# Appendix A – Rangeland Health Determinations for Trout Springs (2001 and 2012) and Hanley FFR (2001 and 2010) Allotments

Evaluation and Determination
**Trout Springs Allotment**
June 29, 2012

## Interdisciplinary Team:

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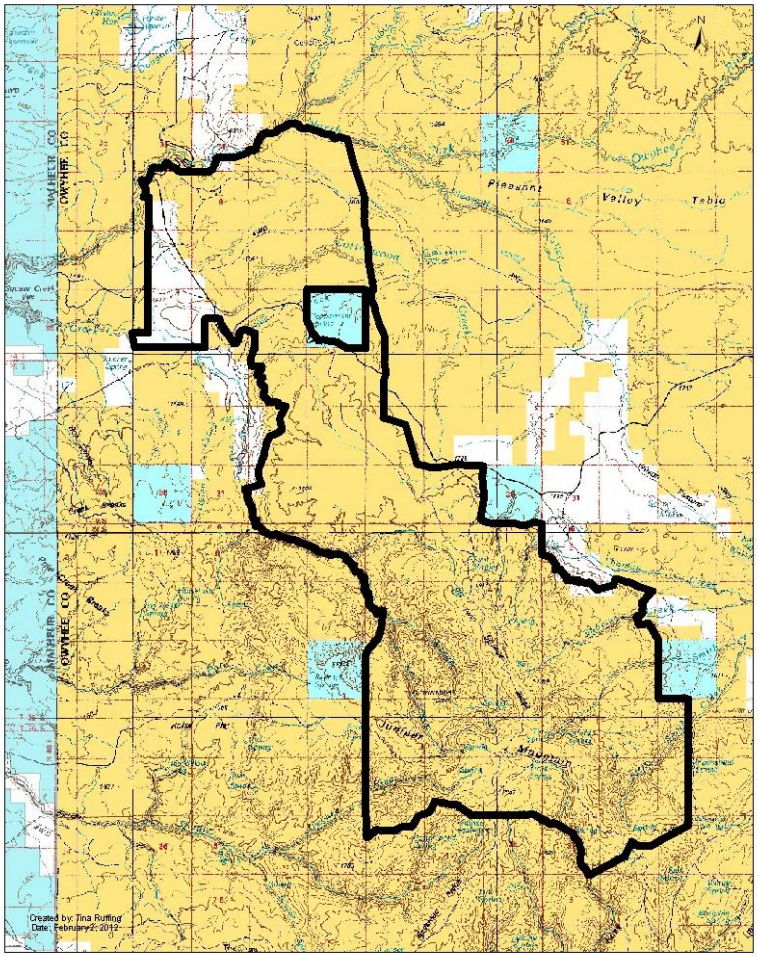
## Background:

The Trout Springs Allotment is located in southwestern Owyhee County, Idaho, approximately 30 miles south of Jordan Valley, Oregon. The allotment lies in the Owyhee Mountains and includes Juniper Mountain. The North Fork of the Owyhee River forms the allotment's northern boundary, the southern boundary lies on the south side of Juniper Mountain, the eastern side is bounded partially by the Owyhee Uplands National Backcountry Byway (aka Mud Flat Road) and Squaw Creek forms a portion of the western boundary (Map 1).

**Map 1. Trout Springs Allotment, general location**



Elevations range from 4,900 feet in Pasture 4 in the northwest corner of the allotment to over 6,700 feet in Pasture 1 on Juniper Mountain. Annual precipitation across the allotment ranges from approximately 12 in lower elevations to 20 inches in higher elevations. Table 1 outlines the ownership and acreage in each pasture of the Trout Springs allotment.

**Table 1. Ownership and Acres, Trout Springs Allotment**

| Allotment | Pastures | Ownership | | | Total Acres |
|---|---|---|---|---|---|
| | | Federal | State | Private | |
| Trout Springs | 1A – Middle Fork | 5,730 | 0 | 0 | **5,727** |
| | 1B – Thomas Cr | 7,730 | 0 | 124 | **7,856** |
| | 2 – Cottonwood | 2,334 | 0 | 2 | **2,585** |
| | 3 – Twin Springs | 11,852 | 65 | 109 | **11,774** |
| | 4 – Fairylawn | 246 | 0 | 1,280 | **1,526** |
| **Totals** | | **27,892** | **65** | **1,515** | **29,472** |

A Rangeland Health Assessment (Assessment) was completed for the Trout Springs Allotment in 2001. Since that time, many changes have occurred on the Trout Springs Allotment. Livestock grazing continued on the entire allotment through 2007. Since 2008, livestock grazing has not been authorized on the Trout Springs Allotment with the exception of Pasture 4, which is still being grazed in conjunction with adjacent private property that is not fenced separately. Additional data have been collected in uplands and riparian systems. For these reasons, the Interdisciplinary Team has determined that the existing Evaluation and Determination should be updated for the Trout Springs Allotment.

This Evaluation and Determination is updated based on data collected through 2008, even though additional data has been collected through 2010. Analysis of these data is more reflective of what conditions are when livestock grazing is occurring. Although it can be assumed that resource conditions on the allotment have improved significantly in the absence of authorized grazing in the past four years, it can also be assumed that this rate of recovery will decrease to some extent if livestock are once again allowed to graze the Trout Springs Allotment.

A significant amount of work, including field visits, utilization measurements, trend data, and riparian monitoring (Multiple Indicator Monitoring {MIM}, which measures stubble height, streambank trampling, woody browse and other parameters, and Proper Functioning Condition {PFC}) has been conducted in the past several years. These data have been used to update, supplement, and replace the data used for the 2001 Assessment, Evaluation and Determination to determine if the allotment is meeting, not meeting, or making significant progress towards the Idaho Standards for Rangeland Health (Standards). For Standards not meeting or making significant progress, the causal factor(s) are determined. Information gathered since the 2001 Assessment is discussed in the Environmental Assessment's (EA's) Affected Environment sections for the applicable resource for each Standard; thus the 2011 Assessment is found in the Affected Environment section of EA # ID-130-2009-EA-3680. This report uses that information, and constitutes a new Evaluation and Determination for the Trout Springs Allotment based on conditions through 2007. "Current" livestock grazing management practices in this document refer to 2000-2007 management.

***Standard 1 – Watersheds***

Overview

The majority of the Trout Springs Allotment is within North Fork Owyhee River watershed. Headwaters Deep Creek, Middle Fork Owyhee River, and Red Canyon-Owyhee River watersheds make up the remainder of the allotment area at 22%, 6%, and 5%, respectively. Headwaters Deep Creek watershed represents less than 1% of the area within the allotment. Soils within the allotment are diverse due to their position on the landscape and varying sources of parent material. These soils occur on structural benches, foothills, and mountains. They formed in alluvium and residuum from welded rhyolitic tuff that has been influenced by volcanic ash. The soils are very shallow to deep and well drained. These soils have a xeric soil moisture regime and a frigid soil temperature regime. The northern third of Trout Springs Allotment soils are generally Hat-Avtable-Monasterio complex; middle are Mulshoe-Squawcreek-Gaib association; and the southern third are Saturday-Mulshoe complex. These soils are generally loamy with high amounts of coarse fragments, both on the surface and in the profile. Surface textures are generally silty loam to loamy. The hazard of water erosion on these soils is slight to moderate; however, soils that occur on 30% or greater slopes have a moderate to high hazard. The hazard of wind erosion is low.

