescue	104	2%
TREE TOTAL	359	6%
TOTAL VEGETATION	4734	81%
Rockland/ Rubble	213	4%
Inclusions*	706	12%
Unknown	217	4%
ALLOTMENT TOTAL	5870	

**Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities.*

Soil Surface Factor (SSF) is an indicator of accelerated erosion and is a method of documenting observations regarding erosion. With 82% (Table 16) 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.

The Observed Apparent Trend (OAT) for the vegetation communities on public land was determined during the ESI (1987) and is seen in Table 17. In 1987, the OAT recorded that 21% of the allotment was in upward condition, 61% was static and zero was in downward trend.

The ESI compares the current plant composition to a defined Potential Natural Plant Community for the identified soil type and precipitation zone. Using the 1987 ESI, the percent of the allotment in each seral stage is summarized in the Table 27.

About 54 % of the allotment is in the mid-seral condition and 28% is in the late seral condition. Most of the late seral acreage is in the low sagebrush/Idaho fescue and Mountain big sagebrush/Idaho fescue communities. About 4% of the allotment is Rockland and 14% is unknown inclusions.

Table 27. Ecological Condition in Sagehen Allotment (00208) from ESI 1987

	Ecological Condition Classes					
	Early	Mid	Late	Climax	Rockland or Playa	Unknown*
Acres	0	3,180	1,649	0	219	822
Percent of Vegetation	0%	54%	28%	0	4%	14%

** 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 unknown also includes acres of types for which the SWA transect was run in a different allotment and the data from that transect may not apply to this allotment.*

There is one long-term upland trend plot on the allotment in the Butte Pasture and two key areas in the Deep Creek Pasture along the creek. The two key areas are located at the east and west end of the pasture along the creek bank and have photos to determine condition changes and vegetation transects designed to determine grazing season use levels. The long-term trend plot in the Butte Pasture documents that the vegetation community is stable. The average of 37% perennial vegetation ground cover is consistent and the plant composition is similar over the last 10 years. The long-term photos on Deep Creek (3-4) illustrate improving riparian conditions over the years.

Environmental Consequences: Sagehen Allotment (00208)

Effects Common to Alternatives 1-2

The impacts of continuing grazing under a deferred 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 be maintained over time under this type of grazing system (BLM 2003a; pages 4-5 and 4-9). In addition, a deferred system would maintain or 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.

Alternative 1: No Action

The impacts of livestock grazing on vegetation 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 vegetation due to overutilization near waterholes (page 4-2). However the deferred grazing system (Table 7) does allow plants to fully grow during the spring and summer, thus mitigating the impacts of grazing and trampling to some degree.

Vegetation would continue to be negatively impacted in livestock concentration areas near water sources and cattle trails under Alternative 1. Allotment monitoring and the configuration of the pastures indicate that cattle tend to concentrate within a quarter of a mile around existing water sources (springs and Waterholes) and within 100 yards along Deep Creek on both sides. There is one constructed waterhole and 2 developed springs on the allotment, all in the Butte Pasture (Map 5A). The impacted areas around the waterhole and springs are a 1/4 mile buffer representing approximately 126 acres/water source. Approximately 378 acres (3 x 126 acres) around water sources would be impacted by concentrated grazing use under Alternative 1. The concentrated use on Deep Creek is estimated to a 300 foot wide zone along 5 miles of the creek and would impact about 181 acres.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. There are about 12 miles of fence located within the allotment representing another 7 acres (12 mi. x 5 ft. x 5,280 ft. per mi./ 43,560 ft.² per acre) 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.

If the allotment was used at full permitted numbers and dates the total area assumed to be impacted by livestock concentration around water sources (378 acres), along Deep Creek (181 acres) and along fences (7 acres) is 566 acres and equals about 10% of the allotment. This alternative would maintain slight to moderate forage utilization across 90% of the allotment resulting in the maintenance of existing plant community and species composition.

However, the grazing management in these pastures and in the riparian zone in particular, mitigates much of the anticipated disturbance (566 acres). The deferred grazing system allows vegetation to maximize growth before being grazed late in the summer. In addition livestock use in the Deep 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 long the cows can graze the Deep Creek Pasture. The actual use is limited by these vegetation standards at two locations on public land along Deep Creek.

Table 28 is a summary of the data collected at two locations along the creek bank for stubble height and the percent of willow leaders browsed. The livestock were moved from the Deep Creek Pasture when stubble height neared 5 inches and the target for percent willow leaders browsed was 25%. The stubble height stayed above 5 inches in every year but 2007 when it was 4.7 inches. The percent of willows stem browsed slightly exceeded the 25% level in three years, but the average over the ten years was only 15%. In the last eleven years the allotment has been completely rested 4 years and the Deep Creek Pasture has been rested 6 years. In the seven years the allotment was grazed the actual use averaged 124 AUMs out of the 266 AUMs authorized. In the five years Deep Creek Pasture was grazed the average AUMs used in Deep Creek Pasture was 74.

Table 28. Average Stubble Height and Percent Willows Browsed at Two Locations on Deep Creek

Year**	AUMs Used	Average Stubble Height	Percent Willow Leaders Browsed
2002	0	10.1inches	0%
2003	80	5.4 inches	30%
2004	0	13.3 inches	2%
2006	116	6.3 inches	29%
2007	28	4.7 inches	28%
2008	0	10.2 inches	3%
2010	59	5.7 inches	6%
2011	0	6.0 inches	3%
2012	87	13.4 inches	35%*
Average			15%

*At one of the locations there was a beaver dam and beavers contributed to the 65% use on Willows at this location.

**In 2005 and 2009 the Sagehen Allotment was rested completely. Therefore, no data was collected.

The trend photos (3-4) along Deep Creek reflect the steady improvement in stream condition, vegetation cover and willow recruitment during the last 10 years. The bare banks have re-vegetated and the channel has narrowed while the floodplains have widened and are functioning properly. Therefore the impact of livestock grazing and trampling on the vegetation along Deep Creek appears to be largely mitigated.

The trend photo and transect in the uplands of the Butte Pasture have also shown an increase in vegetation cover and range condition since 1989. The ground cover of perennial vegetation as measured at the monitoring transect has been stable, at about 37% over the last 12 years.

In the Sagehen Allotment the deferred grazing management as adjusted by the monitoring associated with the Biological Opinion, would continue to control grazing utilization levels and provide rest from grazing. This deferred 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.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 133 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 283 acres or 5% of the allotment. This compares with 566 acres or 10% 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. In the Deep Creek Pasture which is regulated by utilization levels, the lower cow numbers would extend the actual grazing period until the limits were reached. Therefore, in the Deep Creek Pasture the impacts of Alternative 2 would be similar to those in Alternative 1.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The impacts to vegetation would be similar to Alternative 1 for the Butte Pasture as the grazing use would be about the same. The acreage impacted in the Butte Pasture would be around the waterhole and springs (378 acres) and 5 acres along the fences in the Butte Pasture (9 mi. x 5 ft. x 5,280 ft. per mi./ 43,560 ft.² per acre). The total acres impacted would be 383 acres or about 10% of the Butte Pasture.

An FRF Pasture could be created by fencing the off the east end of the Deep Creek Pasture, which would exclude the remaining public land along the creek. This reduces the acreage of public land within the pasture to about 550 acres or about 28% of the total acreage in the pasture and about 20% of the AUMs. Most of the public land in the pasture under this alternative is on the slope and away from the creek and meadow areas. Impacts to vegetation from heavy grazing use would only occur on about 20 acres of public land that is inside the 300 foot impact zone along the creek identified in Alternative 1. The public land acres impacted (20 acres) would be 4% of the public land in the pasture and 1% of the total pasture.

Effects of Alternative 4: No Grazing

Under the No Grazing Alternative, the public land in the allotment would likely be fenced and excluded from grazing. Plant communities 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 (95%) 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).

However, much of the allotment is private land and could still be grazed. 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 Alternative 3. Intensive grazing could cause negative effects to vegetation on private lands.

Affected Environment: Fisher Lake Allotment (00222)

The Fisher Lake Allotment is divided into four pastures (Map 5B). Two of the pastures (North and South) are crested wheatgrass seedings planted in 1988. The largest pasture is the Lake pasture which is primarily sodic meadows and wetlands bordering Fisher Lake and Crump lake. The Neck Pasture is the smallest pasture and occupies a narrow strip of land between the irrigated meadows in Warner Valley to the west and a ridge in the east.

Table 29 describes the composition of the plant communities within the allotment as

Table 29. Existing Vegetation Types in Fisher Lake Allotment (00222) from ESI 1987

Vegetation Type	Acres	Percent of Allotment
Grasses		
AGCR <i>Agropyron cristatum</i> Late Seral	1,292	28%
AGCR <i>Agropyron cristatum</i> Mid Seral	249	6%
BRTE <i>Bromus tectorum</i>	410	9%
Grass TOTAL	1,951	43%
Big Sage/Grass		
ARTR-BRTE big sagebrush/cheatgrass	109	2%
ARTR-POSE big sagebrush/ Sandberg bluegrass	153	3%
Big Sagebrush/Grass TOTAL	262	5%
Shrub /Grass		
SAVE-BRTE greasewood/cheatgrass	230	5%
TOTAL VEGETATION	2,443	54%
Inclusions*	459	10%
Unsurveyed**	1,667	36%
ALLOTMENT TOTAL	4,569	

*Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities.

** The unsurveyed areas include lake playas on the western side of the Lake pasture. The soil types for these areas indicate these are sodic meadows and sodic flats mostly dominated by greasewood (SAVE) and inland salt grass (DIST) with some basin wildrye.

summarized from the range site data in the South Lake Ecological Site Inventory (ESI) which is hereby incorporated by reference. Plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at <http://www.plants.usda.gov>). The crested wheatgrass seeding dominates the two seeding pastures, North and South and comprise 34% of the allotment. The large amount of unsurveyed acreage (37%) occurs in the western portion of the Lake Pasture and is often flooded by overflow water from Crump Lake and Fisher Lake. The range sites in this area are described as wet meadows, sodic meadows, sodic flats and wetlands. The vegetation varies from greasewood with inland salt grass to flat areas dominated by sedges and rushes.

The South Lake ESI inventory s described several indicators of plant community health. These include observed apparent trend (OAT) in Table 19, Soil Surface Factor (SSF) in Table 18, and seral stage in Table 29.

Soil Surface Factor (SSF) is an indicator of accelerated erosion and is a method of documenting observations regarding erosion. With 60% (Table 18) 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.

The Observed Apparent Trend (OAT) for the vegetation communities on public land was determined during the ESI (1987) and is seen in the Table 18. In 1987, the OAT recorded that 35% of the allotment was in upward condition and 18% was in downward trend. The 843 acres in downward trend were on the edges of the crested wheatgrass seeding or in areas where seeding had not occurred and cheatgrass was still dominant. The winter grazing system now rests the pastures during the growing season and the trend plot photos in these areas show improvement in the condition and an upward trend over the last 10 years. The remaining vegetation types were determined to have a static trend.

About 14% of the allotment is in the early seral stage and included the cheatgrass, big sagebrush/cheatgrass and greasewood/cheatgrass communities (Table 30). These are areas

Table 30. Ecological Conditions of Fisher Lake Allotment (00222) from ESI 1987

	Ecological Condition Classes					
	Early	Mid	Late	Climax	Inclusions*	Unsurveyed**
Acres	640	511	1,292	0	459	1,667
Percent of Vegetation	14%	11%	28%	0	10%	36%

* Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities.

** The unsurveyed areas include lake playas on the western side of the Lake Pasture. The soil types for these areas indicate these are sodic meadows and sodic flats mostly dominated by greasewood (SAVE) and inland salt grass (DIST) with some basin wildrye.

that were not seeded following the fire in 1985. The areas that were seeded to crested wheatgrass comprise the 28% of the allotment that is in the late seral stage. The mid seral stage (11%) includes some crested wheatgrass area and the big sagebrush/Sandberg bluegrass type. A large portion (36% of the allotment) of the Lake pasture was unsurveyed and 10% of the allotment is unknown inclusions.

There are 4 long-term trend photo plots starting in the early seventies that have been taken 4-5 times through the years and as recently as 2012. Two of the photo points are in the seedings and two are in the meadow areas. The two in the seedings show improvement since the 1970s and the 2 in the meadow areas show a stable meadow community.

Environmental Consequences: Fisher Lake Allotment (00222)

Effects Common to Alternatives 1-3

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). In addition, a winter system would maintain or improve the composition of the key perennial herbaceous species within both the modified grassland (crested wheatgrass) communities and the wetlands found in this allotment (BLM 2001; page A-167-168). The perennial grasses found in this allotment, crested wheatgrass, inland saltgrass and basin wildrye are dormant during the 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.

Effects of Alternative 1: No Action

The vegetation would continue to have some negative impacts 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 small pastures indicate that cattle tend to concentrate within a tenth of a mile around existing water sources (troughs, springs and lakes). There is a well and about 3 miles of pipeline with 4 troughs in the allotment, one constructed waterhole, 1 developed spring and several lakebeds associated with over flow from Fisher Lake that may contain water depending on precipitation (Map 5B). The impacted areas around the troughs, waterhole and spring would be 1/10 mile buffer representing approximately 25 acres/water source. Approximately 150 acres (6 x 25 acres) around water sources would be impacted by concentrated grazing use under Alternatives 1. The concentrated use around Fisher Lake and lakebeds to the south of Fisher Lake are difficult to quantify and would be depend precipitation in the preceding months. The heavy use area around Fisher Lake in the last 10 years averaged about 80 acres and ranged from 400 acres to 0 acres when the area was under water. Adding

the average area (80 acres) impacted around Fisher Lake with the area impacted around water sources, the total area impacted around water sources for the allotment would be 230 acres or 5% of the allotment. However the grazing management in these pastures and winter use mitigates much of the disturbance as grazing is done when the vegetation is dormant.

Cattle trails tend to be located along fence lines and near water sources. These trails are typically less than 5 feet wide. There are about 18.25 miles of fence located within the allotment representing another 11 acres (18.25 mi. x 5 ft. x 5,280 ft. per mi. / 43,560 ft.² per acre) 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 assumed to be impacted by livestock concentration around water sources (230 acres), and along fences (11 acres) is 241 acres and this equals about 5% of the allotment. The average utilization measured across the entire allotment over the last ten years was 44%. This alternative would maintain slight to moderate forage utilization across 95% of the allotment resulting in the maintenance of existing plant community and species composition. The average utilization measured across the entire allotment over the last ten years was 44%.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3. The winter grazing management does include a rotation grazing system as shown in Table 5 is adjusted through the flexibility provided in the annual application process, to control livestock distribution, grazing utilization levels and provide rest from grazing. This winter grazing combined with the rotation system 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. There are 4 photo trend plots in the allotment that indicate that the vegetation communities are stable and there is a static or upward trend in this allotment. The observed apparent trend (OAT) data (Table 18) was collected during the ESI inventory in 1988 to measure indicators of the trend in the vegetation communities. These indicators include vigor and seedling production along with surface litter, pedestals, and gullies. OAT data collected indicates an upward trend in 35% of the allotment, 6% of the Fisher Lake Allotment was stable, 18% was in a downward trend and 3% are lakes. There is 37% of the allotment rated as unknown. Therefore in most of the allotment there is good plant vigor, good seedlings establishment, the majority of litter is collecting in place, there is little evidence of pedestaling, and gullies are absent from the slopes. There are two long-term trend photos in the areas rated to be in downward trend in 1988 by the ESI inventory. These photos were taken during 5 different years since 1988 and show a static trend, with stable vegetation cover and no change in plant composition at these sites. The vegetation communities across the allotment

appear stable or improving under current grazing management and this trend would continue into the foreseeable future.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2, the reduced grazing level by 50% to 391 AUMs would result in some change in the impacts to vegetation by reducing the stock density around the water sources. The reduction in acres impacted may be near 50% 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 122 acres or 3% of the allotment. This compares with 241 acres or 5% 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 Lake and South Pasture at 43% and North Pasture at 46%. 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.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The impacts to vegetation would be similar to Alternative 1 for the Fisher Lake Allotment as the number of AUMs would be the same. The number of cows would be reduced, but allowed to stay 21 days longer. Therefore the acreage impacted in the Fisher Lake Allotment would be around the troughs, waterhole, spring and Fisher Lake (230 acres) and 11 acres along the fences in the Fisher Lake Allotment (18.25 mi. x 5 ft. x 5,280 ft. per mi/ 43,560 ft.² per acre). The total acres of vegetation impacted would be 241 acres or about 5% of the Fisher Lake Allotment.

The average utilization across the allotment would not change much from Alternative 1 as the same number of AUMs would be utilized. Grazing 3 weeks longer in March does extend the grazing period into the early spring period, but should not significantly impact the grass species in the Fisher Lake allotment. The crested wheatgrass in the Seeding Pastures is well adapted to grazing in the early spring if allowed to regrow in April and May, when most of their growth occurs. The primarily forage species in the Lake Pasture are saltgrass, carex and juncus all of which are still dormant in the early spring. Therefore the impact of extending the grazing season into the early spring (March) on the vegetation in this allotment should be no different from the winter grazing in Alternative 1.

Effects of Alternative 4: No Grazing

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 the No Grazing

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). One review of literature confirming this statement is *Grazing Impacts on Rangeland Vegetation: What We Learned* (Holecheck *et al.* 2006).

Under the No Grazing Alternative, little change to vegetation would occur on the allotment as a whole in the short-term (up to 5 years). Most of the concentrated livestock use areas on (241 acres) associated with water sources and the cattle trails would reclaim naturally with vegetation over the long-term (5-10 years). Some of this disturbance may persist due to continued use by wildlife such as antelope and deer.