**Evaluation:**

The 2001 Assessment with updated trend, density, utilization, actual use, and juniper cover, as discussed in the EA, are used to evaluate the watershed Standard.

Vegetation is the primary factor that influences the spatial and temporal variability of soil processes and as vegetation condition changes, so does runoff, erosion, and infiltration. In all pastures, large perennial bunchgrasses have been reduced and juniper has increased compared to reference conditions. Trend monitoring ground cover data results indicate a replacement of more stable ground cover elements (gravel, rock, persistent litter and biological crust) with less stable (non-persistent litter) cover at two of the four trend monitoring sites. Also, bare ground and basal perennial vegetation trends were stable at three sites and declining at one site. The fact that many ground cover element trends were stable but most changes that did occur indicated less suitable ground cover suggests a slightly declining system, from a watershed and native plant community standpoint.

The 2001 Trout Springs Assessment identified that, on many areas in the allotment, pedestalled interspatial bunchgrass and surface flow patterns were observed, which are indicators of accelerated erosion. Mechanical damage to the soil surface by hoof action was present where livestock tended to congregate (riparian areas, water developments, salting areas or at certain gates). Additionally, many areas lacked adequate surface cover to protect and stabilize the soil surface.

There are two headcuts in the headwaters of Cottonwood Creek in the central portion of the Trout Springs Allotment that have downcut channels through the riparian area creating two disconnected gullies. From 2009 observations, the gullies do not appear to be expanding and some upland grasses are beginning to establish on the barren channel banks and soil slumps.

Evaluation Finding – Allotment is (check one):
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress toward meeting
_X_ Not meeting the Standard

Evaluation Rationale
Standard 1 is not being met on the majority of the allotment as indicated by the evidence of accelerated soil erosion, decreases in native perennial bunchgrass cover, and juniper encroachment. Signs of accelerated erosion such as water flow patterns and pedestaled bunchgrasses were observed in the allotment. The decrease of the deep-rooted perennial bunch grasses reduces soil cover and litter necessary for soil site stability. Replacement of mountain big sagebrush by juniper and the continual encroachment of juniper are changing the nutrient cycling, hydrologic cycling, and nutrient flow from what is expected for the area.

**Determination:**
Standard 1 is not being met throughout the allotment. The primary causes for not meeting the Standard are accelerated soil erosion and the lack of native bunchgrasses due to livestock management, and an increase in juniper from what is expected for the site.

Determination Finding: The Trout Springs Allotment is (check one or more):
___ Meeting the Standard
___ Not Meeting the Standard, but making significant progress toward
___ Conforms with Guidelines for Livestock Grazing Management
_X_ Not Meeting the Standard; Current Livestock Grazing Management Practices are Significant Factors
___ Not Meeting the Standard; Current Livestock Grazing Management Practices are **not** Significant Factors
_X_ Does not conform with Guidelines for Livestock Grazing Management Guidelines No(s). **1, 3, 8.**

Determination Rationale
Accelerated soil erosion such as water flow patterns and pedestalled bunchgrasses were identified throughout the allotment. Reduction of deep-rooted perennial bunch grasses likely due to livestock grazing has reduced soil cover and litter necessary for soil site stability and resulted in accelerated soil erosion. Additionally, replacement of mountain big sagebrush with juniper and the continued juniper encroachment has decreased soil cover and litter.

***Standard 2 – Riparian Areas and Wetlands and***
***Standard 3 – Stream Channel/Floodplain***

Overview
Trout Springs Allotment has about 37 miles of perennial and intermittent streams. Major drainages include the North and Middle Fork Owyhee Rivers and Squaw Creek. The streams generally drain west from Idaho into Oregon. In the Trout Springs Allotment, Squaw Creek forms the southwestern boundary with the Pole Creek Allotment (0635); the North Fork of the Owyhee River canyon rim forms a portion of the northern boundary between Trout Springs and the Cliffs Allotment (0501); and the West Fork of Red Canyon forms a portion of the southern

boundary between Trout Springs and the Bull Basin Allotment (0540). Trout Springs Allotment has 14 developed springs and numerous (≈60) undeveloped springs, many of which are headwaters to various streams. The majority of springs are located in the southern half of the allotment. Two of the larger springs are Trout Springs and Three Springs, both of which have fenced exclosures.

There are two reservoirs north of Mud Flat Road, and another reservoir and several small (less than 0.1 acre) dugout ponds with little associated riparian habitat south of Mud Flat Road. The reservoirs and ponds are primarily used for livestock water.

**Evaluation:**
The 2001 Assessment with updated lotic and lentic PFC assessments, greenline monitoring data, MIM data, herbaceous stubble height, woody browse, and streambank alteration information, found in the 2012 EA, are used to evaluate the riparian areas and wetlands and stream channel/floodplain standards.

PFC assessments were conducted between 1996 and 2000, and most stream segments were assessed as functional at risk (FAR) with no apparent trend. Exceptions include Salt Creek, a 1.7 mile segment of Squaw Creek, and 0.3 mile segment of the North Fork of the Owyhee River which all were assessed as properly functioning, and a 1.1 mile segment of the North Fork Owyhee River that was assessed as non-functional. Streams assessed as properly functioning typically have rock armored channels or densely vegetated streambanks composed of riparian species that have root structures that can stabilize streambanks during high flow events. Streams that were assessed as FAR typically had early seral or increaser species, and generally lacked deep-rooted riparian species. If deep-rooted riparian species were observed, they typically exhibited low vigor. Some stream segments had insufficient riparian vegetation to adequately protect the streambanks from high flow events. Additionally, the width/depth ratios of some streams were out of balance, and the riparian areas are not widening, nor have they reached their potential extent. Flood plain and channel characteristics were generally inadequate to dissipate energy, and lateral and vertical stream movements were occurring as a result of streambank damage by livestock. The existing plant communities lacked vigor and age class diversity of woody species, while some stream reaches lacked hydric species altogether. The North Fork of the Owyhee River non-functional segment had similar deficiencies as the FAR stream segments.

In addition to the perennial stream PFC assessments, PFC assessments were also conducted on the intermittent Cottonwood Creek. Approximately three miles of the lower stream segment was assessed as properly functioning, and the upper 0.7 mile segment was assessed as FAR due to a lack in age class diversity and poor vigor in the riparian vegetation, exposed point bars, and width/depth ratio that is out of balance with the landscape. No monitoring has been conducted on the headwaters of Cottonwood Creek; however, headcuts and severe channel downcutting were observed on a 2009 Trout Springs Allotment tour.