The majority of the allotment (95%) receives moderate to no use so any changes in vegetation would be slow and insignificant. Little or no change in vegetation would be expected in the 34% of the allotment that is crested wheatgrass seedings. In the areas dominated by cheatgrass (9% of the allotment) or with cheatgrass dominating the understory of big sagebrush or greasewood (7% of allotment) no change would be expected. Therefore only in the 36% of the allotment that is currently unsurveyed would 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.

Affected Environment: Hickey FRF Allotment (00223)

The Hickey FRF Allotment is a single pasture allotment located on the ridge and south facing slopes between Crane Creek Meadow and Camas Creek (Map 5A). Table 31 describes the composition of the plant communities within the allotment as summarized from the range site data in the South Lake Ecological Site Inventory (ESI) which is hereby incorporated by reference. Plant codes represent genus-species abbreviations adopted by USDA-NRCS; see also Plants Database available at <http://www.plants.usda.gov>). The eastern portion of the allotment (62% of allotment) from the lower slopes to the ridge top is dominated by low sagebrush and Sandberg's bluegrass. The western portion of the allotment (38% of the allotment) is comprised of western juniper/mountain big sagebrush/cheatgrass (19% of the allotment) and mountain big sagebrush/Idaho fescue (5% of allotment).

Several indicators of plant community health are described. These include current dominant vegetation, observed apparent trend (OAT), Soil Surface Factor (SSF), condition rating, and seral stage.

The Soil Surface Factor (SSF) for the vegetation communities on the allotment was determined during the ESI (1987) and is seen in the Table 20. The SSF rating for the entire allotment was 38% in slight and 68% in the moderate category. However on the public land (41% of the allotment) the rating was slight on 33% of the allotment and only 16% was moderate. Therefore on the public land in the allotment there appears to be sufficient vegetation and litter cover to limit soil erosion and protect against the formation of rills and gullies.

Table 31. Existing Vegetation Types in Hickey FRF Allotment (00223)

Vegetation Type	Land Status	Acres	Percent of Allotment
Low sagebrush/Grass			
ARAR-POSE Low sagebrush/Sandberg bluegrass -	BLM	178	21%
ARAR-POSE Low sagebrush/Sandberg bluegrass	Private	348	41%
Low sagebrush/Grass TOTAL		526	62%
Mountain Big Sage/Grass			
ARTRV-FEID Mountain big sagebrush/Idaho fescue	BLM	39	5%
Tree/ Mountain Big Sage/Grass			
JUOC- ARTRT-BRTE Western Juniper/ Mountain big sagebrush/cheatgrass	BLM	133	16%
JUOC- ARTRT-BRTE Western Juniper/Mountain big sagebrush/cheatgrass	Private	26	3%
Tree/ Mountain Big Sage/Grass TOTAL		159	19%
TOTAL VEGETATION		724	85%
Inclusions*		127	15%
ALLOTMENT TOTAL		851	100%

**Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities.*

The Observed Apparent Trend (OAT) for the vegetation communities on the allotment was determined during the ESI (1987) and is seen in the Table 21. In 1987, the OAT recorded that 100% of the allotment was in a static condition. The three transects, one in each plant community, found plant vigor was moderate and some seedlings of desirable plants were present.

The ecological condition class in Table 32 rates the plant communities present in the allotment as they relate to the potential natural community for range sites within the allotment. Data presented in the table is summarized from the South Lake Ecological Site Inventory (ESI) which is hereby incorporated by reference. All three vegetation types mapped in the allotment were rated in the mid-seral ecological condition.

Table 32. Ecological Condition of Hickey FRF Allotment (00223) from ESI 1987

	Ecological Condition Classes					Inclusions*
	Early	Mid	Late	Climax		
Acres	0	724	0	0	127	
Percent of Vegetation	0%	85%	0%	0	15%	

** Every Site Writeup Area (SWA) has a 10-15% portion of that area that is considered inclusions of different vegetation communities.*

Environmental Consequences: Hickey FRF Allotment (00223)

Effects of Alternative 1: No Action

The impacts of livestock grazing on vegetation 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 vegetation due to grazing and trampling at waterholes and along trails. However this FRF pasture has no water sources on public land and the only expected livestock concentration areas on public land is a mile of fence where livestock might trail.

Cattle trails tend to be located along fence lines and these trails are typically less than 5 feet wide. The 1.0 mile of fence located on public land within the allotment represents 0.6 acres (1.0 mi. x 5 ft. x 5,280 ft. per mi./ 43,560 ft.² per acre) 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 0.6 acres is the only area on public land in the pasture where livestock might concentrate and this represents only 0.15% of the public land in the allotment.

The pasture is used in conjunction with private meadows to the south and west. Therefore this pasture receives limited use and the private land in this pasture is more accessible, therefore receiving the majority of that use. There is no utilization data for this pasture, but the BLM assumes the location and topography limits the utilization of the public land to light or slight. Therefore this alternative would continue to provide for the maintenance of existing plant communities and species composition.

The pasture is used in conjunction with private meadows to the south and west. Therefore this pasture receives limited use, and the private land in this pasture is more accessible, therefore receiving the majority of that use. There is no utilization data for this pasture, but the BLM assumes the location and topography limits the utilization of the public land to light or slight. Therefore this alternative would continue to provide for the maintenance of existing plant communities and species composition.

Under the current grazing management, the allotment is meeting Rangeland Health Standard 3. Grazing at slight to light intensities on the public land would result in a diversity of residual grass cover heights across the allotment.

Effects of Alternative 2: 50% Reduction in Grazing

Under Alternative 2 reducing the grazing level by 50% to 32 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.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The effects of Alternative 3 within this allotment would be similar to Alternative 1.

Effects of Alternative 4: No Grazing

Under Alternative 4, the potential exists for the private lands in the Hickey FRF Allotment to be fenced and grazed. Little change to vegetation would occur on the public land within the allotment due to removal or exclusion of grazing. However, concentrated livestock use would likely continue to be associated with water sources and cattle trails on private lands. The severity of the vegetation impacts 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. Intensive grazing could cause negative effects to vegetation on private lands.

Noxious Weeds

Affected Environment:

Hoary cress (*Lepidium draba*), Canada thistle (*Cirsium arvense*) and Mediterranean sage (*Salvia aethiopsis*) has been inventoried and mapped in the area along Camas, Parsnip, and Deep Creeks on both private and public lands. These noxious weed sites are associated primarily with existing roads and drainages, demonstrating that vehicle and water transport are currently more significant methods of weed spread than are current livestock grazing management practices.

Biological control agents for Canada thistle were released in the general area of Camas and Parsnip Creeks in 2010 and 2011. Stem mining weevils (*Ceutorhynchus litura*) and Gall flies (*Urophora cardui*) were the agents released. It will be several years before a stable or decreasing population of Canada thistle will likely be observed in this area.

These scattered weed locations are monitored and treated as necessary, in accordance with an on-going, integrated weed management program (BLM 2004a). This monitoring and treatment would continue into the future regardless of the alternative selected for future implementation.

Annual grasses have become an area of concern for the Lakeview Resource Area, especially medusahead and ventenata. The Lakeview Resource Area is currently drafting a site-specific analysis for the use of herbicides that are effective on these annual grasses. Populations of these annual grasses could be targeted for treatment after site-specific analysis is completed in the future. Cheatgrass (*Bromus tectorum*) is also present in limited amounts. There have been no other annual grasses mapped in the allotments.

Environmental Consequences:

Effects of Common to Alternatives 1-4

Existing weed management activities would not change under these alternatives. The impacts of this on-going weed treatment program are described in detail in an existing integrated weed treatment plan (BLM 2004a) and will not be repeated here. However, these impacts are also addressed in the cumulative effects section of this EA.

Effects of Alternative 1: No Action

The small infestation of Hoary cress and Canada thistle is the population of most concern in the Camas and Parsnip Creek area. Hoary cress has generally occurred on roadsides and near waterholes; it has not expanded into the upland areas at this time. Canada thistle prefers riparian sites or wetter sites associated with waterholes or other disturbance. The level of risk of weed species expanding or new species invading into these allotments is low and would not change in the foreseeable future.

Alternative 2: 50% Reduction in Grazing

Reduced grazing would slightly decrease the risk of weed site expansion or new weed invasions due to the decreased ground disturbance and reduction in weed spread vectors in all allotments. Existing populations would likely be stable or decrease slightly due to increased vigor of the native plant communities.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Implementation of this alternative would be similar to Alternative 1 in the Hickey Individual, Fisher Lake, and Hickey FRF Allotments would continue to allow livestock grazing use at a similar level of AUMs.

Within the Sagehen Allotment, the risk of weed invasion or expansion in the excluded BLM-administered lands would be reduced. However, there would be an increased risk of spreading invasive species within the new Deep Creek FRF allotment. The new fence would create disturbance that may slightly increase the risk of new species becoming established or existing weed populations to expand within the newly disturbed area. In addition, the unregulated grazing within this new allotment could also increase the risk of weed invasion or expansion.

Alternative 4: No Grazing

Implementation of this alternative would eliminate grazing and would slightly decrease the risk of new weed invasions due to decreased disturbance and decreased vectors for spread in the

area. Existing populations would likely be stable or decrease slightly due to increased vigor of the native plant communities.

Under Alternative 4, the potential exists for the private lands in the Sagehen and Hickey FRF Allotments to be fenced and grazed. The risk of noxious weed invasion or expansion on these private lands would depend upon how intensively the area is grazed, but would likely fall within the range of those described for Alternatives 1-3.

Livestock Grazing Management

Affected Environment: Hickey Individual Allotment (00202)

This is a ten year term grazing permit authorizing 519 AUMs of cattle use in Hickey Individual Allotment (00202). The season of use is from April 16th thru September 20th. Grazing is managed under the grazing permit as a rest rotation grazing system utilizing five pastures (Tables 2 and 3).

There are two riparian pastures used only in the spring and one higher elevation pasture (Fish Creek Rim) which is typically used in the summer and fall. The other two pastures can be used spring or summer depending on water availability. Those two pastures are contiguous to the riparian pastures, while the Fish Creek Rim Pasture is separated from the other pastures (Map 5A). The current permitted use is 519 AUMs and the stocking density varies from 4-5 acres/AUM in the riparian pastures to 26-30 acres per AUM in the Fish Creek Rim Pasture.

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) within 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. Current grazing management practices or levels of grazing use in the Hickey Individual Allotment are either meeting or are making significant progress towards meeting the Oregon/Washington *Standards for Rangeland Health* (BLM 1997). The findings of the RHA for this allotment are summarized in Table 33 and are incorporated in their entirety herein by reference (BLM 1999a).

Table 33. Summary of Rangeland Health Assessment for Hickey Individual Allotment (BLM 1999a)

Standard	Determination	Causal Factors	Comments
1. Watershed Function – Uplands	Met	NA	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 is appropriate.
2. Watershed Function - Riparian/ Wetland Areas	Initially Not Met	Not current grazing	<p>Two reaches of stream, one reach on Camas Creek and one on Parsnip Creek were found to be Functional at Risk (FAR), but with an upward trend. The Camas Creek reach had been in a riparian pasture since 1989. This reach received several years of rest prior to initiation of a grazing system designed to improve riparian conditions. This reach was also managed under consultation with the U.S. Fish and Wildlife Service for protection of the Warner sucker. The existing conditions at that time were largely a result of past grazing practices. Current livestock management practices are making significant progress towards meeting the standard.</p> <p>The Parsnip Creek reach receives no licensed livestock use. It is located in the Right-of-Way for Highway 140 and the conditions on this reach are a result of highway maintenance activities. Current management of livestock is not a factor in failing to meet the standard.</p>
3. Ecological Processes	Met	NA	The trend for vegetation communities was described as being static to upward and plant composition was consistent with site capability. The allotment supported most of the terrestrial animals common to the sagebrush steppe.
4. Water Quality	Initially Not Met	Not current grazing	This standard was not met because Camas and Parsnip Creeks, from the mouth to the headwaters, did not meet state temperature standards. However, grazing has been excluded on the lower reaches of both creeks. Previous grazing changes had been implemented to better manage riparian vegetation which included alternate early season use and rest and had resulted in an increase in stream side cover and vegetation. BLM determined that current livestock management is making significant progress towards meeting the standard.

<p>5. Native, Threatened and Endangered, and Locally Important Species</p>	<p>Met</p>	<p>NA</p>	<p>The allotment provided crucial deer winter habitat. Big game populations were healthy and increasing. The allotment provided habitat for numerous small and non-game birds and mammals. No conflicts between cattle grazing and wildlife species were identified within the allotment. There were two sage-grouse leks identified, along with potential for wintering bald eagles, pygmy rabbits, and sensitive bat species. Redband trout were present in both creeks. Warner sucker habitat is located downstream of the allotment. Noxious weeds were noted along major travel routes, riparian areas, and waterholes. Nodding melica (special status plant) was present, but not affected by grazing.</p>
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Environmental Consequences: Hickey Individual Allotment (00202)

Effects Common to 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 10 years was 432 AUMs, not including 2005 when the entire allotment was rested. The average utilization measured in the upland pastures varied between an average of 52% for West Joes Lake Pasture, 33% in East Joes Lake and 35% in Fish Creek Rim. 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 ten years Fish Creek Rim was completely rested 5 years, West Joes lake 4 years and East Joes Lake 2 years. Therefore average utilization was below the 50% utilization level allowed to sustain root growth and maintain perennial native grass production.

The grazing levels would remain at 519 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.

Effects of Alternatives 2: Reduced Authorized Grazing Levels by 50%

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 260 AUMs. The permittee would need to replace 260 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.

Effects of Alternatives 4: No Grazing

Under this alternative, livestock grazing within the allotment would not be authorized. The permittee would need to replace 519 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 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: Sagehen Allotment (00208)

This is a ten year term grazing permit authorizing 267 AUMs of cattle use in Sagehen Allotment (00208). The season of use is from June 15th thru September 5th. Grazing is managed under the grazing permit as a deferred grazing system utilizing two pastures (Table 4). In addition grazing management in the Deep Creek Pasture is determined by the Biological Opinion under consultation with USFWS (1997).

There are two pastures used mainly in the late summer and fall, one higher elevation pasture (Butte Pasture) and one riparian pasture (Deep Creek Pasture). The permit allows for grazing to begin in the summer (6/15) and some years this may be necessary, but generally the grazing plan is to use the allotment later in the summer because of the permanent water sources and ample forage. The plan is to graze the Butte Pasture two out of three years. In the second year the use may begin in July so the Fish Creek Rim Pasture in the Hickey Allotment can be rested. The use will be 3-4 weeks depending on the water availability and utilization levels. Then the livestock would be moved south into the Deep Creek Riparian Pasture and remain 3-5 weeks depending on the stubble height and willow use levels. The stubble height and willow use levels in the pasture are set in the Biological Opinion for the Threaten Warner Sucker in consultation with the Fish and Wildlife Service. Most of this pasture is private land with the key monitoring areas on public land occurring at the west and east ends of the pasture. The west end already contains a drift fence which allows for control of the utilization levels on the public land there.

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) within 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. Current grazing management practices or levels of grazing use in the Sagehen Allotment are either meeting or are making significant progress towards meeting the Oregon/Washington *Standards for Rangeland Health* (BLM 1997). The findings of the RHA for this allotment are summarized in Table 34 and are incorporated in their entirety herein by reference (BLM 1999b).

Environmental Consequences: Sagehen Allotment (00208)

Effects of 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 deferred grazing system is meeting all Standards and Guidelines. Livestock grazing management is maintaining a vegetative community that supports other resources objectives and uses.

The current grazing system and schedule works well with the permittees' private and other BLM permits. This grazing schedule provides adequate forage and water throughout the grazing season while balancing the need to provide rest and rotate livestock to protect other resources across all four allotments in this permit.

The average actual use over the last 11 years was 124 AUMs during the seven years the allotment was grazing, not including the 4 years the entire allotment was rested. The Deep Creek Pasture was rested 6 years and average actual use for the 5 years the pasture was grazed was 74 AUMs. The average utilization measured in the upland pasture (Butte) was heavy for a ¼ mile around the water sources, but was slight to light across most of the Butte Pasture. The average utilization in the Deep Creek Pasture is limited by the Biological Opinion for the Threatened Warner Sucker (USFWS 1997). The herbaceous and the willow utilization were monitored as part of the BO to determine how long cows can stay on the allotment. In the last 11 years the average stubble height of herbaceous vegetation was about 7 inches during the 5 grazed years (Table 27). The standard for acceptable stubble height was above 5 inches. The average use on willows during the 5 grazed years was 25% and the standard was 25%. When all 11 years are considered the average use on willows was 15% (Table 27).