Herbaceous stubble heights, streambank alteration, and riparian woody browse utilization were measured on various stream reaches in 2000-2002. The data indicate heavy livestock use (low stubble height and high bank alterations) in all stream reaches during 2000-2002 time periods.

Several Greenline monitoring transects were established in 2002 on various stream reaches in the Trout Springs Allotment. From the monitoring data, streambank stability percentages (based on vegetation community types) were calculated for each stream reach. The majority of stream reaches sampled have a substantial percentage of unstable streambanks. Sampled reaches in Squaw Creek, West Fork of Red Canyon Creek, and Little Smith Creek all had greater than 50% of streambanks rated as stable. In contrast, sampled reaches of Cottonwood Creek, Pleasant Valley Creek, and the Middle Fork of the Owyhee River had greater than 85% of streambanks rated as unstable.

Data from various sources were gathered from 2003-2007. The Ada County Fish and Game League, Idaho Bird Hunters, and the Idaho Wildlife Federation (2004) documented degraded conditions with photographs and identified less than 2-inch stubble height in riparian areas on West Fork of Red Canyon Creek, Middle Fork Owyhee and Cottonwood Creek in the Trout Springs Allotment during the 2003 grazing season. In 2005, BLM personnel identified excessive riparian utilization on Pleasant Valley Creek tributary in Pasture 3 and West Fork of Red Canyon Creek in Pasture 1B. In an Idaho District Court declaration by Charles Clarke, evidence of overgrazing such as extremely low stubble heights in riparian areas and accelerated erosion such as pedestaled bunchgrasses accompanied by rilling were observed in the Trout Springs Allotment in 2007.

In 2008, data were collected on Hells Creek, Cottonwood Creek, Thomas Creek, Middle Fork Owyhee River, Pleasant Valley Creek, Squaw Creek, Smith Creek, and West Fork Red Canyon Creek. MIM protocols were used to measure and calculate median herbaceous riparian stubble height, streambank alteration, and wood browse. The 2008 data were collected in the absence of any authorized grazing. However, bank alteration data indicated unauthorized livestock use in Hells Creek, Middle Fork Owyhee, and West Fork Red Canyon Creek. All stream segments had herbaceous obligate wetland plant species and willow plant communities. Woody browse was not measured on Middle Fork Owyhee, Pleasant Valley Creek, or Squaw Creek because willows on those reaches were mature and well above five feet tall. The general lack of young and immature willows in these reaches may indicate periods of heavy browsing usually during the late summer. Few bank alterations were observed in Pleasant Valley and Squaw Creek reaches, and were as expected in non-grazed pastures.

Previous reports (1996-2000) have identified that many springs have been negatively impacted by cattle trampling. In 2008, 12 springs were assessed as PFC. These springs were generally small (less than two acres) and contribute water flow to streams. Obligate wetland plants along with various willow species were present. One spring was assessed as FAR due to the high potential for erosion. There was soil slumped at the point where water flows from the spring into the stream channel. This slump is at risk for causing excessive erosion during high flow events.

In addition, juniper encroachment is occurring in and near riparian areas. Although it is having some effect, the encroachment is not yet a significant causal factor affecting the functioning condition of riparian areas and stream channels.

Evaluation Finding – Allotment is (check one):
___ Meeting the Standards
___ Not meeting the Standards, but making significant progress toward meeting
_X_Not meeting the Standards

Evaluation Rationale
Standards 2 and 3 are not being met in riparian areas accessible to livestock grazing throughout the allotment. In a majority of the stream reaches, riparian vegetation is not controlling erosion, stabilizing streambanks, or dissipating energy. Streambanks are not within the appropriate range of stability as indicated by individual reach functional rating. In addition, multiple stream reaches on multiple years have had less than 4-inch median herbaceous stubble height and greater than 10% streambank alterations.

**Determination:**
Significant progress is not being made towards Standards 2 and 3. Due to the hot season use, livestock accessible riparian areas are negatively affected by subsequent heavy utilization and/or streambank/wetland physical disturbance. Conversely, areas that are inaccessible to livestock, either from fencing or terrain, are usually meeting Standards 2 and 3.

Although juniper encroachment is not yet significantly affecting functioning condition of riparian areas and stream channels, the incremental increase in juniper will eventually affect precipitation runoff and increase erosion/sedimentation in the stream channels.

Determination Finding: The Trout Springs Allotment is (check one or more):
___ Meeting the Standards
___ Not Meeting the Standards, but making significant progress toward
___ Conforms with Guidelines for Livestock Grazing Management
_X_Not Meeting the Standards; Current Livestock Grazing Management Practices are Significant Factors
___ Not Meeting the Standards; Current Livestock Grazing Management Practices are **not** Significant Factors
_X_Does not conform with Guidelines for Livestock Grazing Management Guidelines No(s) **5, 7.**

Determination Rationale
In this allotment, grazing occurs at the hottest time of year. Due to topography and hot season use, livestock tend to congregate and concentrate their use in narrow riparian areas, increasing riparian vegetation use and streambank trampling to unacceptable levels. From available data, it appears that stream segments and springs that are accessible to livestock have been negatively affected by current and past grazing practices. Furthermore, stream reaches and springs that have been assessed as properly functioning and have well developed woody and herbaceous riparian communities are likely to be inaccessible or have limited livestock accessibility.

Juniper encroachment is slowly changing the hydrology of the area by increasing surface runoff and associated sediment input into the stream channels. Due to the degraded riparian conditions on the majority of streams, there will be little buffering capability, and sediment from potential increase in overland flow would enter stream systems. Unless changes to management occur, in

some of the stream systems, rapid runoff coupled with unstable streambanks and general lack of deep-rooted riparian plants would cause channel widening or incision to the point where little soil is left in the riparian areas.

***Standard 4 – Native Plant Communities***

Overview

Ecological sites are a description of the expected vegetation based on soils, climate (precipitation and temperature), and a natural disturbance regime. The Trout Springs Allotment is composed of two primary and three secondary ecological sites. The primary ecological sites are a loamy soil mountain big sagebrush/bluebunch wheatgrass and Idaho fescue site and a mahogany savanna with Idaho fescue site; these sites make up about 76% of the allotment. A shallow claypan low sagebrush/Idaho fescue site, a very shallow stony loam low sagebrush/Sandberg bluegrass and bluebunch wheatgrass site, and a steep rocky canyon site make up most of the remaining 24% of the allotment.

The ecological sites indicate that under a natural disturbance regime, the Trout Springs Allotment should be dominated by shrub/bunchgrass communities, primarily sagebrush or mountain mahogany with large perennial bunchgrasses. Other vegetation types, such as juniper, aspen, and riparian areas, are expected to occur as unmapped inclusions within the larger ecological sites.

**Evaluation:**

Information sources for this evaluation and determination include the 2001 Trout Springs Assessment (which incorporated trend, photo, ground cover, actual use, and rangeland health indicators data collected up to that point), 2006-2007 utilization, 2002-2007 actual use, and 2005 (and 2009, but considering no authorized grazing for 2008 and 2009) trend data (nested frequency, photos, cover, and density data). These data are discussed in detail in the Upland Vegetation/Noxious Weeds Affected Environment section of the 2012 EA.

In all pastures, large perennial bunchgrasses have been reduced compared to reference conditions. Reference conditions in the loamy mountain big sagebrush/bluebunch wheatgrass and Idaho fescue site, for example, describe composition by weight as 55-65% grass, 10-20% forb, and 20-30% shrub. Currently, juniper makes up much of the composition, with large reductions in grasses, forbs, and sagebrush. Bluebunch wheatgrass, which is expected to be co-dominant over much of the area, is highly reduced to absent in most of the allotment. There is more Idaho fescue than bluebunch wheatgrass, but it is still reduced compared to reference conditions. Within the grass layer, large grasses have chiefly been replaced by smaller bunchgrasses; these include medium bunchgrasses/graminoids like needlegrass, squirreltail, melicgrass, and Ross' sedge, or small bunchgrasses like Sandberg bluegrass and the non-native bulbous bluegrass. Forb species diversity is fairly similar to reference conditions, but forb cover/abundance has been reduced. Weedy annual grasses (cheatgrass, other annual bromes, ventenata, medusahead) or non-native forbs are present in scattered patches but are not common. Noxious weeds are limited to a few small infestations of whitetop and Canada thistle. Of the non-native weeds, only bulbous bluegrass noticeably affects native plant communities in the Trout Springs Allotment; bulbous bluegrass is rather common within the allotment, particularly

along roads and drainages, and is co-dominant with native bunchgrasses in areas, but nowhere has it entirely replaced native grasses.

Trend data between 2000 and 2005 showed generally stable or decreasing frequency for bunchgrasses and perennial forbs, indicating that native plant community conditions were not improving. Ground cover between 2000 and 2005 shows somewhat of a replacement of more stable ground cover elements (gravel, rock, persistent litter, and biological crust) with less stable (non-persistent litter) cover at two of the four monitoring sites, while the other two sites showed no significant change in these elements. Bare ground and basal perennial vegetation were stable at three sites and declining at one site. That many ground cover elements were statistically stable but most changes that did occur indicated less suitable ground cover suggests a slightly declining system, from a watershed and native plant community standpoint.

Trend data between 2005 and 2009 showed bunchgrass and perennial forbs with generally stable to increasing frequency in monitoring plots. Perennial herbaceous (grass and forb) canopy cover was also generally stable between 2005 and 2009. Ground cover data between 2005 and 2009 indicated ambiguous changes, with improvement (or no significant change) in basal vegetation but reduction (or no significant change) in stable ground cover elements; bare ground was statistically unchanged, and non-persistent litter trends were variable between sites. Notice that this time period partially includes different management than the focus of this evaluation.

Shrubs, including mountain big sagebrush, mountain mahogany, and low sagebrush, have been highly reduced in cover and density over much of the Trout Springs Allotment. These shrubs have largely been replaced by western juniper, which dominates much of the allotment. Juniper has replaced shrubs primarily in deeper soil areas which make up the dominant ecological sites, loamy mountain big sagebrush and mahogany savanna. Shallow claypan and very shallow stony loam low sagebrush sites, along with the rocky canyon walls, are areas where inclusions of old growth juniper are typically found because fire burns more infrequently through these less productive areas. Juniper has not encroached into these areas to the same extent that it has in deeper soil areas, so less low sagebrush has been lost than big sagebrush or mahogany.

Evaluation Finding – Allotment is (check one):
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress toward meeting
_X_ Not meeting the Standard

Evaluation Rationale:
Standard 4 is not being met throughout the Trout Springs Allotment, as indicated by the reduction in large perennial bunchgrasses, particularly bluebunch wheatgrass, and the reduction of shrubs expected for the ecological sites, particularly mountain big sagebrush and mountain mahogany.

**Determination:**
Standard 4 is not being met due to a combination of grazing management and juniper encroachment. Grazing has occurred season-long every year in most pastures, often with moderate or higher utilization (ex: 54-74% utilization in 2006), leading to a reduction in the most

palatable grasses. Juniper has replaced much of the shrub component expected for the ecological site, and also affected native grass and forb abundance.

Determination Finding: The Trout Springs Allotment is (check one or more):
___ Meeting the Standard
___ Not Meeting the Standard, but making significant progress toward
___ Conforms with Guidelines for Livestock Grazing Management
_X_ Not Meeting the Standard; Current Livestock Grazing Management Practices are Significant Factors
___Not Meeting the Standard; Current Livestock Grazing Management Practices are **not** Significant Factors
_X_ Does not conform with Guidelines for Livestock Grazing Management Guidelines No(s). **4, 9 .**

Determination Rationale
The reduction in large bunchgrasses (primarily bluebunch wheatgrass, and to a lesser degree Idaho fescue) is mainly a result of grazing management. Moderate or higher utilization (see EA Appendix F), grazing during the critical growing season, a long season of use that leads to potential re-grazing of plants multiple times, and no rest have caused a reduction in the density of the largest, most palatable native bunchgrasses; these bunchgrasses are important for providing plant community structure, wildlife cover, and soil cover. Trend data between 2000 and 2005 show stable to declining trends in frequency for bunchgrasses, particularly large and medium bunchgrasses, indicating that loss of desirable grasses would continue under similar management. Ground cover data showed similar trends.

Trend and ground cover data between 2005 and 2009 show more mixed results, with no apparent trend. This may be because management between 2005 and 2009 included three years of use similar the time period of 2000-2005, followed by (almost) two years of non-use. We would expect to see improvements in large bunchgrasses after rest, but the 2009 data reflect less than two years of rest, and effects of juniper continue, so no improvement is obvious, although an increase in basal vegetation at three of the four sites (no significant change at the fourth site) suggests improvement may be occurring.

Juniper cover has increased significantly in the Trout Springs Allotment, compared to reference conditions. The current density and cover of juniper has substantially affected native plant community structure, by largely replacing big sagebrush and mountain mahogany by shading out these species and competing for water and nutrients. Juniper encroachment has also contributed to reduced bunchgrass and forb abundance, and replaced low sagebrush in localized areas.

Bulbous bluegrass affects parts of the Trout Springs Allotment, competing with native bunchgrasses and influencing native plant community structure in some areas. Smaller areas of invasive annual grasses or forbs have very limited, localized effects. These weeds are not a significant causal factor for not meeting Standard 4 in the allotment as a whole because of the relatively low proportion of the landscape affected.