Table 34. Summary of Rangeland Health Assessment for Sagehen Allotment (BLM 1999b)

Standard	Determination	Causal Factors	Comments
1. Watershed Function – Uplands	Met	NA	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.
2. Watershed Function - Riparian/ Wetland Areas	Initially Not Met	Not current grazing	The standard was not met because 2 reaches on Deep Creek were not in Proper Functioning Condition (PFC) in 1996. The upper reach was Functional at Risk (FAR) with an upward trend, while the lower reach was Non-functional. In 1995, both reaches were placed into a riparian pasture to better manage riparian vegetation. (This pasture also included a 3.5 miles of stream under private ownership that was voluntarily included in the riparian management plan). Both reaches were managed under consultation with the U.S. Fish and Wildlife Service for protection of the Warner sucker. While the existing conditions at that time were largely a result of past grazing practices and upstream channelization, current management of livestock is resulting in significant progress towards meeting the standard.
3. Ecological Processes	Met	NA	The vegetation trend for the allotment was static to upward and the plant composition was consistent with site capability. The allotment supported most of the terrestrial animal species common to the sagebrush steppe including deer, antelope, elk, and sage-grouse.
4. Water Quality	Initially Not Met	Not current grazing	This standard was not met because Deep Creek, from the mouth to the headwaters, did not meet state temperature standards. However, current grazing management limits use on the riparian vegetation and has resulted in an increase in stream-side cover and vegetation. Therefore, BLM determined that current management is resulting in making significant progress towards meeting the standard.
5. Native, Threatened & Endangered, and Locally Important Species	Met	NA	Redband trout were present in the allotment. Warner sucker habitat is located downstream of the allotment. The deer, elk, and pronghorn populations are healthy and increasing in number within the allotment. Habitat quantity and quality do not appear to be limiting population size or health. The allotment provided marginal or potential habitat for sage-grouse, raptors, wintering bald eagles, pygmy rabbits, and sensitive bat species. Noxious weeds were noted along major travel routes, riparian areas, and waterholes. The special status plant prostrate buckwheat was found within the

			allotment. The population was in a stable condition and current grazing management posed no apparent threat.
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In summary, the grazing management under Alternative 1 has utilization levels under 50% in the uplands and is maintaining a proper stubble height and willow use level on the creek. These levels have maintained perennial native grass production and dramatically improved riparian conditions on Deep Creek.

The grazing levels would remain at 267 AUMs under Alternative 1. This level of use, along with managed grazing, would provide a sustainable forage base. 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.

Effects of Alternatives 2: Reduced Authorized Grazing Levels by 50%

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 134 AUMs. The permittee would need to replace 134 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.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The effects in the Butte Pasture would be the same as Alternative 1. However in the Deep Creek Pasture the cost of the AUMs would be the same, but the permittee would determine the grazing management. The permittee would have the flexibility to graze the Deep Creek Pasture anytime within the permit dates (June 15- Oct 5) and with any number of cows. The permittee would be responsible for building and maintaining the new fence (1.0 mile) on private land,

Effects of Alternatives 4: No Grazing

Under this alternative, livestock grazing could continue on the private land within the allotment if the permittee fenced off the BLM land with up to 5-6 miles of new fence. There would be about 200 AUMs of forage left on the private land and most of that along Deep Creek. The permittee would need to replace 267 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: Fisher Lake Allotment (00222)

This is a ten year term grazing permit authorizing 781 AUMs of cattle use in Fisher Lake Allotment (00222). The season of use is from November 20th thru March 10th. Grazing is managed under the grazing permit as a winter rotation grazing system utilizing four pastures (Tables 2 and 5).

There are two seeding pastures and two pastures that are predominately native range (Map 5B). The two crested wheatgrass seeding pastures are contiguous and similar in size. The native range include the largest pasture (Lake Pasture) mostly in a sodic meadow and wet meadow and the smallest pasture (Neck Pasture) a narrow strip of land used mostly as a gathering pasture. The current permitted use is 781 AUMs and the stocking density varies from 2 acres/AUM in the seeding pastures to 6 acres per AUM in the Lake Pasture.

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) within the allotment in 2002 to determine if grazing management was in conformance with the applicable standards. The RHA was reviewed again as part of this environmental analysis. Current grazing management practices or levels of grazing use in the Fisher Lake Allotment are meeting the Oregon/Washington *Standards for Rangeland Health* (BLM 1997). The findings of the RHA for this allotment are summarized in Table 35 and are incorporated in their entirety herein by reference (BLM 2002a).

Environmental Consequences: Fisher Lake Allotment (00222)

Effects of 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

Table 35. Summary of Rangeland Health Assessment for Fisher Lake Allotment (BLM 2002a)

Standard	Determination	Causal Factors	Comments
1. Watershed Function – Uplands	Met	NA	Upland soils in the Fisher Lake Allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate.
2. Watershed Function - Riparian/ Wetland Areas	Met	N/A	The 266 acres of wetlands in the allotment were in Proper Functioning Condition (PFC). Livestock grazing did not appear to be impacting these areas.
3. Ecological Processes	Met	NA	About 45% of the allotment was a functioning crested wheatgrass seeding. The remaining 55% of the allotment contains healthy, productive and diverse plant and animal populations and communities that are appropriate to soil, climate and landform and are supported by ecological processes of nutrient cycling, energy flow and the hydrologic cycle. The vegetation trend was static on 6%, downward on 18%, and upward on 35% of the allotment. The areas in downward trend were also in early seral stage. These areas were outside the seeding and were dominated by cheatgrass. The utilization studies conducted the 1990s showed light to moderate use in the Lake Pasture every year, while both seeding pastures had heavy use in 1991 (65%) and 1995 (77%) and light or moderate use during six other years. The allotment supported current and proposed number of mule deer and pronghorn antelope identified by ODFW management plans. Noxious weeds were noted in the allotment and included halogeton, perennial pepperweed, and Canada and bull thistles.
4. Water Quality	Met	N/A	This standard was not applicable since there were no 303d listed water bodies within the allotment.
5. Native, Threatened and Endangered, and Locally Important Species	Met	NA	Sage-grouse had been seen using the allotment at different times of the year. Livestock grazing does not appear to be limiting sage grouse production within the allotment. Peregrine falcons have been seen within the allotment, however, no nesting occurs within the area. Wintering bald eagles also use the area. No special status plants have been found and none are suspected.

current winter 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 10 years was 548 AUMs, with 222 AUMs in the South, 156 AUMs in the North and 171 AUMs in Fisher Lake Pasture. The average utilization measured across the allotment was 44% with all the pasture between 43% and 46% average over the decade. The highest single year average was 56% in the South Pasture (2008) and the lowest 31% in the South Pasture in 2007. The average utilization was very consistent through the years and below the desired 50% utilization level.

The grazing levels would remain at 781 AUMs under Alternatives 1. This level of use, along with winter grazing and a pasture rotation (Tables 2 and 5) will sustain root growth and maintain perennial grass production over the long-term.

Effects of Alternatives 2: Reduced Authorized Grazing Levels by 50%

Under this alternative authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 391 AUMs. The permittee would need to replace 390 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.

Effects of Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The effects would be similar to Alternative 1 as the number of AUMs would be the same. The difference is the grazing period would be 3 weeks longer and if the permittee chose to use the entire grazing period, number of cows would be reduced from 215 to 180. This alternative does give the permittee more flexibility and works better with the other grazing permits. This reduces by 3 weeks, the period of time the permittee needs to find forage and reduces the number of moves the cows are required to make. Staying until March 31 means the permittee can move the cows directly to private land adjacent to the Hickey Individual Allotment and only stay there 2 weeks before using the Hickey Individual Allotment.

Effects of Alternative 4: No Grazing

Under this alternative, livestock grazing within the allotment would not be authorized. The permittee would need to replace 786 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 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: Hickey FRF Allotment (00223)

This is a ten year term grazing permit authorizing 64 AUMs of cattle use in Hickey FRF Allotment (00223). The season of use is from April 20th thru May 15th. Grazing is conducted as a fenced federal range (FRF) Allotment.

This allotment is a single pasture with only 412 acres of public land and 439 acres of private land. The public land occurs primarily on the west edge of the allotment along the ridge top.

The allotment is categorized as an “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 Rangeland Health Assessment (RHA) within the allotment in 2002 to determine if grazing management was in conformance with the applicable standards. The RHA was reviewed again as part of this environmental analysis. Current grazing management practices or levels of grazing use in the Hickey FRF Allotment are meeting the Oregon/Washington *Standards for Rangeland Health* (BLM 1997). The findings of the RHA for this allotment are summarized in Table 36 and are incorporated in their entirety herein by reference (BLM 2002b).

Environmental Consequences: Hickey FRF Allotment (00223)

Effects Common to Alternatives 1 and 3

The authorized use would remain at 64 AUMs under Alternatives 1. This level of use was determined to be the carrying capacity of the BLM land (412 acres) within the Hickey 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).

Effects of Alternatives 2: Reduced Authorized Grazing Levels by 50%

Under this alternative, authorized livestock grazing within the allotment would be reduced by 50% resulting in a reduction of 32 AUMs. The effects of this reduction would be no different

Table 36. Summary of Rangeland Health Assessment for Hickey FRF Allotment (BLM 2002b)

Standard	Determination	Causal Factors	Comments
1. Watershed Function – Uplands	Met	NA	Upland soils in the Hickey FRF Allotment exhibited infiltration and permeability rates, moisture storage, and stability appropriate for soil, climate, and land form. Root occupancy for the soil was appropriate.
2. Watershed Function - Riparian/ Wetland Areas	Met	N/A	The 2 acres of wetlands found in the allotment were in Proper Functioning Condition (PFC). Livestock grazing did not appear to be impacting these areas.
3. Ecological Processes	Met	NA	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. The vegetation trend was static on 80% of the allotment, upward on one acre, and unknown on 20%. Utilization studies in 1991 and 2002 found use was light (30%-50%) to moderate on most of the public land. Heavy use was mostly restricted to the private land in the meadow and near water sources. The allotment supported current and proposed number of mule deer and pronghorn antelope identified by ODFW management plans. Noxious weeds noted to occur in the allotment, mostly on private lands.
4. Water Quality	Met	N/A	This standard was not applicable since there were no 303d listed water bodies within the allotment.
5. Native, Threatened and Endangered, and Locally Important Species	Met	NA	The allotment contained healthy, productive, and diverse plant and animal populations and communities that are appropriate to soil, climate, and landform. Sage-grouse had been seen using the allotment at different times of the year, but the forage habitat present was not being impacted by livestock grazing. Peregrine falcons have been seen within the allotment, however, no nesting occurs within the area. Wintering bald eagles also use the area. No special status plants have been found and none are suspected.

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.

Effects of Alternative 4: No Grazing

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

Affected Environment:

The Rangeland Health Assessments for Hickey Individual, Sagehen, Fisher Lakes and Hickey FRF Allotments indicated these allotments (BLM 1999a, 1999b, 2002a, BLM 2002b) were meeting the Rangeland Health Standard 5 related to wildlife habitat at the time the assessments were completed.

Three of the allotments (Sagehen, Hickey Individual and Hickey FRF) fall within the larger Oregon Department of Fish and Wildlife (ODFW) 923 square mile Warner big game unit. Mule deer fawn recruitment has been below maintenance level (35/100) in the Warner unit 2 of the last 3 years (31/100, 38/100 and 23/100) (ODFW 2012b.). According to ODFW, "Cougars and coyotes are the primary predators of mule deer in the Warner WMU. Predation by these species has likely led to decreased adult deer survival as well as low fawn recruitment" (ODFW 2011a.). The Warner Unit is one of the units included in the ODFW Mule Deer Initiative (ODFW 2011a.) an initiative focused toward increasing mule deer populations within certain management units. Pronghorn have been increasing in the unit over the last three years and the population appears to be stable (ODFW 2012a.). The three allotments comprise about 3% of the unit and provides habitat capable of supporting mule deer, pronghorn antelope and elk. The three allotments fall entirely within winter range for mule deer with the exception of a small 50 acre tract on the southern end of the Sagehen Allotment.

The Rangeland Health Assessments for the Hickey Individual Allotment (BLM 1999a) and the Sagehen Allotment (BLM 1999b) indicated that recruitment of new bitterbrush plants (a primary forage species for wintering mule deer) is virtually absent or relatively low in the allotment, although browse studies conducted by the BLM showed some improvement in bitterbrush vigor and stand replacement over the past 10-15 years (BLM 1999a, 1999b).

The majority of the Sagehen Allotment is winter range for elk, except for a little over a square mile in the southwest portion of the allotment. The southern third of the westerly portion of the Hickey Individual Allotment has approximately 785 acres of elk winter range. Some concern was expressed in the Rangeland Health Assessments for the Hickey Allotment (BLM 1999a) and the Sagehen Allotment (BLM 1999b) regarding the potential for an expanding elk population. According to the 2012 ODFW High Desert Hunting Forecast (available at http://www.dfw.state.or.us/RR/hunting_forecast/fall_high_desert.asp), elk densities are currently very low in the Warner big game unit (in which these allotments fall) indicating the population is not currently expanding.

Bighorn sheep range has been identified on approximately 10 square miles of habitat in the Hickey Individual Allotment and is primarily located along Lynchs Rim and above a small section of Drakes Creek and Parsnip Creek. Bighorn sheep habitat in these allotments is limited by perennial water sites and unrestricted movement to and from these water sources, juniper encroachment, and to a lesser degree, invasive cheatgrass. There are currently 90, 132, and 76 AUMs allocated for mule deer, pronghorn, elk, bighorn sheep and other wildlife species within the Sagehen, Hickey Individual and Hickey FRF Allotments respectively (BLM 2003b, pages A-26, A-18, and A-41). Based on previous consultation with ODFW biologists, this forage allocation is adequate to support big game populations within the allotment.

The Fisher Lake Allotment falls in the 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 populations continue to fluctuate at or slightly above ODFW's population management objectives for the unit (ODFW 2003). The allotment comprises a small percentage of the unit and provides habitat capable of supporting mule deer and pronghorn antelope. All but the western edge of the allotment is winter range for mule deer.

Bighorn sheep range has been identified on approximately 168 acres of the northwest portion of the allotment. The only limitations in bighorn habitat within the allotment are limited perennial water sites and unrestricted movement to and from these water sources. There are currently 60 AUMs allocated for mule deer, pronghorn, bighorn sheep and other wildlife species within the allotment (BLM 2003b, page A-40). ODFW describes the existing bighorn habitat as adequate for future population expansion.

Other mammals observed in the general area include jackrabbits, cottontails, coyotes, ground squirrels, chipmunks, marmots, bobcats, mountain lions, badgers, and other common shrub-steppe mammal species. The allotments also provide habitat for numerous small and nongame birds and mammals common to the Great Basin. In some areas porcupines and bears have been seen.

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

The Migratory Bird Treaty Act of 1918 identifies migratory birds, regardless of their status, as common or rare. Common migratory species observed or expected to occur (based on species range and vegetation) in the allotments include American robin, dark-eyed junco, mourning dove, Townsend's solitaire, and the mountain bluebird. Other bird species suspected to occur within the allotments are the great horned owl, barn owl, short-eared owl, American kestrel, chukar, California quail, common raven, various waterfowl and shorebirds, and other common shrub-steppe bird species.

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service (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 (BCC 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.

Golden and bald eagles are given special protection under the Bald Eagle Protection Act of 1940 (as amended).

Game birds below desired condition (GBBDC) are game bird species identified by the ODFW and USFWS that represents species whose population is below long-term averages or management goals, or for which there is evidence of declining population trends.

Table 37 lists wildlife species with special management designation(s) (excludes common migratory species except where otherwise designated) that potentially occur on the allotments. Common names for avian species have been standardized and are used for avian species throughout this document and are taken from the ABA Checklist of birds available at: <http://www-personal.umich.edu/~bbowman/birds/updates/abalist1.html>.

Water for wildlife is readily available from the perennial streams on the Sagehen Allotment and the Fish Creek Rim Pasture of the Hickey Individual Allotment. (Issues related to these water sources are addressed in the preceding Water Quality and Wetland and Riparian sections).

Table 37. Wildlife Species with Special Management Designations

Species and Designation	General Habitat	Special Status Species	Birds of Conservation Concern	Migratory Birds	Focal Species	Game Birds Below Desired Condition	Eagle Act	Allotments with Known Habitat or Potential Habitat	Affected by Proposed Actions In Allotments
Ferruginous Hawk	Sagebrush-shrub steppe		x	x	x			0202, 0208, 0223	none
Golden Eagle	Elevated nest sites in open country		x	x			x	0202, 0208, 0222, 0223	none
Sage Sparrow	Sagebrush		x	x				0202, 0208, 0222, 0223	none
Peregrine Falcon	Cliffs near water	x (delisted)*	x	x				0202, 0222, 0223	none
Prairie Falcon	Rim rocks and open country				x			0222, 0202, 0208, 0223	none
Greater Sage Grouse	Sagebrush dominated rangelands	x (FC)*	x	x	x			0202, 0208, 0222, 0223	Potentially affected 0208
Loggerheaded Shrike	Open country/scattered trees/shrubs		x	x	x			0222, 0202	none
Trumpeter Swan	Open Water/Ponds	x		x				0222	none
Greater White-fronted Goose (Tule sub-species)	Aquatic/Terrestrial	x		x				0222	none
Eared Grebe	Open water		x	x				0222	none
Franklin's Gull	Open Water	x		x				0222	none
Burrowing Owl	Open grasslands			x	x			0222, 0202, 0208, 0223	none
Horned Grebe	Open water	x		x				0222	none
Snowy Plover (inland pop.)	Alkali Flats	x	x	x				0222	none
Snowy Egret	Meadows, marshes, streams, ponds	x		x				0222	none
Green-tailed Towhee	High density shrub stands with high diversity		x	x				0202, 0208, 0222, 0223	none
American White Pelican	Lakes and fresh water marshes	x		x				0222	none
Sage Thrasher	Big sagebrush		x	x	x			0202, 0208, 0222,	none
Bald Eagle	Wetlands/River Systems/Lakes	x (delisted)*	x	x			x	0208, 0222, 0208, 0223	none
Brewer's Sparrow	Big sagebrush Bitterbrush/ Shrubs		x	x	x			0208, 0223, 0202	none
Canvasback	Aquatic habitats					x		0222	none

Mourning Dove	Habitat generalist						x		0202, 0208, 0223, 0222	none
Ring-necked Duck	Larger lakes and ponds						x		0202, 0222	none
Mallard	Aquatic/riparian						x		0202, 0208, 0223, 0222	none
Snow Goose (WIP pop.)	Freshwater/Emergent Marshes						x		0222	none
Northern Pintail	Large lakes, ponds, flooded meadows						x		0222	none
Pallid Bat (<i>Antrozous pallidus</i>)	Arid regions/rocky outcroppings	x							0202, 0208, 0222, 0223	none
Pygmy Rabbit (<i>Brachylagus idahensis</i>)	Sagebrush with deep soils	x							0202	none
Townsend's Big-eared Bat (<i>Corynorhinous townsendii</i>)	Lava fields/Rocky Cliffs /Abandoned Structures	x							0202, 0208, 0222, 0223	none
Spotted Bat (<i>Euderma maculatum</i>)	Cliff Habitat	x							0208	none
Columbia Spotted Frog (<i>Rana luteiventris</i>)	Springs/Ponds/Riparian Areas with Deep Pools	x (FC)*							0202, 0208	none
Red-band Trout (<i>Oncorhynchus mykiss</i>)	Streams and Lakes	x							0208, 0202	none
Warner Sucker (<i>Catostomus warnerensis</i>)	Streams and Lakes	x (FT)*							none	Affected downstream 0202 and 0208
Kit Fox (<i>Vulpes macrotis</i>)	Greasewood and Sage-brush	x							0202, 0223, 0208, 0222	none
Western Bumblebee (<i>Bombus occidentalis</i>)	Areas with appropriate flowering plants	x							0202, 0208, 0223	none

FC – Candidate for listing under the Endangered Species Act

FE – Federal Endangered Species

FT – Federal Threatened Species

OR-SEN – State of Oregon Sensitive Species

Delisted – formerly federally listed species

There are no perennial streams on the Hickey FRF or the Fisher Camp allotments. Additional water for wildlife is also available from various springs (developed and undeveloped), wetlands, and livestock water developments scattered across the allotments. Water availability for wildlife varies and is dependent on the magnitude of annual precipitation and spring runoff.

Special Status Species

Affected Environment:

The Bureau policy and guidance on special status species is to conserve those species and the ecosystems upon which they depend (BLM 2001). The allotments provide habitat for a number of special status species.

Greater sage-grouse (also a Federal candidate species) occur in the Sagehen, Hickey Individual, Hickey FRF Allotments. The three allotments provide year-round habitat for sage-grouse including habitat important for nesting, brood rearing and winter habitat.

Sage-grouse leks are found on or near all 4 of the allotments with the exception of the Fisher Lake Allotment. The rangeland health assessment for the Fisher Lake Allotment indicated the presence of two leks on the allotment (BLM 2002a). These two leks may have existed prior to the 1984 and 1985 Calderwood and Calder II wildfires that burned approximately 2,450 acres of the allotment, including the vast majority of sage-grouse habitat then existing within the allotment. The area was subsequently planted with crested wheatgrass, which remains the primary vegetation today. At this point in time it is not known if there is any current use of the Fisher Lakes Allotment by sage-grouse. If use does occur, it would be incidental due to the effects of the fires and the subsequent seeding. The inclusion of two sage-grouse leks in the 2002 range land health assessment appears to have been in error, as there is currently no evidence that these leks actually existed at that time. The current ODFW lek database has no information on the leks in question. Based on lek surveys completed after 2002, there are no known or active leks in this allotment.

The closest active lek to the Fisher Lake allotment is the Northern Badger Hole lek located approximately 4.4 miles east of the allotment. The current status of the lek is listed as pending by ODFW. Only two male sage-grouse were reported at the last lek count conducted in 2009 at the Northern Badger Hole lek. The Parsnip Creek lek occurs in the Hickey Individual Allotment and is 0.8 miles from the Hickey FRF and the Sagehen Allotments. The Parsnip Creek lek has had consistent lek count data collected by ODFW over the last 20 years. The 20 year male attendance average for the lek is 30 males. Over the last 10 years the average male attendance has significantly increased with an average of 38 males attending the lek. Big Reservoir lek is located 1.75 and 2 miles from the east boundary of the Hickey Individual and the Sagehen Allotments respectively. ODFW conducted lek counts at this location 7 of the last 11 years. Average male attendance during the period was 32 males. Attendance was counted 4 of the last 5 years (not counted in 2009) and an average 34 males in attendance was recorded during that period.

Several new leks have been discovered in the area near the allotments within the last 2 years. Lane lek was first noted by the BLM wildlife staff in 2011. The lek is located 0.25, 1.7 and 2 miles north of the Hickey Individual, Hickey FRF and Sagehen Allotments, respectively. The Crump Reservoir Southeast lek is located about 0.25 miles west of the Fish Creek Rim Pasture of the Hickey Allotment and was also first noted by BLM wildlife staff in 2011. Both of the new leks are small with 20 or less males in attendance. However, new leks are sometimes indicative of an expanding sage-grouse population which is evident by modest gains in average lek counts at both the Parsnip Creek and Big Reservoir leks noted above.

The greater sage-grouse (*Centrocercus urophasianus*) is a Bird of Conservation Concern for the Great Basin Region and a USFWS candidate species. In March 2010, the U.S. Fish and Wildlife Service (USFWS 2010) issued its 12-Month Findings which noted that that listing the greater

sage-grouse range-wide is warranted, but precluded by higher priority listing actions. The major risk factors in the western portion of the range that are relevant to the area include habitat conversion due to fire, invasive plants such as cheatgrass and juniper, and West Nile virus occurrence. Grazing was evaluated as a risk factor in the 12-Month Findings with both positive and negative effects to sage-grouse being reported (USFWS 2010, p. 13939-13942). In the report the USFWS noted that “the impacts of livestock operations on sage-grouse depend upon stocking levels, season of use, and utilization levels” (USFWS 2010, p. 13941). The 12-Month Findings also determined that destruction, modification, or curtailment of habitat pose a major risk to sage-grouse across its range.

Additional risks to sage-grouse exist to a lesser extent including the risk of fence collisions under certain conditions, as identified by research conducted in Idaho by Stevens (2011). The Natural Resources Conservation Service (NRCS 2012) recently applied the Stevens’ model to all sage-grouse habitat in Oregon creating a fence collision risk model for sage-grouse for the entire state.

Preliminary Priority Habitat (PPH) comprises areas that have been identified as having the highest conservation value for maintaining sustainable Greater Sage-Grouse populations. These areas include breeding, late brood-rearing, and winter concentration areas. These areas have been identified by the BLM in coordination with respective state wildlife agencies. Preliminary General Habitat (PGH) comprises areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been identified by the BLM in coordination with respective state wildlife agencies and in Oregon are similar to ODFW’s Core and Low Density habitat categories. The ODFW developed Core Areas with the goal of conserving 90% of Oregon’s greater sage-grouse population with emphasis on highest density and important use areas which provide for breeding, wintering and connectivity corridors for greater sage-grouse (ODFW 2011a, p. 82).

Current BLM sage-grouse interim management policy (BLM 2011a) grazing permit renewal NEPA analyses incorporate available site information collected using the Sage-Grouse Habitat Assessment Framework (Stiver *et al.* 2010). The Sage-Grouse Habitat Assessment Framework (HAF) at the third order scale (fine scale) was utilized by BLM biologists to assess PPH and PGH within each of the allotments. The results are found in Table 38 and Map 7. It should be noted that differences exist between the total PPH and PGH within any given allotment and the total number of acres of suitable habitat identified using the HAF third order analysis. Several factors account for this apparent discrepancy. PPH and PGH are coarse scale modeling efforts that rely on such parameters as physical distance from leks to determine habitat suitability and do not use direct habitat measurements, but assumptions of what likely habitat conditions exist. The HAF uses actual onsite habitat measurements within individual soil polygons and then applies that data to the polygon as a whole. This is one step closer to what is actually occurring on the ground and, therefore, represents a finer scale of measurement than that obtained using only the PPH/PGH modeling.

Table 38. Sage-grouse Habitat Assessment Framework (HAF) for Each Allotment

Sage-Grouse Habitat Type	Hickey Individual (Upper Joes Lake, Lower Joes Lake, Parsnip Seeding, and Camas Creek Pastures)		Hickey Individual (Fish Creek Rim Pasture)		Sagehen		Hickey FRF		Fisher Lake	
	acres	percent	acres	percent	acres	percent	acres	percent	acres	percent
PPH	3203		7233	90	5148	91	778	100	464	11
PGH	0		0	0	0	0	0	0	871	21
Not PPH or PGH	0		804	10	504	9	0	0	2769	67
Unsuitable for Sage-Grouse	75	2.3	54	0.7	1067	18.9				
Yearlong Suitable			7016	87.3	3077	54.4				
Yearlong Marginal	2971	92.8	278	3.5	1208	21.4				
Breeding Marginal			321	4						
Breeding & Summer Suitable					300	5.3				
Breeding & Summer Marginal	157	4.9	239	3						
Riparian Suitable			129	1.6						

Going one step beyond the HAF analysis would be placing radio collars on sage-grouse that allow researchers to let sage-grouse define which habitats are important within a given area. In most cases this type of effort is not practical due to cost restraints and other considerations. However, there is several years of telemetry data available for 3 of the allotments (Hickey Individual, Hickey FRF and Sagehen Allotments) due to an unrelated study conducted by the BLM (fall 2009 – summer 2011). Map 7 shows nest locations for sage-grouse on these allotments and how telemetry locations correspond to the HAF analysis. Some discrepancies between the HAF analysis and actual use by sage-grouse are apparent. One explanation of this discrepancy would be that no radio marked sage-grouse used the habitat as predicted so no use of these predicted habitats was detected. This might be the case in some outlying locations, but is unlikely in the general scheme of things. Another explanation might be that the sage-grouse population at the time of the study was insufficient for the birds to occupy the entire available habitat. This is also unlikely as there are areas with no telemetry locations adjacent to heavily used areas with many locations (western portion of the Hickey Allotment where no telemetry points fall in the northern third of yearlong suitable habitat identified in the HAF analysis). The HAF analysis appeared to overestimate sage-grouse habitat in these

allotments which can occur with a coarser scale of analysis. The same is true of PPH and PGH which are coarser scale modeling efforts. Unfortunately, the finer the scale of analysis the more costly it is to perform and thus limits its use.

Another discrepancy between the HAF analysis and the telemetry data is winter habitat use. Yearlong habitat by definition should be suitable for winter use. However, much of the yearlong habitat showed no use by sage-grouse during the winter as is evident in the Sagehen Allotment where only one winter telemetry point was collected. Approximately 90% of all winter telemetry locations were collected in low sagebrush habitats with all but a few of the remaining winter telemetry points being collected in a low sagebrush/Wyoming sagebrush mix. However, telemetry data also revealed that not all available low sage habitats were used by wintering sage-grouse indicating that additional factors were involved in the selection of winter habitat by sage-grouse. Locally, low sagebrush sites tend to be windswept areas where forage remains available for sage-grouse throughout the winter in most years. Infrequently, in years with extreme snowfall sites with big sagebrush may serve as important foraging areas for sage-grouse if low sagebrush sites become impacted with snow. It is important to consider local conditions when applying model results to a localized area. Winter habitat, as defined in the HAF analysis is broad based in nature and incorporates conditions for nesting habitat from multiple locations such as Idaho where wintering sage-grouse use taller sagebrush habitats for wintering than sage-grouse do locally.

In some cases juniper may be limiting or preventing sage-grouse from using otherwise viable habitat. Beginning in the winter of 2011/2012 post-settlement juniper was removed from the public land portions of the Sagehen, Hickey FRF, and western pastures of the Hickey Individual Allotments. This will likely increase sage-grouse use of those areas in the future and may further help to resolve observed difference in sage-grouse use of the allotments and sage-grouse habitat as determined through the PPH/PGH and HAF processes.

Bat species are known to frequent all four of the allotments including Townsend's big-eared bats and pallid bats which are Bureau Sensitive Species. Spotted bats and fringed myotis (also Bureau Sensitive Species) rarely occur in the area and are not known to occur on the 4 allotments. Intensive range use can lead to altered invertebrate densities and species abundance and could reduce availability of habitat for certain bat species but causality is speculative and research would be required to draw conclusions (BCME 2008). Schmidt (2003) presented the following discussion regarding livestock grazing and bats:

"No studies were found which addressed the impact of livestock grazing on Townsend's big-eared bat populations. One could predict, however, that this activity would negatively impact this species only if livestock grazing and associated activities were allowed to degrade water sources, or convert mesic riparian habitats to more xeric upland habitats. Livestock grazing may indirectly benefit bat species through the construction of additional water sources (Chung-MacCoubrey 1996)".

Roosting and wintering (hibernacula) habitat for these species is limited throughout the 4 allotments. 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. Use of the area by these species of bats is likely limited primarily to foraging activities. Due to the low potential for occurrence and lack of roosting/resting habitat none of the alternatives would likely have any measurable impacts to these bat species, and therefore, they are not carried forward for further analysis.

The four allotments lie within the northern range of the kit fox, a bureau sensitive species, in Oregon. Potential habitat for kit fox does exist within the Lakeview Resource Area. However, according to information available from ODFW at http://www.dfw.state.or.us/species/mammals/coyotes_wolves_foxes.asp, kit foxes occur in Deschutes, Klamath, and the southern half of Harney and Malheur counties. All of the allotments occur in Lake County and potential for the presence of kit foxes is very low. Therefore, they are not carried forward for further analysis.

There are no known bald eagle nests or nesting habitat within the 4 allotments although they are occasional visitors to the area. Bald eagles occasionally feed on scattered carrion within the allotments. The known bald eagles nest is approximately $\frac{3}{4}$ of a mile from the north boundary of the Hickey Individual Allotment. Golden eagles have been seen within the allotment foraging on small mammals. However, there are no known golden eagle nests or nesting habitat within the allotments with the exception of the Fisher Lakes Allotment where one known active nest exists. Monitoring of the nest recorded a 9 month old eaglet on the 20th of June 2012 (Frank Isaac, Oregon Eagle Foundation, Inc., Philomath, OR. Personal Communication, December 7, 2012). However, nest sites have been identified within the areas surrounding the other three allotments where suitable cliff type habitat exists especially adjacent to the easterly edge of the Hickey Individual Allotment along the Lynch's Rim.

Peregrine falcons have been observed in some of these areas due to releases from the Crump and Summer Lake hack sites; however, no nesting has been documented within the 4 allotments. A historic nest site is located about 1.5 miles north of allotment 0202. The site was survey by BLM staff in 2011 but no peregrine falcons were observed. While potential habitat for peregrine falcon, ferruginous hawk, burrowing owl, and pygmy rabbits was identified in the Rangeland Health Assessments for the Hickey Individual, Sagehen, Hickey FRF and Fisher Creek Allotments (BLM 1999a.; BLM 1999b.; BLM 2002a.; 2002b.), none of these species have actually been confirmed within the allotments to date. There have been no inventories or incidental sightings indicating ferruginous hawks, burrowing owls or pygmy rabbits are present within these allotments although the rangeland health assessments for the Hickey Individual Allotment (BLM 1999a.) and the Sagehen Allotment (BLM 1999b.) indicate that pygmy rabbits may possibly occupy the allotments. For this reason, peregrine falcon, ferruginous hawk, burrowing owl, and pygmy rabbits are not carried forward in this analysis.

The western bumblebee may occur on the 4 allotments and is suspected to occur on the Lakeview Resource Area, but no records documenting their occurrence on the Lakeview Resource Area exist. Therefore, they will not be carried forward for further analysis.

Environmental Consequences: Wildlife and Special Status Wildlife Species

Effects Common to Alternatives 1-4

Fencing

ODFW (2011; 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. The ODFW (2011; p. 104) strategy recommends that fences within 1 mile of leks be marked with anti-strike markers (reflectors). Current BLM sage-grouse management policy takes a more conservative stance prioritizing the need to evaluate and mark new and existing fences within 1.25 miles of leks that have been active in the last five years (BLM 2011a) based on a number of risk factors including flat terrain, spans exceeding 12 feet between posts and where fence densities exceed 1.6 miles of fence per section (Stevens 2011).

The Natural Resources Conservation Service (2012) applied the Stevens' model to Oregon sage-grouse habitat. High risk as defined in the Stevens' model is equal to >1 sage-grouse collision per lek per year and is not dependent on the actual number of miles of fence occurring in the vicinity of the lek. Naturally some amount of fence must occur for a collision event to take place. The results of that modeling effort did indicate that there are about 1.0 miles of fence in the Hickey Individual Allotment that poses a high risk to sage-grouse. There are no high-risk fences identified in the other 3 allotments.

According to the Stevens' model, unmarked high-risk fences in the Hickey Individual Allotment could negatively affect sage-grouse using the area. Despite this potential, 20 years of lek data from the Parsnip Creek lek located near the high-risk fence shows an increasing trend in lek attendance over the last 10 years. The risk to sage-grouse from fence collisions on the Hickey Individual, Sagehen, and Hickey FRF Allotments is low and likely limited to a few individual birds and does not pose a population level risk to sage-grouse.

To mitigate the collision risk posed by high-risk fences the BLM will begin prioritizing the marking of high risk fences with anti-strike devices as time as money allows to comply with IM 2012-043 (BLM 2011a) . It is expected that the majority if not all of the high risk fences in the Lakeview Resource Area will be marked during 2013.

Fences in wintering habitat can also pose risks to wintering sage-grouse. Fences posing a high risk to wintering sage-grouse were identified and have already been marked with anti-strike devices. The BLM used unpublished winter telemetry data (BLM 2011b) in the three allotments that have documented sage-grouse use to identify the potential for mortality associated with fences in winter sage-grouse habitat. However, no sage-grouse mortalities attributable to

fence collisions were associated with fences on any of the allotments, including the high-risk fences in the Hickey Individual Allotment.