***Standard 5 – Seedings***
Not Applicable

***Standard 6 – Exotic Plant Communities, Other than Seedings***
Not Applicable

***Standard 7 – Water Quality***

Overview
Streams with designated beneficial uses are addressed under the Idaho Administrative Procedures Act (IDAPA) 16.01.02.140. All streams within the Trout Springs Allotment have general use designations for secondary contact recreation, agricultural water supply, wildlife habitat, and aesthetics. The North and Middle Fork Owyhee River have been assigned additional designated uses including domestic water supply, cold water biota, salmonid spawning, primary contact recreation, and special resource water. Additionally, Pleasant Valley Creek, Squaw Creek, and West Fork Red Canyon Creek were identified as having additional beneficial uses of cold water biota and salmonid spawning. In 2009, the Omnibus Public Land Management Act designated the North Fork of the Owyhee River as a Wild and Scenic River.

The following streams are on the State of Idaho's 303(d) list as water quality limited: Middle Fork Owyhee River from the headwaters to the Oregon/Idaho state line; North Fork Owyhee River from source to the Oregon/Idaho state line; Pleasant Valley Creek from the headwaters to the North Fork Owyhee River; Thomas and Smith Creeks and associated tributaries from source to Nickel Creek; and Red Canyon Creek from the headwaters to the East Fork Owyhee River. Flow alteration and thermal modification are the primary pollutants in the North and Middle Fork Owyhee Rivers, Pleasant Valley Creek, and West Fork Red Canyon Creek. Thomas and Smith Creeks' primary pollutants are thermal modification and sedimentation/siltation. Total maximum daily loads (TMDLs) were developed for stream temperature in North and Middle Fork Owyhee Rivers, Pleasant Valley Creek, Smith Creek, Thomas Creek, and West Fork Red Canyon Creek. Smith and Thomas Creeks also have an approved TMDL for sediment/siltation.

Waters in Squaw Creek are not considered impaired by IDEQ and fully support their beneficial uses.

**Evaluation:**
The 2001 Assessment with updated 2010 IDEQ water standard information and PFCs, MIMs, and Greenline riparian monitoring data are used to evaluate the water quality standard.

Thermal modification in the North and Middle Fork Owyhee Rivers, West Fork Red Canyon Creek, Pleasant Valley Creek, Smith Creek, Thomas Creek and their tributaries is likely due to the loss of shade-producing vegetation such as shrubs and herbaceous grass-like species along streambanks. Additionally, streambank alteration caused by livestock (trampling, pugging, shearing, etc.) has likely increased stream width and decreased depth, thereby exposing more water to solar radiation and increasing water temperature.

Although only Smith and Thomas Creeks have been identified as having excess sedimentation/siltation, excessive sedimentation is likely occurring in remainder of the stream

reaches that are livestock accessible due to poor riparian conditions. The major sediment contributor is unstable, eroding streambanks resulting from excessive livestock use and juniper encroachment. Excessive bank alterations from livestock trampling, pugging, and shearing exposes bare soil and increases the likelihood for sedimentation.

Evaluation Finding – Allotment is (check one):
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress toward meeting
_X_ Not meeting the Standard

Evaluation Rationale
Standard 7 is not being met based on findings from IDEQ which state North and Middle Fork Owyhee Rivers, Pleasant Valley Creek, Smith Creek, Thomas Creek, and West Fork Red Canyon Creek are not meeting all of their beneficial uses. In addition, North and Middle Fork Owyhee Rivers, Pleasant Valley Creek, Smith Creek, Thomas Creek, and West Fork Red Canyon Creek are on the 303(d) list as water quality limited due to thermal modification. Smith and Thomas Creeks are also water quality limited for sedimentation/siltation. Other streams within the allotment are likely not meeting water quality standards due to poor riparian conditions and excessive streambank alterations that contribute to increased water temperatures and sedimentation.

**Determination:**
Waters within the Trout Springs Allotment are not meeting Standard 7 and livestock grazing is a significant factor. Hot season grazing concentrates livestock in the riparian areas, causing heavy utilization and/or streambank/wetland physical disturbance.

Although juniper encroachment is not yet significantly affecting water quality, the incremental increase in juniper will eventually affect precipitation runoff and increase erosion/sedimentation in the stream channels, increasing turbidity and stream temperatures.

Determination Finding: The Trout Springs Allotment is (check one or more):
___ Meeting the Standard
___ Not Meeting the Standard, but making significant progress toward
___ Conforms with Guidelines for Livestock Grazing Management
_X_ Not Meeting the Standard; Current Livestock Grazing Management Practices are Significant Factors
___ Not Meeting the Standard; Current Livestock Grazing Management Practices are **not** Significant Factors
_X_ Does not conform with Guidelines for Livestock Grazing Management Guidelines No(s) **10.**

Determination Rationale
Hot season grazing has concentrated livestock use in riparian areas, resulting in reduced riparian zone buffering capacity and increased sedimentation and stream temperatures. Thermal modification due to the loss of shade-producing vegetation, such as shrubs and herbaceous grass-like species along streambanks, is occurring. Additionally, sediment deposits from streambank alterations (i.e., trampling and shearing) has increased fine sediment yield, leading to hydraulic disequilibrium, reduced sediment transport capacity, and eventually increased stream width,

aggradation, and decreased depth, which exposes more water surface to solar radiation. Water temperatures increase, and streams are likely to be more turbid and sediment laden.

Juniper encroachment is slowly changing the hydrology of the area by increasing surface runoff and associated sediment input into stream channels. Due to the majority of the streams' degraded riparian conditions, there is little buffering capability, and sediment from overland flow freely enters stream systems. In some of the stream systems, rapid runoff, coupled with unstable streambanks and the general lack of deep-rooted riparian plants, causes channel widening or incision to the point where little soil is left in the riparian areas.

***Standard 8 – Threatened and Endangered Plants and Animals***

Overview: *Special Status Animals*
The Trout Springs Allotment is located within the Owyhee Uplands and Canyons and Semiarid Uplands Level IV Ecoregions of Idaho. Within the allotment, these ecoregions are characterized by rolling shrub steppe uplands interrupted by low hills, rocky outcrops and precipitous river canyons. Wildlife habitats within the Trout Springs Allotment include juniper woodlands, mountain shrublands, sagebrush steppe, grassland meadow complexes, riparian areas, springs and seeps, and a few small reservoirs. Many wildlife species utilize a variety of habitats in the allotment. These habitats provide forage, nesting substrate, and cover for a variety of bird, mammal, amphibian, reptile, and fish species common to southwestern Idaho and the Northern Great Basin region.

No Threatened and Endangered Species listed under the Endangered Species Act (ESA) occur in the allotment. However, two bird and one amphibian species listed as candidates under the Endangered Species Act, and 11 mammals, 25 birds, and one fish with BLM special status (including Watch List Species) may potentially occur within the allotment. Special status wildlife species, their status, key habitat associations and current information regarding habitat conditions and occurrence potential within the allotment are explained in detail in the Affected Environment for Fish and Wildlife Section in the EA. Special status wildlife information is based on the 2001 Assessment, field observations, BLM records, and data on file with the Idaho Fish and Wildlife Information System.

Overview: *Botany*
Six BLM special status plant species are known to occur in or near the Trout Springs Allotment: Mud Flat milkvetch (*Astragalus yoder-williamsii*), dimeresia (*Dimeresia howellii*), thinleaf goldenhead (*Pyrrocoma linearis*), rabbitbrush goldenweed (*Ericameria bloomeri*), short-lobed penstemon (*Penstemon seorsus*), and diverse-leaved pondweed (*Potamogeton diversifolius*). Information on special status plants is based on field work by BLM staff, data on file with Idaho Department of Fish and Game Idaho Fish and Wildlife Information System Plant Conservation Database, the USDA PLANTS database, and published references.

**Evaluation:** *Special Status Animals*
The 2001 Assessment with current terrestrial and aquatic wildlife occurrence data and updated upland, riparian, and stream channel/floodplain information relevant to habitat conditions, as discussed in the EA, are used to evaluate the threatened and endangered wildlife Standard.

Upland wildlife habitats within the allotment have departed substantially from what would be expected under a natural disturbance regime. Wildlife habitat for many species is currently in poor condition due to a combination of season-long livestock grazing and juniper encroachment. Based on ecological site descriptions, sagebrush steppe communities that would be expected at higher elevations throughout the allotment have been predominantly converted to juniper woodlands. The increase in juniper cover may have benefited some woodland associated species such as northern goshawks, Lewis' woodpeckers and Cassin's finches. Conversely for these species, juniper encroachment is threatening riparian areas and aspen stands limiting the amount of nesting and foraging habitat these species require.

Juniper encroachment has certainly reduced the quantity and quality of habitat for a variety of shrub-obligate species including greater sage-grouse, sage sparrows, and Brewer's sparrows. At lower elevations within Pastures 2 and 4, sagebrush habitat persists with varying amounts of juniper encroachment. Although juniper encroachment has lowered the habitat quality for most of these species, many are relatively common. Excessive livestock grazing in the allotment is also a limiting factor for sage-grouse use because heavy grazing reduces nesting and hiding cover which also increases exposure to predators. Sagebrush steppe habitats within these pastures will continue to be degraded as junipers are established and increase in density, and perennial bunchgrasses are replaced by non-native perennials and exotic annuals that do not provide the same quality of cover.

In areas accessible to livestock, lentic and lotic riparian wildlife habitats lack sufficient vegetative cover, deep-rooted vegetation, and species diversity. These highly degraded habitats are due to hot season grazing which has concentrated livestock use in riparian areas and resulted in heavy riparian vegetation utilization. Heavy utilization has reduced forage, nesting substrate, and cover for riparian dependent species, migratory songbirds and special status species such as calliope hummingbird and willow flycatchers. In these areas, instream aquatic habitats are subject to increased temperatures due to the loss of shade-producing vegetation such as shrubs and herbaceous grass-like species along streambanks. Additionally, streambank alteration caused by livestock (trampling, pugging, shearing, etc.) increases stream width and decreases depth, thereby exposing more water to solar radiation and increasing water temperature. Livestock trampling in riparian areas also increases sediment loads to aquatic habitats. These factors have decreased the quantity of lentic habitats in Cottonwood Creek for spotted frog reproduction and have limited suitable habitat for redband trout by degrading lotic habitats in Cottonwood, Squaw, Hells, Smith, Little Smith, and West Fork Red Canyon Creek and North Fork Owyhee River.

Evaluation Finding – Allotment is (check one):
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress toward meeting
_X_ Not meeting the Standard

Evaluation Rationale
Standard 8 (special status animals) is not being met on higher elevation upland habitats due to excessive livestock grazing, juniper encroachment, and conversion to woodlands. These woodland habitats are unsuitable for shrub-obligate species that would be present in the expected shrub steppe habitat. Although lower elevation upland habitats may be providing marginal habitat for shrub-

obligate species, the continuation of juniper encroachment and localized increases of invasive grasses at the expense of desirable perennial bunchgrasses will lead to further degradation of nesting and foraging conditions. In addition, Standard 8 (special status animals) is not being met in riparian areas accessible to livestock grazing. Heavy herbaceous riparian vegetation use and streambank trampling has reduced nesting substrate, protective cover, and foraging areas for many riparian-dependent species. Heavy use and trampling in riparian areas has also increased stream temperatures, channel width to depth ratios, and sediment loads which degrade suitable habitat for aquatic species such as amphibians and fish.

**Evaluation:** *Botany*
Special status plants and their habitats have been or potentially are affected by direct disturbance, reduced ground cover, increase of weeds (such as bulbous bluegrass), disturbance to pollinators, conversion to tree-dominated (juniper) plant communities, and alterations of the fire regime in the Trout Springs Allotment. Although no quantitative data on special status plant occurrence trends within the allotment is available, the plants' habitats are all within plant communities (upland or riparian) that have been altered from reference conditions (see Standards 2 and 4). As a result, habitat for special status plants has been degraded.

Evaluation Finding – Allotment is (check one):
___ Meeting the Standard
___ Not meeting the Standard, but making significant progress toward meeting
_X_ Not meeting the Standard

Evaluation Rationale
Mud Flat milkvetch is somewhat resistant to disturbance since it is often found in previously disturbed openings, but is shade intolerant, so likely has been negatively impacted by juniper expansion. Dimeresia is a small annual that is sensitive to trampling on its sandy soil habitat during flowering and fruiting. Thinleaf goldenhead is affected by grazing during its growing and flowering period, which reduces plant vigor by removing carbohydrates and reduces seed set by eliminating flowering heads. Rabbitbrush goldenweed may be impacted by grazing, particularly later in the season as herbaceous plants dry and animals eat more shrubs, and is shade intolerant and negatively impacted by juniper expansion. Short-lobe penstemon is sensitive to grazing, particularly during its flowering period, and negatively affected by juniper shade. Diverse-leaved pondweed is subject to trampling and incidental grazing as cattle water at its reservoir habitat.

**Determination:** *Special Status Animals*
Standard 8 (special status animals) is not being met throughout the allotment and livestock grazing is a significant factor in both upland and riparian areas. Hot season grazing concentrates livestock in the riparian areas, causing heavy utilization and streambank/wetland physical disturbance which limits or excludes use by species dependent on these habitats. Standard 8 (special status animals) is not being met in upland habitats due to excessive livestock use which has reduced perennial bunchgrasses and juniper encroachment which has converted the expected sagebrush steppe communities to woodlands. In addition, Standard 8 (special status animals) is not being met in riparian areas accessible to livestock grazing. Heavy herbaceous riparian vegetation use and streambank trampling has reduced nesting substrate, protective cover, and foraging areas for many

riparian-dependent species. Reductions in perennial bunchgrasses limit cover and foraging areas and drastic changes in plant communities typically are associated with changes in wildlife communities.