West Nile Virus

Another 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 2011, USFWS 2010). Sage-grouse are susceptible to West Nile Virus (Clark *et al.* 2006) and mortality may be as high as 100 percent (Naugle *et al.* 2004) in certain areas. 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 allotment or in southeast Oregon since the first observations in 2006 (DeBess 2009). There is no new water development projects proposed in any of the alternatives. Therefore, the risk of virus spread or associated mortality would be low and identical under all alternatives.

Effects of Alternatives 1-3

The NRCS (2012) used modeling data to determine which sage-grouse action areas are susceptible to annual grass invasion. The Warner action unit which includes the Hickey FRF, Sagehen, and Hickey Individual Allotments were found to be at a high risk of conversion to annual grasslands. The NRCS recommended that private landowners implement adaptive grazing management systems in core habitat on intact sagebrush sites to decrease the risk to these sites.

Alternatives 1-3 would continue a rest rotation grazing system in the Hickey Individual Allotment. Rest rotation grazing promotes heath sagebrush communities and the production of native grasses, thus helping to alleviate the threat of annual grass conversion identified by the NRCS.

The Sagehen Allotment would be placed in a deferred grazing system under Alternatives 1 and 2. Under deferred grazing systems grazing occurs after most herbaceous key species have completed growth (BLM 2003b. p. A-147) which would promote healthy perennial grasses. All but the newly created FRF portion of the allotment would remain in a deferred grazing system under Alternative 3. The grazing system in the FRF portion of the Sagehen Allotment created under Alternative 3 would be under the control of the permittee. A large portion of the FRF falls in riparian habitat along Deep Creek with less potential for cheatgrass conversion than drier upland areas. In the Hickey FRF the permittee determines how many cattle will use the private land and by default the public land fenced in with the private land. Therefore, it is not possible to know what the future risk is to sage-grouse on this allotment due to the potential of conversion of perennial grasslands to annual grasslands.

Much of the Fisher Lake Allotment is seeded with crested wheatgrass or is otherwise not suitable sage-grouse habitat (Maps 6 and 7). Therefore, the risk of further habitat conversion on this allotment need not be addressed further.

Fire can also be a factor in the spread of annual grasses. However, prescribed fire is not a part of any of the alternatives analyzed in this EA and, therefore, will not be discussed further.

Effects of Alternatives 1 and 2

An estimated 708 acres (6%) of predominantly sagebrush wildlife habitat types within the Hickey Individual Allotment would continue to be negatively impacted by livestock concentration near existing water sources and salting areas, while impacts to habitat across the majority of the allotments (94%) would be dispersed and much less concentrated. Twenty of those acres are riparian habitat on Camas and Parsnip Creeks. The majority of this allotment is sage-grouse habitat and this habitat would continue to be impacted by livestock trailing and concentration near water sources. The remainder of the vegetation and associated habitats within the Hickey Individual Allotment would continue to be impacted to a very minor degree by dispersed grazing use. The Hickey Individual Allotment is currently achieving Rangeland Health Standard 5 for wildlife habitat, including special status species habitat and habitat used by migratory birds and other species of concern. This trend is expected to continue into the foreseeable future under Alternatives 1 and 2.

The Rangeland Health Assessment for the Hickey Individual Allotment (BLM 2002b) noted numerous decadent bitterbrush and poor recruitment of young bitterbrush plants. Bitterbrush is important winter mule deer forage and the entire allotment falls within winter mule deer habitat. Rest rotation grazing in the Hickey Individual Allotment would be employed under both Alternatives I and II. Rest rotation allows plants to complete the stages of vegetative growth, seed production and food storage (BLM 2003a, p. A-148). This should have some slow, but positive effect on bitterbrush over time and should slowly improve winter forage for mule deer.

An estimated 566 acres (10%) of wildlife habitat in the Sagehen Allotment would continue to be impacted by high livestock concentration near existing water sources, salting areas, and trailing areas while impacts to habitat across the majority of the allotments (90%) would be dispersed and much less concentrated. Seven of these acres occur along fences, 181 acres along Deep Creek and 378 acres of concentrated use around water sources. The majority of the allotment is sage-grouse habitat and this habitat would continue to be impacted by livestock trailing and concentration near water sources. However, much of the land bordering Deep Creek is unsuitable for use by sage-grouse and, therefore livestock trailing or concentrated use in those areas would have no effect on sage-grouse. The remainder of the vegetation and associated habitats within the Sagehen Allotment would continue to be impacted to a very minor degree by dispersed grazing use. The Sagehen Allotment is currently achieving Rangeland Health Standard 5 for wildlife habitat, including special status species habitat and habitat used by

migratory birds and other species of concern. This trend is expected to continue into the foreseeable future under Alternatives 1 and 2.

The Rangeland Health Assessment for the Sagehen Allotment noted numerous decadent bitterbrush and poor recruitment of young bitterbrush plants. Bitterbrush is important winter mule deer forage and the entire allotment falls within winter mule deer habitat. Rest rotation grazing in the Sagehen Allotment would be employed under both Alternatives 1 and 2. Rest rotation allows plants to complete the stages of vegetative growth, seed production and food storage (BLM 2003 p. A-148). This should have some slow, but positive effect on bitterbrush over time and should slowly improve winter forage for mule deer.

An estimated 241 acres (5%) of predominantly greasewood and crested wheatgrass wildlife habitat types within the Fisher Lakes Allotment would continue to be impacted by livestock concentration near existing water sources and salting areas while impacts to habitat across the majority of the allotments (95%) would be dispersed and much less concentrated. The remainder of the vegetation and associated wildlife habitats within the Fisher Lake Allotment would continue to be impacted to a very minor degree by dispersed grazing use. The allotment currently does not have viable sage-grouse habitat, although some habitat suitable for sage-grouse may have existed prior to the Caulderwood and Caulder 2 fires of 1984 and 1985 which burned approximately 2,450 acres in the Fisher Lake Allotment. The Fisher Lake Allotment is currently achieving Rangeland Health Standard 5 for wildlife habitat, including special status species habitat and habitat used by migratory birds and other species of concern. This trend is expected to continue into the foreseeable future under Alternatives 1 and 2.

A golden eagle nest exists on the Fisher Lake Allotment. According to Frank Isaacs (Oregon Eagle Foundation, personal communication) a nine week-old eaglet was observed on the nest 20 June 2012. The nest is located in cliff like habitat and should not be affected by Alternatives 1 or 2. Stable trends for vegetation on the allotment should continue to provide adequate forage for golden eagle prey species resulting in an adequate food supply for nestling and adult eagles.

The Hickey FRF Allotment is comprised of public and private lands. There are no streams or water developments on the public portion of the allotment. It is not possible to accurately estimate the number of acres of the allotment impacted by cattle trailing. All of the wildlife habitat in the Hickey FRF Allotment is used by sage-grouse and would be impacted by livestock trailing and concentrated use near water sources. This likely represents about 5-6% of the allotment. The remainder of the vegetation and associated wildlife habitats within the Hickey FRF Allotment would continue to be impacted to a much less degree by dispersed grazing use. The Hickey FRF Allotment is currently achieving Rangeland Health Standard 5 for wildlife habitat, including special status species habitat and habitat used by migratory birds and other species of concern. This trend is expected to continue into the foreseeable future under Alternatives 1 and 2. The entire Hickey FRF Allotment falls within winter mule deer range. However, there is no bitterbrush data available for this allotment.

Effects of Alternative 3

The effects on wildlife habitat associated with Alternative 3 in the Hickey FRF and the Hickey Individual Allotments would be the same as under Alternative 1, as management of the allotments would be similar to that described under Alternative 1.

Alternative 3 would create a new FRF allotment along Deep Creek (Map 3). The permittee would build a fence on private lands on the east end of the allotment to exclude most public lands. Portions of the fence would be located in relatively flat terrain in an area frequented by sage-grouse. The BLM would recommend that the landowner build the proposed fence with spans not exceeding 12 feet between posts and areas of flat terrain be marked with sage-grouse diverters alternatively spaced every 6 feet on the top two wires. Additionally, the BLM would recommend that the fence be constructed to BLM fence guidelines with regard to wildlife passage, including pronghorn antelope (bottom strand constructed of smooth wire with enough space for an antelope to pass under the fence). However, BLM cannot require that the landowner follow these recommendations. This new fence could cause indirect mortality risks to sage-grouse as it would provide perches for raptors and could be used as predator corridors, especially if a new road is developed in association with the fence. However, this additional fence would pose a very small additional risk to sage-grouse from indirect mortality. The effects of this new fence on sage-grouse and antelope could be mitigated if the landowner chooses to follow BLM's fencing guidelines.

The permittee would control future grazing management of the new Deep Creek FRF Allotment (created from the Sagehen Allotment) under this alternative. The majority of the area is unsuitable for sage-grouse, but it does include some summer suitable and yearlong marginal habitat (Map 7). Any increase in grazing associated with the FRF pasture could impact suitable lands in the FRF for sage-grouse if grazing levels increased as a result of the action. The affected area in the FRF would be almost entirely under private ownership. Therefore, it is not possible to determine what, if any effect Alternative 3 would have on sage-grouse as grazing management would no longer be under the control of the BLM on these lands. If the permittee continued grazing the new FRF allotment in the same manner as it is currently grazed there would likely be no change in sage-grouse use of the area. However, if the permittee chose to increase the level of grazing, or changed the season of grazing in way that negatively affected perennial bunch grasses, sage-grouse could be negatively affected by the action. Bunch grasses provide nesting cover for sage-grouse and some nesting habitat for sage-grouse would be negatively impacted. Some of this habitat occurs on public lands that would become part of the FRF under Alternative 3.

Alternative 3 would change the season of use on the Fisher Lake Allotment with a longer season of use in March on certain portion of the allotment. The season of use is early enough in the growing season that it would not have a detrimental effect on native grasses in the area. However, the increased use would likely have some effect on the crested wheat plantings, as it would occur during the growing season for that species. Crested wheat generally provides little

habitat for most avian species, but does provide some spring forage to mule deer and pronghorn antelope.

Effects of Alternative 4

Under Alternative 4, no grazing would be authorized on public lands within the 4 allotments. However, the potential exists for the private lands in the Sagehen and Hickey FRF Allotment to be fenced and grazed. This would create additional fencing in sage-grouse habitat that could pose a collision risk to sage-grouse and prevent free movement of other wildlife species across these two allotments.

Little change to vegetation or associated wildlife habitat would occur on the public land within the allotments due to removal or exclusion of grazing. Removal of grazing would provide for additional forage for other wildlife species such as mule deer, elk and bighorn sheep. However, forage availability does not appear to be limiting these species at this time. Elimination of grazing would likely have little effect on the potential for conversion of perennial grasslands to annual grasslands. The removal of grazing alone would also not restore areas with current cheatgrass invasion.

Concentrated livestock use would likely continue to be associated with water sources and cattle trails on private lands. The severity of the habitat impacts 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. Intensive grazing could cause negative effects to vegetation and associated wildlife habitats on private lands.

Special Status Fish and Amphibian Species

Affected Environment:

Redband trout (*Oncorhynchus mykiss*), a Bureau sensitive species, can be found in all fish-bearing streams within the allotments, which include Parsnip Creek (00202), Camas Creek (00202 and water gap in 00208), and Deep Creek (00208). Redband trout are generally temperature tolerant, but prefer temperatures between 10° -15° C. with critical thermal maxima of 28°-30.8°C (Gamperl and Rodnick 2003). Lower late season flows have had an impact on redband trout in the BLM reaches of the allotments, especially because of the accompanying high water temperatures. Although no recent water temperature data exists for streams within the project area, data collected in the 1990s (FS and BLM 1998) shows that temperatures can reach the critical thermal maxima in and downstream of the allotments.

The allotments do not contain habitat for the federally listed (Threatened) Warner sucker (*Catostomus warnerensis*), although historic habitat exists approximately seven miles downstream in Deep Creek, below Deep Creek Falls. The type locality (origin of the specimen for description of a species) for Warner suckers came from Warner Creek (now called Deep Creek) near Adel (Snyder 1897). There is historic habitat in Deep Creek from the falls

downstream to Adel, Oregon, and Crump Lake; however, most recent fish captures have been below Adel (over 10 miles from the allotments). Captures above Adel have been rare (White *et al.* 1990). Coombs and Bond (1980) found no suckers in Deep Creek above the upper diversion and felt sucker spawning occurred between Highway 140 and Crump Lake. Andreasen (1975) found no suckers in Deep Creek, even with several sampling attempts. No resident suckers have been found in Deep Creek since 1983 (USFWS 1998). No spawning has been observed in Deep Creek, although it is suspected to occur between Crump Lake and Adel.

No designated critical habitat for Warner sucker exists in the allotments; the nearest designated critical habitat is well over 10 miles downstream of the allotments in Deep Creek east of Adel.

Columbia spotted frogs (*Rana luteiventris*) are a Federal candidate species known to occur in Parsnip Creek and Deep Creek within and adjacent to the allotments. Columbia spotted frogs have been identified in Deep Creek, just upstream (approximately 50 meters) of the allotments on private land, and in Parsnip Creek, within one allotment.

Environmental Consequences:

Alternative 1: No Action

The current grazing systems (including those put in place under consultation with the USFWS, 1997) are resulting in improving trends in fish and amphibian habitat (see Photos 1-4). Habitat improvements would continue under Alternative 1, as the current grazing system would be maintained.

Alternative 2: 50% Reduction in Grazing

A 50% reduction in AUMs would result in approximately 50% less cattle utilization of riparian vegetation and associated disturbance to fish and amphibians, and their habitat. Reducing utilization of riparian vegetation and disturbance to fish and amphibians, and their habitat, would improve habitat conditions at a more rapid rate than Alternative 1.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Alternative 3 would have similar effects to riparian vegetation, and fish and amphibian habitat as Alternative 1 (with the exception of Sagehen Allotment) as the AUMs would remain the same for all of the allotments.

Fencing off and excluding cattle from the BLM-administered reaches of Deep Creek would benefit riparian vegetation, and fish and amphibian habitat in the approximately one mile reach of public land that would be excluded from grazing. Riparian, fish, and amphibian habitat conditions would trend upward at the fastest rate possible (without active restoration).

Conversely, the 3.5 miles of Deep Creek in the new Deep Creek FRF Allotment that are privately owned would no longer be managed in common with the BLM-administered reaches, and would therefore no longer be subject to BLM or USFWS grazing standards. Unregulated grazing use on these 3.5 miles of Deep Creek has the potential to degrade riparian, fish, and amphibian habitat conditions on private lands.

Alternative 4: No Grazing

Under Alternative 4, no grazing would occur on BLM-administered lands in any of the 4 allotments. This would result in reduced watershed, riparian, and stream channel disturbances. This would promote the most rapid improvement to fish and amphibian habitat within the allotments, even without active restoration measures.

Under Alternative 4, the potential exists for the private lands in the Sagehen and Hickey FRF Allotments to be fenced and grazed. The 3.5 miles of Deep Creek that are privately owned would no longer be managed in common with the BLM-administered reaches, and would therefore, no longer have to meet BLM or USFWS grazing standards. The severity of impacts to watershed, riparian, and stream channel conditions and associated aquatic habitats in these reaches 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 areas are intensively grazed, this could potentially degrade to fish and amphibian habitat conditions in these reaches.

Native American Traditional Practices

Affected Environment:

The allotments are located within a pre-Contact and modern American Indian Traditional Use area. Some members of The Fort Bidwell Paiute Community have ancestors one to two generations back that used the area in their seasonal economic activities. Current members of the Fort Bidwell Indian Community have indicated that they consider portions of this area to be a Traditional Cultural Property. Several large and significant rock art sites are known which are considered to be sacred sites by most Native Americans. The BLM is not aware of any other specific locations important to The Fort Bidwell Indian Community in general or the families that make up its membership. The BLM has no direct knowledge of current traditional uses in the area. This should not be considered as proof that such uses are not occurring since native Americans seldom reveal such uses to persons outside of their group. Past statements from the Fort Bidwell Indian Community indicate that they consider all manifestations of the native American past to be important or sacred.

Environmental Consequences:

Impacts Common to Alternatives 1-4:

There is currently no known use of the area for collecting of any type of culturally important plants or for religious/ceremonial purposes. None of the alternatives would change the nature of any traditional use sites in the area that may exist. Therefore, none of the alternatives are expected to affect native American traditional practices.

Cultural and Historic Resources

Affected Environment:

Only about 5-10 percent of the allotments have had a Class III survey completed on them. Surveys have been done on geothermal leasing of portions of the area (intuitive survey), on land exchanges, water developments, juniper cutting projects and roads. Surveys have been done for past geothermal leasing of portions of the area (intuitive survey), land exchanges, water developments, juniper cutting projects, and roads. The fact that cultural surveys have not been completed on 100% of the allotment 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 entire area (19,368 acres) are estimated at \$800 to \$1080 per acre (or approximately \$15,494,400 to \$20,917,440) and would be exorbitant.

The allotments have a high probability for containing high value archaeological resources because they are fairly well watered and have areas containing edible grass seeds, roots, and other plants potentially important to native Americans for food and medicines. The area would have been valuable for hunting of game. The archaeological record of occupation for the area covers the past 12,000 year time period.

Based on past surveys, 29 archaeological sites have been documented in the area. Eight of the sites are large rock art sites with associated occupation. These are sites where people both

lived and made rock art. In two of the recorded sites, stone house rings are present. One site is a small cave which has associated rock art. Four sites are recorded as just having rock art present. Two of the sites are occupation sites which do not contain rock art. The remaining twelve sites are that only contain lithic debris from stone tool manufacture or repairs.