Determination Finding: The Trout Springs Allotment is (check one or more):
___ Meeting the Standard
___ Not Meeting the Standard, but making significant progress toward
___ Conforms with Guidelines for Livestock Grazing Management
_X_ Not Meeting the Standard; Current Livestock Grazing Management Practices are Significant Factors
___ Not Meeting the Standard; Current Livestock Grazing Management Practices are **not** Significant Factors
_X_ Does not conform with Guidelines for Livestock Grazing Management Guidelines No(s). **5, 6, 8, 12.**

Determination Rationale:
Within the Trout Springs Allotment, juniper cover has increased substantially. Higher elevation upland habitats have been replaced by juniper woodlands. Woodland habitats do not provide the proper biological and structural plant community shrub-obligate species such as greater sage-grouse and sage sparrows require. Another important upland habitat component, large perennial bunchgrasses, has been reduced as a result of grazing management. Decreased perennial bunchgrasses and juniper encroachment have diminished the quality of upland habitats by reducing cover and foraging areas for many species of birds and small mammals.

Hot season grazing has concentrated livestock in riparian areas. Heavy utilization in riparian areas has reduced vegetation that provides nesting substrate, protective cover, and foraging areas for many riparian-dependent bird species. Reduced cover and streambank trampling in riparian areas (lotic and lentic) due to heavy utilization by livestock increases water temperatures and sediment loads and reduces water quality. Spotted frog habitat quality is degraded by sedimentation which reduces breeding pool depths; aquatic habitat quality for fish such as redband trout also is degraded by sedimentation which can cover spawning substrates and redds and negatively affect reproduction. Reduced shade from the lack of riparian vegetation allows greater solar radiation to reach the affected wide and shallow streams, potentially surpassing temperature thresholds and precluding use by aquatic species.

**Determination:** *Botany*
Standard 8 is not being met for special status plants due to a combination of grazing management and juniper encroachment.

Determination Finding: The Trout Springs Allotment is (check one or more):
___ Meeting the Standard
___ Not Meeting the Standard, but making significant progress toward
___ Conforms with Guidelines for Livestock Grazing Management
_X_ Not Meeting the Standard; Current Livestock Grazing Management Practices are Significant Factors
___ Not Meeting the Standard; Current Livestock Grazing Management Practices are **not** Significant Factors

_X_ Does not conform with Guidelines for Livestock Grazing Management Guidelines No(s). **4, 9, 12.**

Determination Rationale:
Grazing has occurred season-long every year in most pastures, often with moderate or higher upland utilization (ex: 54-74% utilization in 2006), and riparian areas have been heavily used due to hot-season grazing, leading to potentially high incidence of grazing and trampling on special status plants and their habitats. Under this grazing system, special status plants have no opportunity for rest or deferment during critical growing stages to recover vigor and provide for reproduction. Grazing has affected special status plant habitat by increasing bare ground, potentially increasing weeds, and may be impacting critical pollinators. Juniper has encroached into some special status plant habitats, reducing suitability for shade-intolerant species.

**Summary of Evaluation and Determination**

| | Standards | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Check one box for each | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | Watersheds | Riparian | Stream Channel | Native Plant Communities | Seedings | Exotics (not seeded) | Water Quality | T& E |
| Meeting the Standard | | | | | | | | |
| Not Meeting the Standard, but making **significant progress** toward | | | | | | | | |
| Not Meeting the Standard; current livestock grazing practices **are not** significant factors | | | | | | | | |
| Not Meeting the Standard; current livestock grazing practices **are** a significant factor | X | X | X | X | | | X | X |
| Not Meeting the Standard; cause not determined | | | | | | | | |
| Standard does not apply | | | | | X | X | | |
| **Guidelines for Livestock Grazing** | | | | | | | | |
| Conforms with Guidelines for Livestock Grazing Management? | | | | | | | **NO** | |
| If no, list the Guidelines not in conformance: **1, 3, 4, 5, 6, 7, 8, 9, 10, 12** | | | | | | | | |

/s/ Loretta V. Chandler 7/9/2012
Owyhee Field Manager Date

# DETERMINATION

**Achieving Standards for Rangeland Health**
**and**
**Conforming with Guidelines for Livestock Grazing Management**

Resource Area: **Owyhee** Watershed Name/Number: _____

Grazing Allotment Name/Number: **Trout Springs Allotment (0539)**

Public Land (acres): **29,034**

Streams on Public Land (miles): **48**

Date(s) of Assessment: **The assessment is based on data collected over several years.**

Name of Permittee(s): **Hanley Ranch Partnership**
**Ted Payne**

Assessment Participants (Name & Discipline or Interest):

BLM

| | |
|---|---|
| Bill Reimers | Rangeland Management Specialist |
| Paul Seronko | Soil Scientist |
| Leo Coleman | Natural Resource Specialist |
| Mike Mathis | Wildlife Biologist |
| Janis Reimers | Ecologist |
| Ann Debolt | Botanist |

## Standard 1 (Watersheds)

Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow.

Check those that apply: [*One or more boxes must be checked.*] ☐ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☒ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☒ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s). 1, 3

Rationale/Information Sources:

Livestock grazing occurs on all pastures on this allotment every year. The season of use in Pasture 4 is generally April and May with use occurring throughout the summer in some years. The season of use in Pasture 2 is generally mid June through the end of July with grazing occurring again in the fall as cattle drift down the mountain. It is also common to see a few cattle in this pasture after gathering has occurred in late July and before cattle begin their drift down the mountain in the fall. The season of use in Pastures 1 and 3 is generally August through mid November with some use beginning in June and ending in December. Pastures 2 and 4 are grazed during the critical growing season every year.

In all pastures livestock grazing has resulted in reduced plant vigor, a loss of forage plants and the loss of litter and cover necessary for nutrient cycling and site protection. This coupled with soil surface damage caused by livestock hoof action in Pastures 2, 3 and 4 has resulted in water flow patterns, pedastalled plants and increased bare ground which are indicators of accelerated erosion.

Adequate amounts of ground cover are not being maintained to stabilize soils and therefore grazing management practices do not conform with Guideline #1.

Additionally, grazing practices do not maintain adequate plant vigor or cover to support water infiltration, therefore grazing management practices do not conform with Guideline #3.

## Standard 2 (Riparian Areas and Wetlands)

Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Check those that apply: [*One or more boxes must be checked.*] ☐ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☒ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☒ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s). 4, 5

Rationale/Information Sources:

Under current livestock grazing practices, this standard is not being met on 22.45 miles of the 23.18 miles of stream in pasture 1, on 7.36 miles of the 10.64 miles in the pasture 2, and on 8.73 miles of the 8.73 miles in pasture 3. The standard appears to be met on the 1.70 miles of stream in pasture 4. On the streams classified as functional-at-risk or not functioning, early seral species generally dominate the herbaceous component of the plant community. There is insufficient deep rooted riparian-wetland vegetation present to protect stream banks and dissipate energy during periods of high flow. Point bars are commonly not vegetated.