Environmental Consequences:

Alternative 1: No Action

Based on field observations by BLM cultural resources staff over the last 38 years on known cultural resource sites in the Lakeview Resource Area, livestock can impact cultural materials located in the top 12 inches of the soil profile. These effects include ground cover removal, surface scuffing, and hoof shear. The reoccurring cycle of ground disturbance, removal of vegetative cover, along with water and wind erosion can lead to continued loss of soil and further exposure of a given site, and loss of vertical context within the site. Cultural materials within the top 12 inches of soil can be exposed to trampling damage, resulting in reduced site integrity. The deepest disturbance is typically seen at sites located in congregation areas (near water sources and trailing areas) where concentrated hoof shear is common. Generalized dispersed grazing, with light hoof shear and surface scuffing, can result in light (2 inches) to moderate (6 inches) depth of impacts to some sites.

According to site records the majority of the known sites in the allotments have been impacted to varying degrees (from surface scuffing 2 inches deep to hoof shear 12 inches deep) by past (up to 130 years) livestock and/or wild horse grazing. However, the severity and extent of impacts have not been quantified. Cultural resource sites were likely affected more intensely and to a greater depth in the past than under the more refined, controlled grazing management of practices of today. The most common impacts to sites today are livestock trampling of sites located on or near the soil surface, wind erosion, and sheet wash erosion from rain.

Based on the analysis described in the Soils section, approximately 1,516 acres (6.7%) of the allotments would continue to be impacted by concentrated livestock use (near water sources and cattle trails) under Alternative 1. Any undocumented cultural sites located in these areas would have the highest potential to be impacted by hoof shear and trampling. Any undocumented sites located across the remainder of the allotment would continue to be impacted by light hoof shear, surface scuffing, and erosion from wind and water.

Alternative 2: 50% Reduction in Grazing

Under the Reduced Grazing Alternative, cultural resources would continue to be affected, but generally at a lower level and smaller aerial extent due to fewer numbers of livestock grazing in any given pasture. The areas of highest concentrated use would be reduced to about 760 acres (3.4%) across the four allotments. Continued impacts from erosion from wind and water would also be expected.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Impacts to cultural resources in the Hickey Individual and Hickey FRF Allotments would be similar to Alternative 1. Under this alternative the number of AUMs in the Fisher Lake Allotment would remain the same, but the length of time to use them would be extended. This would result in a similar level of impacts to cultural resources as Alternative 1, since fewer cows would be in the area for a longer period of time. In addition, the reduction of the size of the Sagehen Allotment could increase the amount of trampling effects on the remaining portions.

Alternative 4: No Grazing

This alternative would have less effects on cultural resources than any of the other alternatives because existing livestock trampling effects would cease and congregation areas would begin to recover. Continued erosion from wind and water would still be expected to occur, but would be at a lower rate due to increased ground cover.

Recreation

Affected Environment:

There are currently no developed recreation sites within the Hickey Individual, Sagehen, Fisher Lake, and Hickey FRF Allotments, nor are there any planned for the future. Recreation along the Highway 140 corridor (within a half mile) is currently managed for rural activities, opportunities, and experiences (see Map R-3 in BLM 2003b). Motorized use and parking opportunities are available and the probability of user interaction is moderate to high. Outside of the highway corridor, recreation in these allotments is managed primarily for Semi-Primitive Motorized activities, opportunities, and experiences (see Map R-7 in BLM 2003b). 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.

Pockets of vegetation (mountain mahogany and western juniper on Fish Creek Rim WSA/ACEC) and topographic screening (multiple drainages on Sage Hen Butte) provide some opportunities for solitude within these allotments where a visitor could avoid the presence of others. Use of motorized vehicles on roads, trails, and cross-country travel is allowed across approximately half of the area (see Map R-7 of BLM 2003b). However, OHVs are limited to Designated Roads and Trails within Fish Creek Rim WSA. The primary recreation activities in these allotments are upland game bird (e.g., chukar and quail) and big game (e.g., mule deer and pronghorn antelope) hunting, along with trout fishing along Deep Creek. Other recreation activities may occasionally occur in these allotments including: wildlife viewing, photography, camping, hiking, backpacking, horseback riding, and target shooting.

Environmental Consequences:

Alternative 1: No Action

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.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would marginally 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 a reduction in AUMs.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Alternative 3 would marginally degrade recreational experiences and opportunities across the allotments. Although the number of cattle would be decreased on the Fisher Lake Allotment to accommodate a 19% increase in in the season of use, overall Alternative 3 would result in 21 less days a year the public could recreate within the allotment free of the sights and sounds of cattle. Furthermore, additional constructed fencing within the Sagehen Allotment (needed to create a FRF pasture) would negatively impact existing access to fishing along a quarter-mile section of Deep Creek. Although public access would still be permitted within the enclosure, the fence would likely create a deterrent for some fishermen.

Alternative 4: No Grazing

The No-Grazing Alternative would enhance recreation activities, opportunities, and experiences in these allotments. Naturalists' and wildlife dependent recreationists' experiences in these areas would be enhanced by the removal of livestock grazing due to the permanent absence of the sights and sounds of cattle, as well as from the increased potential to observe, photograph, and hunt wildlife due to the eventual improved ecological condition of these allotments.

Visual Resources

Affected Environment:

The Hickey Individual Allotment is divided into two separate areas. Topographically, the visual setting of the area to the south of Highway 140 consists of an island plateau (5,050 ft.) surrounded by steep drainages of by Camas, Deep, Parsnip, and Drake Creeks. The plateau is dominated by Joe Lake, a seasonally dry lake bed, and a ridge (5,613 ft.) running northwest to southeast along the northern boundary of the area above Parsnip Creek. Vegetation is

comprised of low and big mountain sagebrush, with pockets of juniper, and various riparian species along the creeks.

Topographically, the area north of Highway 140 is dominated by a flat, open, plateau sloping gently to the west (5,950 ft.), with Fish Creek Rim and Lynch's Rim (6,932 ft.) along the eastern boundary. Views looking out from the area include: Deep Creek to the south, the Warner Valley to the east and northeast, and the Warner Mountain Range, including Drakes Peak, to the northwest. Vegetation consists of fescue and bluegrass, with low sagebrush, and pockets of juniper and mountain mahogany to the northwest. Observable developments in the area include: the Highway 140 corridor, constructed roads, primitive motorized routes, reclaiming routes, closed routes, fences, utility lines, waterholes, reservoirs, seeding, and gravel pits.

The visual setting of the Sagehen Allotment is dominated by panoramic views from atop Sage Hen Butte (6,354 ft.), with multiple drainages sloping down to Deep Creek (5,480 ft.) to the south and east, and Sage Hen Creek to the west and north. Views looking out from the allotment include: the Warner Mountain Range to the west, with Big Lake, Fish Creek and Coleman Rims to the east. Vegetation in the allotment consists primarily of western juniper, pockets of white fir, curleaf, mountain mahogany, low sagebrush, mountain big sage brush, silver sagebrush, Idaho fescue, Sandberg bluegrass, blue bunch wheat grass, cheatgrass, and various riparian vegetation species . Observable developments in the area include: roads, motorized routes, fences, abandoned mine, developed spring, short pipeline, and troughs.

The Fisher Lake Allotment is dominated by the flats of Fisher Lake and the Warner Valley (4,480 ft.) to the west along with west facing slopes of moderate fault scarps (4,961 ft.) along the eastern boundary. Views looking out from the allotment include the Warner Lakes (Crump Lake) in the foreground with Fish Creek Rim and Lynch's Rim in the background. Vegetation in the area is comprised primarily of big sagebrush, greasewood, crested wheatgrass, Sandberg bluegrass, inland salt grass, and cheatgrass. Observable developments in the area include: roads, motorized routes, reclaiming routes, pipelines, fences, wells, developed springs, waterholes, water tank, troughs, and non-native seeding.

The Hickey FRF Allotment slopes southeast, from a ridge (5,868 ft.) running southwest to northeast above the main channel of Camas Creek, down across a small draw (5,490 ft.) draining to the east into the southern fork of Camas Creek. Views looking out from the area include Crane Lake to the west and two forks Camas Creek to the north and east. Vegetation in the area consists primarily of western juniper, mountain big sagebrush, low sagebrush, Idaho fescue, Sandberg's bluegrass, and cheatgrass. Observable developments in the area include motorized routes and fences.

Hickey Individual (north and south, Sagehen, Fisher Lake, and Hickey FRF Allotments are managed according to Visual Resource Management classes VRM I, VRM II, VRM III, and VRM IV (Table 39).

Table 39. Visual Resource Management Classes in the Allotments

Allotment	VRM I* (acres/%)	VRM II** (acres/%)	VRM III*** (acres/%)	VRM IV**** (acres/%)
Hickey Individual (Fish Creek Rim Pasture)	6,159/76.6%	1,884/23.4%	-	-
Hickey Individual (Upper Joes Lake, Lower Joes Lake, Parsnip Seeding, and Camas Creek Pastures)	-	1,838/60.1%	1,219/39.9%	-
Sagehen	-	2,750/79.4%	584/16.9%	129/3.3%
Fisher Lake	-	-	4,029/99.1%	38/0.1%
Hickey FRF	-	44/15.1%	-	247/84.9%

*VRM I management objectives are to “preserve the existing character of the landscape ... level of change should be very low and must not attract attention.”

**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).

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 I, 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 I, II, III, and IV would continue to be achieved.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Alternative 3 would nominally impact the visual quality across the Fisher Lake and Sagehen Allotments. Although the occurrence of viewing non-native animals within the landscape would be decreased on the Fisher Lake Allotment, a 19% increase in in the season of use would nullify any benefit. Additionally, a quarter-mile new fence within the Sagehen Allotment would negatively impact visual quality near Deep Creek. However, this slight impact would likely be unnoticed by the casual observer, given amount of fence lines already constructed in the

southern portion of the allotment. Visual objectives for VRM classes I, II, III, and IV would continue to be achieved.

Alternative 4: No Grazing

The No-Grazing Alternative would marginally 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 (roads, motorized routes, fences, abandoned mine, developed spring, short pipeline, and troughs) 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 I, II, III, and IV would continue to be achieved.

ACEC/RNA

Affected Environment:

Allotment 00202 contains approximately 2,530 acres of the Fish Creek Rim ACEC/RNA which was designated to recognize and manage for cultural and natural system values. In particular, it provides 4 Oregon Natural Heritage Program (ONHP) native plant community “cells” representing the Basin and Range Ecosystem: (20) big sagebrush- bitterbrush/Idaho fescue, (26) low sagebrush/Idaho fescue scabland, (37) mountain mahogany/mountain/big sagebrush/ bitterbrush, (41) snowbrush/bittercherry shrub. In addition, special status plant species, culturally important plant species, and prehistoric archeological sites are present (BLM 2003a).

Environmental Consequences:

Alternative 1: No Action

The RHAs completed in 1999 and 2002 found both all four allotments were meeting Standards 1 (upland watershed function), 3 (ecological processes), and 5 (native, threatened and endangered, and locally important species). Based on these findings, and the analysis contained in the cultural resources and vegetation sections of this EA, continued grazing on the allotments under this alternative would not have significant impacts on either the natural system values (ecological processes) or cultural values for which the ACEC/RNAs were designated.

Alternative 2 - Reduce Grazing by 50%

Since Alternative 2 would reduce grazing in the Fish Creek Rim Pasture of the Hickey Individual Allotment, it would nominally enhance or protect the natural system (ecological processes) and cultural values for which the ACEC/RNA was designated when compared to Alternative 1. Refer also to the analysis contained in the cultural resources and vegetation sections of this EA.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Impacts would be similar to Alternative 1, as there would be no management changes associated with the Fish Creek Pasture under this alternative.

Alternative 4: No Grazing

Permanently removing grazing from the Hickey Individual Allotment, would nominally enhance or protect the natural system (ecological processes) and cultural values for which the ACEC/RNA was designated when compared to Alternative 1.

Wilderness

Affected Environment:

There are no designated wilderness areas within any of the allotments. However, about three-fourths of Fish Creek Rim Pasture of the Hickey Individual Allotment overlaps with the Fish Creek Rim Wilderness Study Area (WSA) (Map 2).

The 16,070 acre Fish Creek Rim WSA (OR-1-117) was studied under section 603 of the FLPMA and was included in the *Final Oregon Wilderness Environmental Impact Statement* (BLM 1990). Fish Creek Rim WSA is essentially in a natural condition and possesses outstanding opportunities for solitude and primitive and unconfined recreation. Additionally, the Fish Creek Rim WSA has several supplemental values including some of the largest and best quality mountain mahogany stands in the Basin and Range Province in Oregon, strict onion grass (nodding melic), habitat for Peregrine falcon and other raptors, California bighorn sheep, and sage-grouse, and numerous archaeological sites (BLM 1989, 1991).

Existing WSAs must be managed in accordance with the *Management of Wilderness Study Areas* manual so as not to impair suitability for preservation as wilderness (BLM 2012b). Generally, wilderness values must be protected or enhanced in WSAs. Preservation of wilderness values is the primary consideration when evaluating a proposed action or use that may affect those values. To this end, all proposals for uses and/or facilities within WSAs must be reviewed to determine whether the proposal meets the non-impairment criteria: (1) temporary (2) wilderness values must not be degraded so far as to significantly constrain the area's wilderness suitability for preservation as wilderness.

The only permitted exception to the non-impairment criteria are: (1) emergency (wildfire/search and rescue), (2) reclamation activities to minimize impacts created by violations and emergencies, (3) uses and facilities which are considered grandfathered or valid existing rights under the IMP, (4) uses or facilities that clearly protect and enhance the area's wilderness values, and (5) reclamation of pre-FLPMA impacts.

The manual specifically identifies grazing as a “grandfathered use” and permits this use to “continue in the same manner and degree as on that date (October 21, 1976), even if this impairs wilderness suitability”. The “manner and degree” of grazing use is further defined as “the physical and visual impacts that use was having on the area on October 21, 1976” (BLM 2012b, Page 1-12). Grandfathered grazing use is further defined as the grazing management practices (e.g. level of use, season of use, etc.) authorized during the 1976 grazing fee year (BLM 2012b, Page 1-18).

Approximately 6,151 acres or 56% of the Hickey Individual Allotment falls within the Fish Creek Rim WSA. A total of 517 AUMs of forage was allocated to cattle in 1979 (BLM 1981; page B-1). Therefore, the “grandfathered” or existing grazing use that occurred in this portion of the WSA at the time FLPMA was signed in 1976 is estimated at 56% of the total for the allotment or 290 AUMs of forage during the spring, summer, and fall grazing seasons. This portion of the WSA also has several grandfathered water developments including constructed waterholes, reservoirs, and a developed spring.

Environmental Consequences:

Alternative 1: No Action

Under this alternative, livestock AUMs for the Hickey Individual Allotment would be managed for the same number of AUMs as was occurring in 1976 (in both the WSA and the allotment as a whole) and, therefore, this level of use meets the definition of a *grandfathered* use. Additionally, the season of use for the allotment would be similar to that which was occurring in 1976 (spring, summer, and fall). Continued grazing under the No Action Alternative would have negligible negative impacts to wilderness values within the Fish Creek Rim WSA and would likely meet the non-impairment criteria.

Alternative 2: 50% Reduction in Grazing

Alternative 2 would have marginal beneficial impacts to wilderness values associated with the Fish Creek Rim WSA. This alternative would minimally enhance wilderness characteristics such as naturalness and opportunities for solitude and primitive and unconfined recreation on about 38.3% of the WSA due to the reduction of grazing use within a portion of the WSA. The amount of grazing use in this portion of the WSA would be about half what occurred in 1976. The season of use would be similar to what occurred in 1976. Thus, the proposed grazing use would remain well within the definition of *grandfathered* use. This level of use would have less negative impacts to wilderness values than Alternative 1 and would meet the non-impairment criteria.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

Impacts to wilderness values would be similar to Alternative 1 as the grazing management proposed specifically within the Fish Creek Pasture of the Hickey Individual Allotment is the same as Alternative 1.

Alternative 4: No Grazing

The No Grazing Alternative would minimally enhance naturalness and outstanding opportunities for solitude and primitive and unconfined recreation in the area. While the sights and sounds of cattle would be eliminated and cattle trails and trampled areas around water sources would be recover over time, the adverse visual impacts of observable human developments within the area would likely remain until such time as they deteriorate or funds and resources are made available to facilitate their removal. Additionally, the absence of cattle on the Fish Creek Pasture would only benefit a portion of the WSA. Cattle would continue to be grazed on the remaining 9,919 acres (61.7%) of the WSA. This management action would have less negative effects and more positive effects on wilderness values than either Alternatives 1 or 2 and would meet the non-impairment criteria.

Social and Economic Values

Affected Environment:

The same permittee uses all the allotments at different times. 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 2010, an estimated 52,500 cow/calves were in Lake County Oregon (Pete Scheder, Personal Communication, Lake County Agricultural Extension Agent). In 2010, Lake County ranchers sold an estimated \$35,000,000 worth of cattle and calves or related beef products from public lands. The four allotments, combine for 1,634 AUMs for about 10 months of the year. This calculates out to forage for about 160 cows for 10 months. The 160 cows would produce about 129 calves for market, assuming 8 bulls and an 85% calf crop.

Environmental Consequences:

Effects Common to Alternatives 1-3

The same permittee uses all allotments at different times of 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 (1,634 AUMs @ \$1.35/AUM = \$2,209.95. 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 129 calves each year associated with the 4 allotments under the Harman Permit, providing continued economic stability for the permittee and contributing approximately 0.25% to the total county-wide cattle production. Based on the current price of a 600-pound stocker calf at \$163/cwt (100 lbs. of live weight) (Stockmans Journal, 2012) the permittee would generate a gross annual income of approximately \$126,162. 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 4 allotments, reducing the grazing fees collected by \$1102.95, assuming 817AUMs @ \$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 \$163/cwt) (65 calves) approximately \$63,570. This would be a loss of gross income compared to alternative 1 of approximately \$62,592. 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 \$88,200 to feed hay for 10 months. This is based on the current cost of hay, approximately \$245/ton (Oregon-Washington weekly hay report, 2012) and assuming feeding 30lb/day/cow for all 10 months. If the permittee could lease private land the estimated cost for 50% of the herd would be approximately \$12,091, assuming (1,634 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 \$12,091 and \$88,200

If the rancher could not secure other suitable pasture land or could not afford these increased costs, then approximately 65 calves would no longer be produced in Lake County, resulting in a 0.12% annual reduction in county-wide cattle production. . Based on the current price of a 600-pound stocker calf at \$163/cwt (100 lbs. of live weight) (Stockmans Journal, 2012), this could

result in an economic gross loss to the permittee and counties economy of about \$63,081 per year.

Alternative 3: Adjust Grazing Season (Fisher Lake Allotment) and Create New Deep Creek FRF Allotment

The grazing fees collected by the BLM would be the same as under alternative 1 for all allotments.

In the Sagehen allotment the conversion of the Deep Creek Pasture to an FRF allotment would not change the number of AUMs that were billed, but would allow the permittee to determine the grazing schedule and livestock numbers in the Deep Creek Pasture. This flexibility makes it easier and possibly cheaper for the permittee to operate in the Sagehen Allotment. The new fence across Deep Creek would increase the maintenance problems and cost for the permittee.

In the Fisher Lake Allotment extending the grazing season by three weeks would benefit the permittee by reducing the period of time between allotment grazing periods. This would reduce the number of cattle moves and the amount of forage the permittee will have to provide before going onto the spring grazing pastures (Hickey Individual Allotment) in mid-April.

Alternative 4 No Grazing

A minimum loss of (1,634 AUMs @ \$1.35/AUM) \$2,209.95 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 \$245/ton (Oregon-Washington weekly hay report, 2012) and assuming feeding 30lb/day/cow. This would result in approximately \$176,400 in additional costs to feed the permittee's 160 cows for 300 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 \$21,973 ((1,634 AUMs * \$14.80) - \$357.75).

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 \$21,973 and \$176,400.

If the permittee could not secure other suitable pasture land or could not afford these increased costs, then approximately 129 calves would no longer be produced in Lake County, resulting in a 0.25% annual reduction in county-wide cattle production. Based on the current price of a 600-pound stocker calf at \$163/cwt (100 lbs. of live weight) (Stockmans Journal, 2012), this could result in an economic gross loss to the permittee and counties economy of about \$126,162 per year.

The permittee would be responsible for the cost of fencing off the public land in the Sagehen and Hickey FRF Allotments. The cost in the Sagehen Allotment would be about \$15,000-\$18,000 (5-6 miles) and about \$3,000 (1 miles) in the Hickey FRF Allotment.

The previous analysis assumes that permittee would fence off the public land in the Sagehen and Hickey FRF Pastures and continue grazing on the private lands. If the permittee chose not to fence off the private land in the Sagehen Allotment, the additional costs to the permittee would be for 201 AUMs produced on private land or \$22,050 for hay and \$2,975 for private pasture. The Hickey FRF has 64 AUMs on the public land which was included in the 1,634 acres already analyzed. The number of AUMs on the private land in the Hickey FRF can only be estimated at about 130 AUMs, so the cost of not being able to graze the private land would be \$14,333 for hay or \$1,924 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 Sagehen and the FRF would be approximately 331 AUMs. To replace those AUMs would cost about \$36,383 for hay or \$4,899 for private pasture.

Cumulative Effects

Analysis Scale and Timeframe

For the purposes of this analysis, cumulative impacts are generally addressed at the allotment scale. The reasons for choosing this analysis scale include the fact that issuing a permit is a decision that affects the entire allotment and BLM has a good idea of other potential reasonably foreseeable actions that may occur within the allotment due to management direction identified in the *Lakeview RMP/ROD* (Appendix E, BLM 2003b). However, the analysis spatial scales could vary somewhat depending upon the resource value/use being addressed. 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, range improvement project construction and maintenance, and sage-grouse habitat improvement (juniper removal) projects.

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 for the allotment, approximately 54.8 miles of open roads and primitive motorized routes (66.4 acres of total road-related disturbance) have been constructed or created within the allotments.

About 45.3 miles of fence (27.6 acres disturbance) currently exist in the four allotments. Other past and present actions within the allotment have included 35 water developments (Maps 5A and 5B) and several natural water sources resulting in approximately 1,488 acres of concentrated livestock use around water sources. This represents an estimated total of about

1,516 acres of past or on-going ground disturbance. While juniper treatment have been completed in portions of these allotments in recent years, these projects were designed to benefit sage-grouse habitat by removing young, encroaching juniper and leave the sagebrush communities relatively undisturbed. For this reason, these acres are not considered in the total acreage estimates of cumulative ground disturbance.

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 Assessments for the allotments (BLM 1999a, 1999b, 2002a, 2002b).

Reasonably Foreseeable Future Actions

The *Lakeview RMP/ROD* (Appendix E3, page A-143, BLM 2003b) lists headcut stabilization and juniper removal/control as potential future projects within the Hickey Individual Allotment. As noted above, some juniper treatment has already been completed in the area. However, headcut stabilization has not yet been completed and is somewhat speculative at this point in time. Other foreseeable future actions in these allotments would include road and range improvement maintenance, weed treatments, and hunting and other dispersed recreation activities.

Environmental Consequences:

Cumulative Effects Common to Alternatives 1 – 4

For purposes of this analysis, total acres of concentrated ground surface disturbance or potential for surface recovery served as the main indicator of cumulative impacts on soils and BSCs, upland vegetation, wetland and riparian areas, cultural resources, and wildlife and special status species habitat.

Road and range improvement maintenance activities would occur on an as needed basis and generally would not cause additional surface disturbance beyond what already 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 66.4 acres.

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 also 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.

Existing or new infestations of noxious weeds would be treated in accordance with the most current Integrated Weed Treatment Plan(s) and related policies (such as BLM 2004b, 2007b, 2007c). It is difficult to predict the aerial extent of these potential future impacts. However, the impacts of these treatments have already been analyzed and these analyses are incorporated by reference in their entirety. Such impacts could include: short-term increases in surface disturbance and soil erosion, coupled with reduction in weed distribution, native vegetation recovery, protection or restoration of wildlife habitats, maintenance of recreation experiences, maintenance of livestock forage production, maintenance of visual quality, and minimal risk to human health over the long-term (BLM 2004d, Pages 10-20).

None of the alternatives would have any measureable or substantial incremental cumulative effects on native American traditional practices, recreation, or visual quality, as the analysis contained earlier in this chapter revealed that there would be little or no direct or indirect effects on these values/issues.

Cumulative Effects of Alternatives 1 – 3

Table 40 lists total acres of concentrated livestock use or heavy ground disturbance associated with livestock grazing management activities for each alternative. Alternative 1 represents the amount of ground disturbance associated with past and present livestock grazing management activities. Slight incremental decreases in existing ground disturbance would occur under Alternatives 2 and 3.

Table 40. Estimated Acres of Concentrated Livestock Grazing Use

Allotment	Alternative 1	Alternative 2	Alternative 3
Hickey Individual	708	354	708
Sagehen	566	283	403
Fisher Lake	241	122	241
Hickey FRF	0.6	0.6	0.6
TOTAL	1516	760	1353

Cumulative Effects of Alternative 4: No Grazing

The incremental cumulative effects of removal of grazing, when added to past, present, and reasonably foreseeable future actions, would result in an incremental decrease in total ground disturbance of ranging from 760 to 1516 acres across the 4 allotments compared to Alternatives 1-3.

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STREAM PHOTOS



Photo 1 – Condition of Camas Creek in 1981.



Photo 2 – Condition of Camas Creek in 2009.

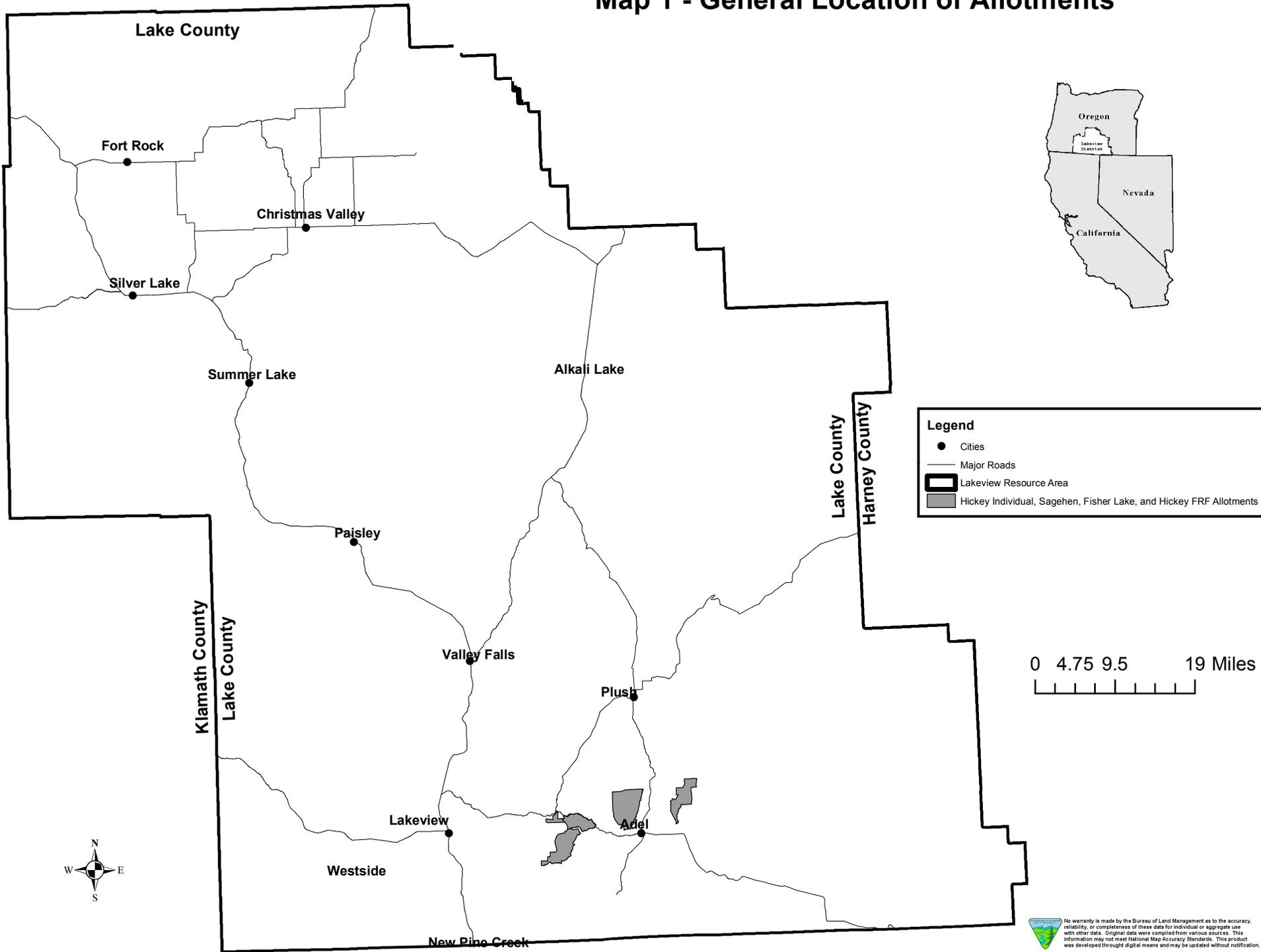


Photo 3. Condition of Deep Creek in 1994.

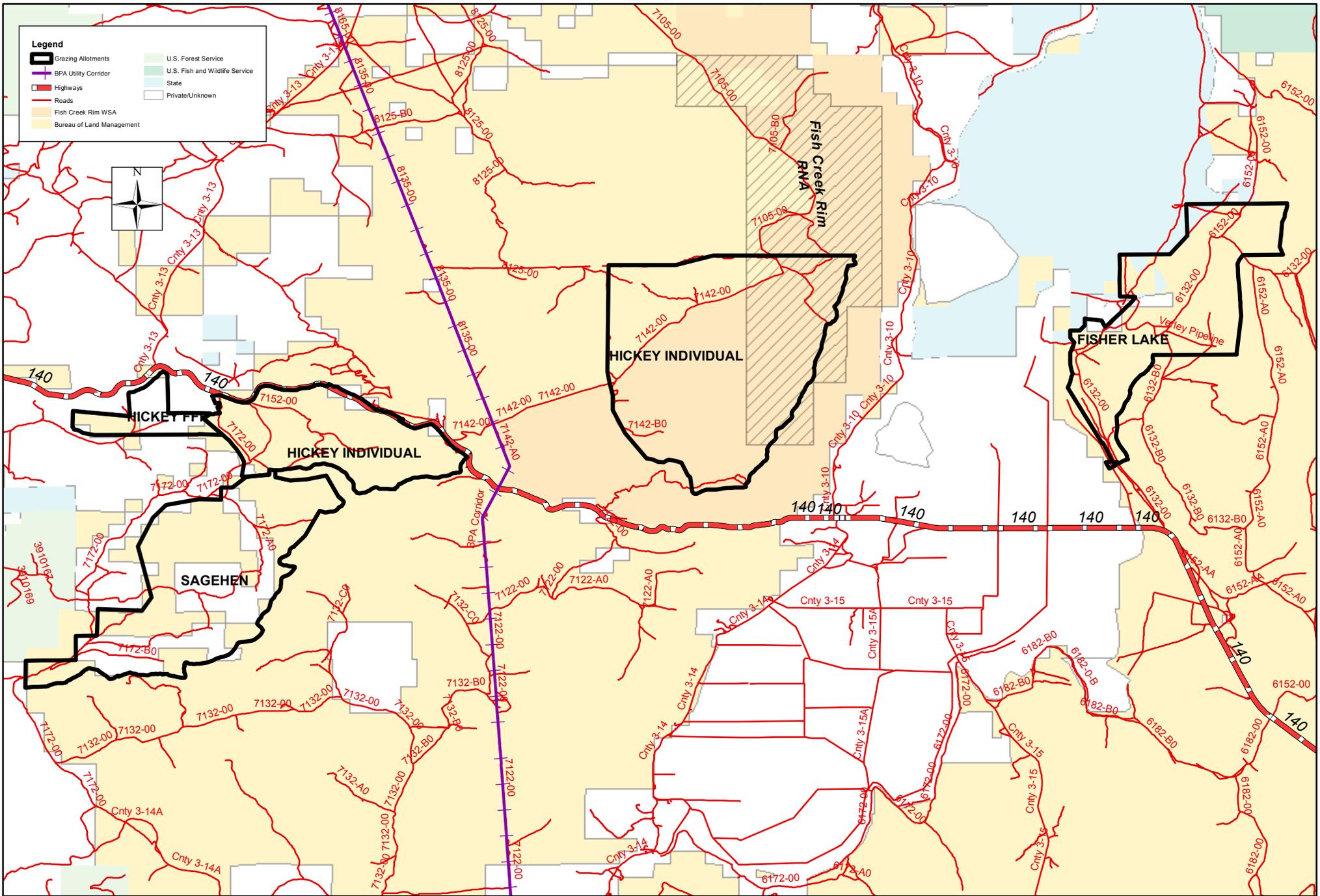


Photo 4. Condition of Deep Creek in 2009.

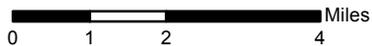
Map 1 - General Location of Allotments

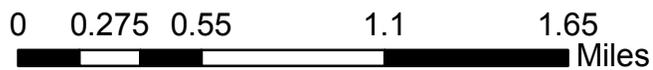
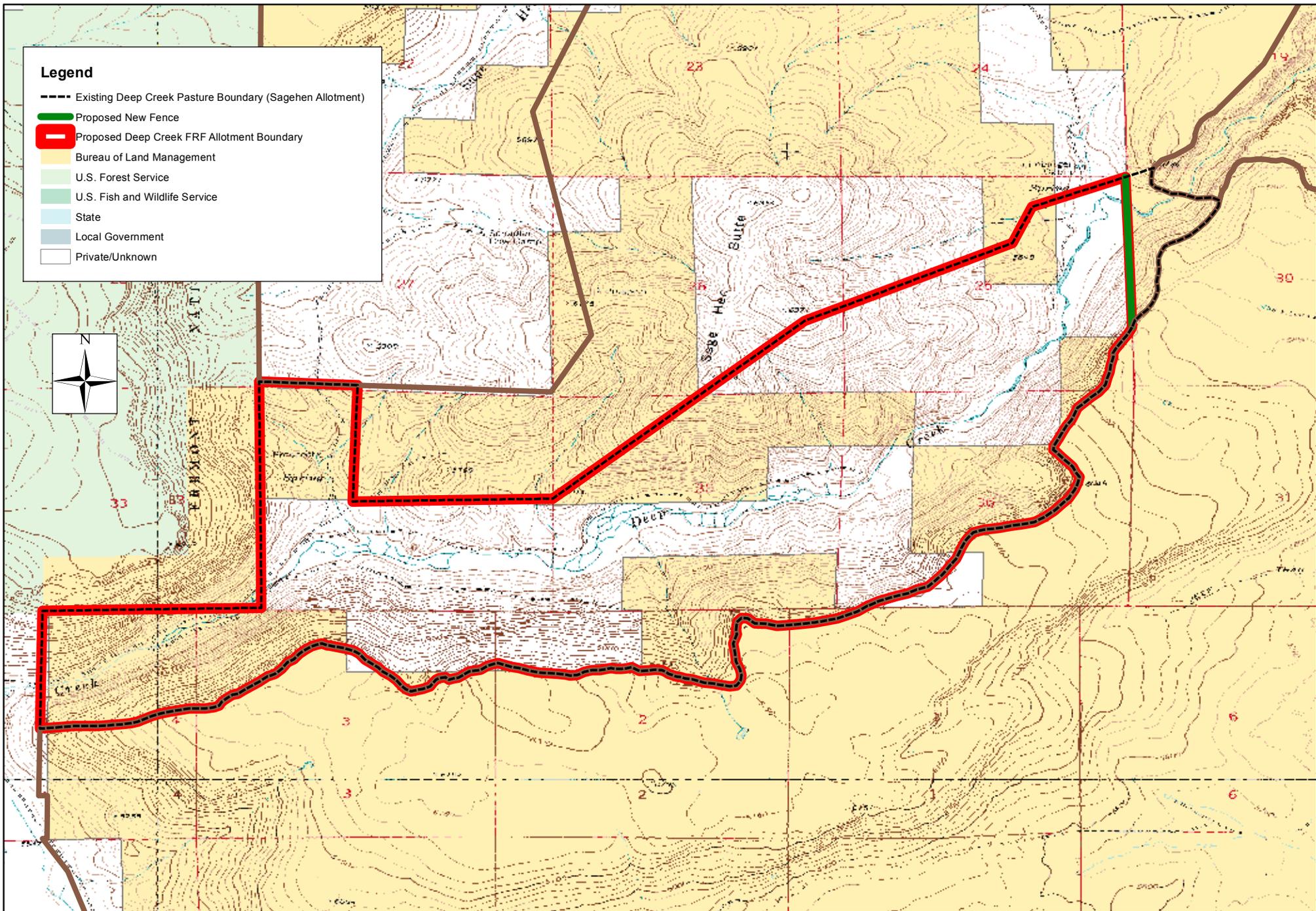


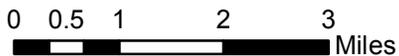
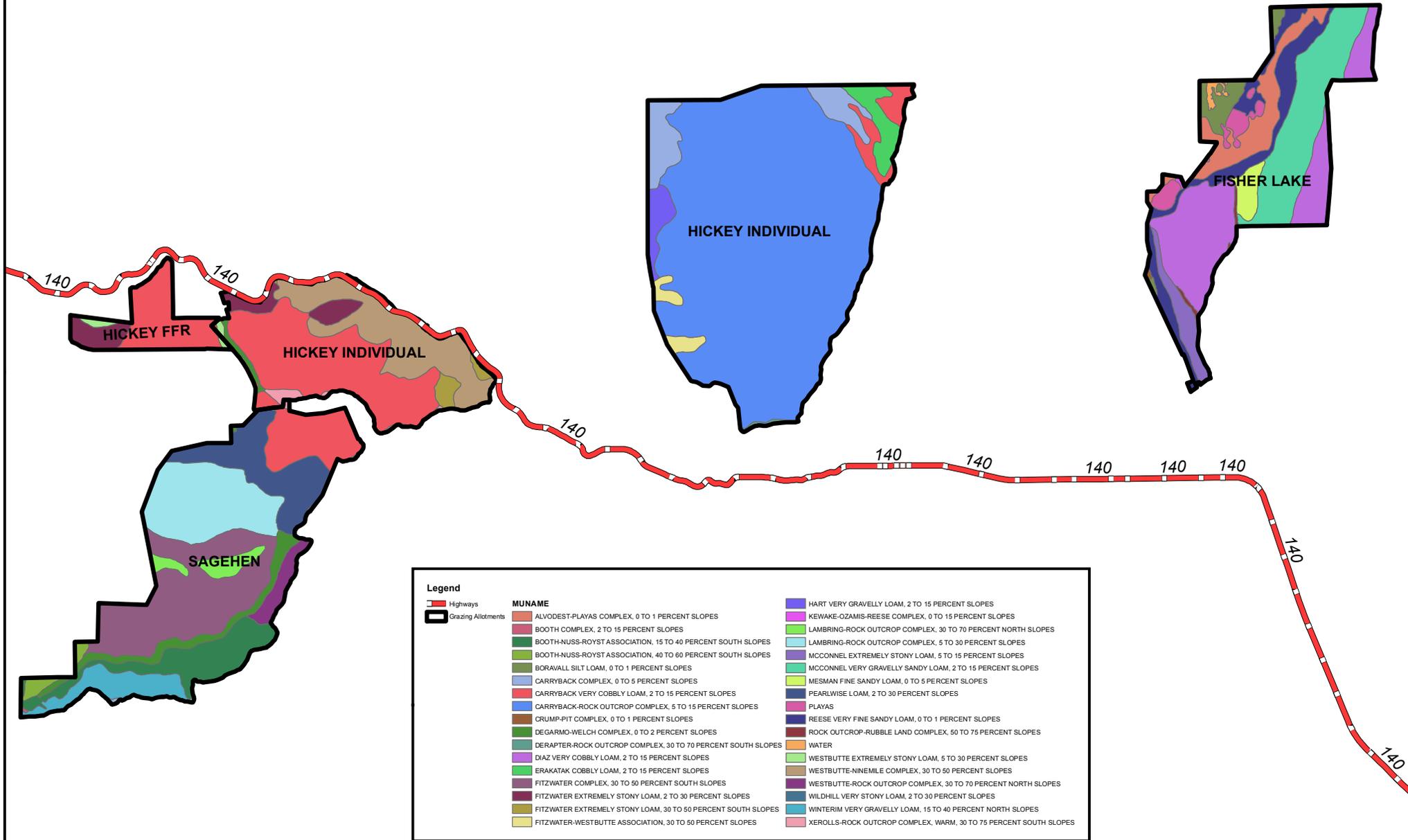
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Map 2. Land Status, ACEC/RNAs, and WSAs within the Hickey Individual, Sagehen, Fisher Lake, and Hickey FRF Allotments

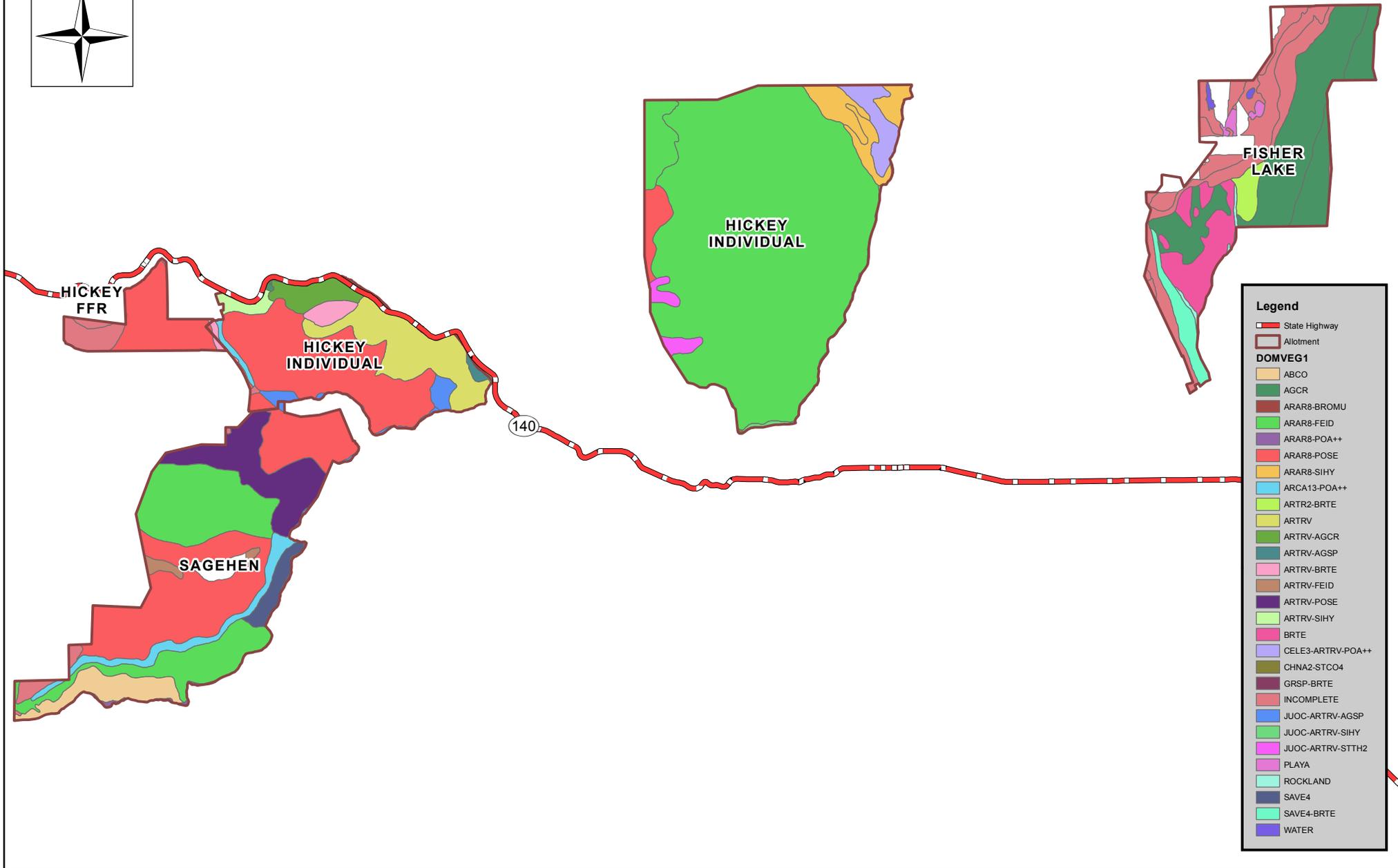






Map 4 - Soils in the Allotments

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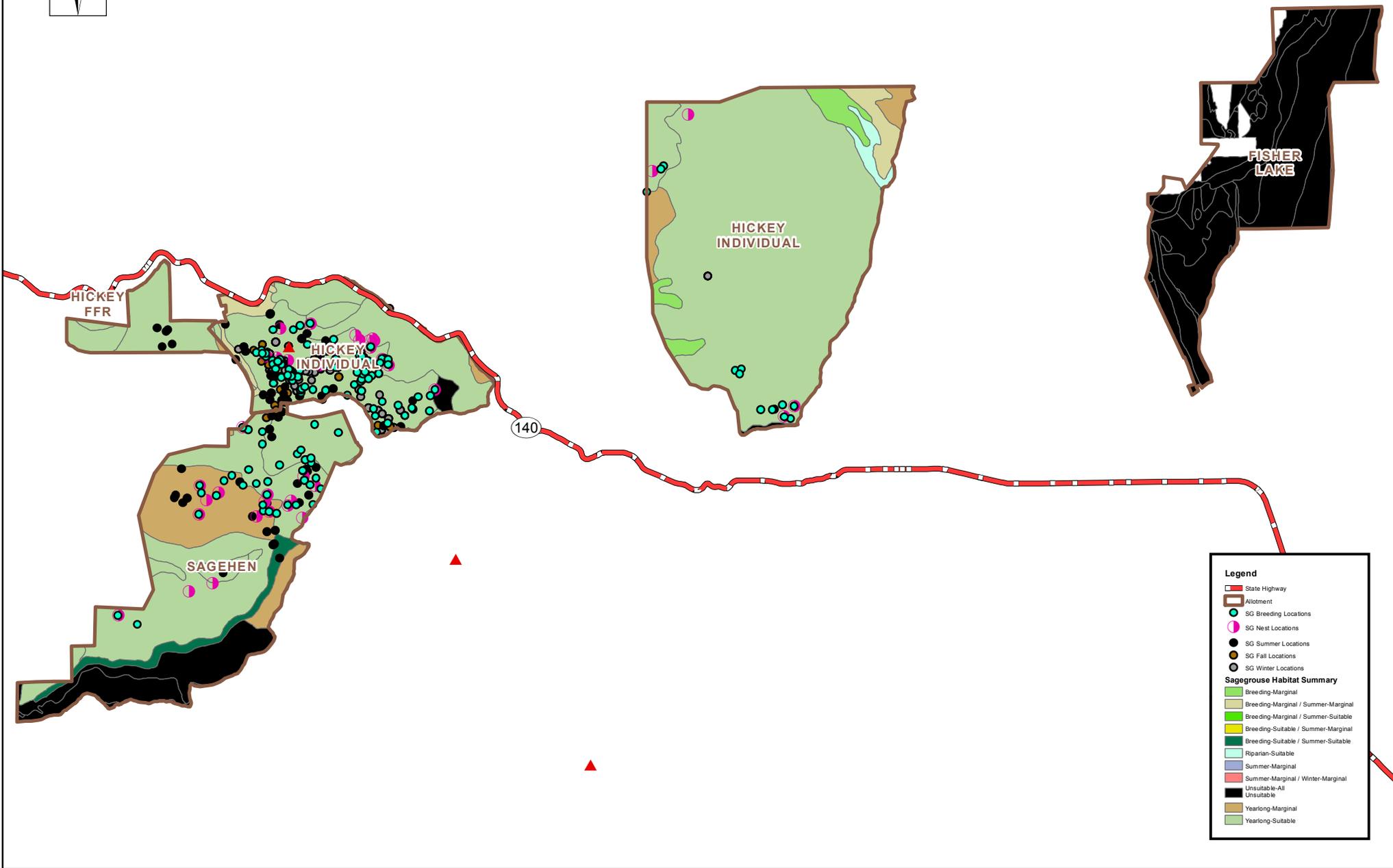


Map 6. Existing Dominant Vegetation in the Allotments

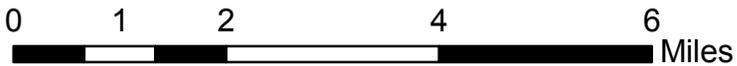
0 0.75 1.5 3 4.5
Miles



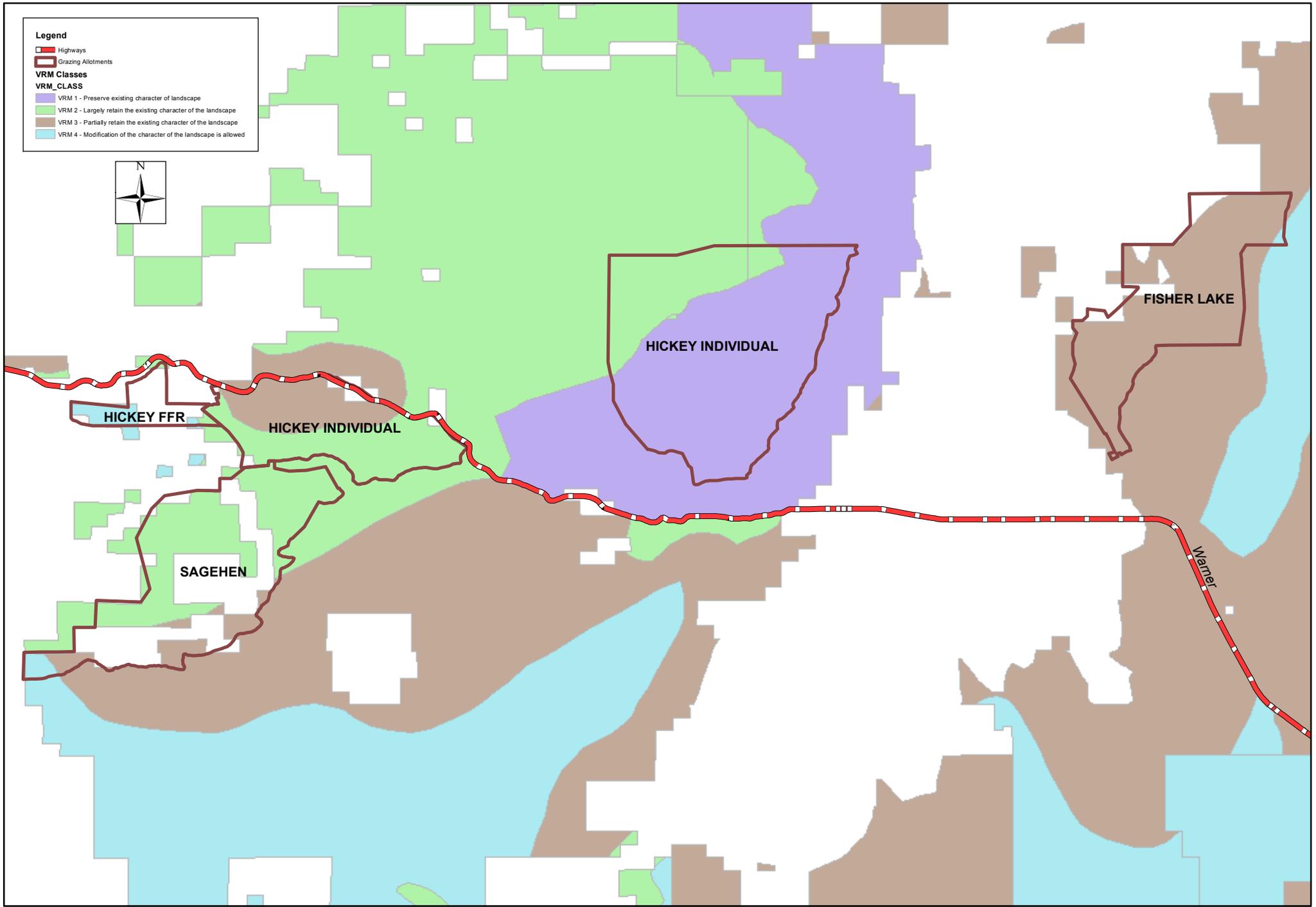
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Map 7 - Sagegrouse Habitat and Actual Use Data Collected via Telemetry in the Allotments



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Map 8 - Visual Resource Management Classes in the Allotments