In Pastures 1, 2 and 3 grazing has generally occurred during the hottest time of the year. (See the discussion of livestock season of use under Standard 1.) Cattle tend to congregate along the narrow mountain streams during this time of year, for water, cooler temperatures and palatable forage. Cattle concentrating along the streams has resulted in heavy to severe utilization on the herbaceous component of the riparian community. The assessment indicates that this has resulted in low plant vigor, and sites potentially dominated by deep-rooted hydric species are now dominated by shallow-rooted early seral species. These utilization studies indicate light to moderate use of the shrub component by livestock. Stream bank damage studies conducted in 2000 indicate moderate to severe stream bank damage from livestock trampling. The assessment indicates that the shrub component is insufficient. The younger willow are poorly represented and evidence of recruitment is lacking. The lack of woody species, the dominance of shallow-rooted herbaceous species and impacts due to livestock trampling result in a lack of shading for the streams, increasing water temperatures.

Cattle are removed from the allotment (Pasture 1, 2 and 3) late in the year so the riparian species are not allowed a sufficient timeframe to regrow to achieve and maintain healthy properly functioning conditions, and therefore grazing practices do not conform with Guideline #4.

The heavy and severe utilization by livestock along the streams does not provide sufficient residual vegetation to improve, restore or maintain healthy riparian functions, and therefore grazing practices do not conform with Guideline #5.

## Standard 3 (Stream Channel/Floodplain)

Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Check those that apply: [*One or more boxes must be checked.*] ☐ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☒ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☒ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s). 7

Rationale/Information Sources:

Under current livestock grazing practices, this standard is not being met on 22.45 miles of the 23.18 miles of stream in pasture 1, on 7.36 miles of the 10.64 miles in the pasture 2,and on 8.73 miles of the 8.73 miles in pasture 3. The standard appears to be met on the 1.70 miles of stream in pasture 4. The functional-at-risk segments lack the hydric species in the herbaceous community which are necessary to aid in riparian zone development. Some segments are incised and exhibit little floodplain development. Some are overly wide and lack sufficient sinuosity. Stream substrates are commonly gravels or other fine materials and the lack of stabilizing vegetation allows erosion. The livestock season of use discussion under Standard 1 also applies here. Cattle congregating along the narrow streams cause streambank alteration through trampling (pugging, shearing, etc.) which in turn tends to increase stream width and decrease depth which exposes more water to solar radiation thus increasing water temperature in the summer and contributing to freezing in the winter. In addition to altering the water temperature, the water tables are also lowered resulting in greater fluctuations of water flows with lower flows in the summer and greater flows in the spring.

The grazing management practices do not promote progress toward appropriate stream channel and streambank morphology and functions, therefore grazing practices do not conform with Guideline #7.

## Standard 4 (Native Plant Communities)

Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Check those that apply: [*One or more boxes must be checked.*] ☐ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☒ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☒ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s). 4, 9

Rationale/Information Sources:

Under current livestock grazing management, this standard is not being met in this allotment. In Pasture 1, livestock grazing is negatively influencing plant community integrity, native species diversity and plant vigor. When decreaser grasses are present in the interspatial areas, they are generally few in number, and they demonstrate poor vigor with small size, few leaves and no seedstalks. Recent reproduction is not apparent. In many areas, decreaser grasses are present mostly under the protection of shrubs, and they are absent from other locations including the trend study. Utilization information indicates moderate to heavy utilization occurs on the decreaser grass species in most years. This heavy grazing has resulted in reduced vigor and limited reproduction and recruitment of decreaser grass species. Invasive species include western juniper, bulbous bluegrass and cheatgrass. Bulbous bluegrass and cheatgrass have a minimal impact on the plant community, but western juniper is negatively influencing the plant community integrity by impacting shrub densities.

In Pasture 2, decreaser grasses are sparsely populated with Idaho fescue showing signs of mortality, no seedstalks and no sign of recent recruitment. Plant vigor and interspatial litter are being impacted by heavy grazing. Livestock are negatively influencing plant community integrity where heavy grazing has resulted in reduced vigor, density, reproduction and recruitment of decreaser grass species. Utilization information indicates moderate to heavy utilization occurs on the decreaser grass species in most years and this pasture is used during the growing season in each year. Native species diversity and soil surface integrity were also rated as inadequate with minimal perennial forbs and microbiotic crust lacking. Interspatial areas lack vegetation cover and litter. Invasive plants include western juniper, rabbitbrush, bulbous bluegrass and cheatgrass. Of the invasive plants, only western juniper is having a negative influence on plant community integrity by reducing the shrub component in some areas.

In Pasture 3, decreaser plants are present, but the numbers are less than expected and the plants show signs of mortality and reduced vigor. However, in the assessment, these indicators were

found to be less evident than in Pasture 2. Decreaser grasses were found to be vigorous when not grazed due to protection provided by the lower canopy of shrubs and juniper in the deeper loamy sites. Some areas showed signs of soil surface erosion with pedestaling, active flow patterns, high percentage of surface gravels and bare areas common. Western juniper, bulbous bluegrass and cheatgrass invasives were found throughout the pasture with encroaching juniper having a negative influence on the plant community integrity by reducing the shrub component in some areas.

In Pasture 4, decreaser grass plants are present but Idaho fescue is found in limited numbers and has poor vigor, show signs of mortality, and exhibits few to no seedstalks with no sign of reproduction or recruitment. An increaser grass, bottlebrush squirreltail, showed significant decline at the trend site. Microbiotic crusts were minimal to absent, bare ground was common and interspatial litter was absent. The soil's surface contained areas with surface crusts, subsurface compaction and mechanical damage due to livestock hoof action. Pedestaled plants were also common in some areas. This pasture is used in the spring each year.

In all pastures livestock grazing has resulted in a decline of plant vigor, a reduction in size of individual plants, the loss of plants and a reduction in litter in the interspatial areas with the furthest departure from acceptable conditions being found in Pasture 2. Heavy livestock grazing is wholly or partially responsible for unacceptable ratings to indicators of the native plant community standard including plant community integrity, native species diversity, plant vigor, invasive plants and soil surface integrity. The assessment indicates that western juniper development continues to expand in the shrub-steppe in Pastures 1, 2 and 3 and, in many areas, these communities could be classified as juniper woodlands. This development has resulted in a decline in shrubs on some sites and has contributed along with livestock grazing to reduced plant community integrity.

In Pastures 2 and 4, grazing management practices are not providing rest or sufficient deferment during the critical growth stages to maintain plant vigor and adequate vegetation cover, therefore grazing practices do not conform with Guideline #4.

Grazing management practices are not maintaining adequate plant vigor for seed production and seed dispersal and for seedling survival of desired species, therefore grazing practices do not conform with Guideline #9.

## Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Check those that apply: [*One or more boxes must be checked.*] ☒ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☐ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☐ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s)._____

Rationale/Information Sources:

This standard does not apply to this allotment.

## Standard 6 (Exotic Plant Communities, Other than Seedings)

Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

Check those that apply: [*One or more boxes must be checked.*] ☒ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☐ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☐ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s)._____

Rationale/Information Sources:

This standard does not apply to this allotment.

## Standard 7 (Water Quality)

Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Check those that apply: [*One or more boxes must be checked.*] ☐ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☒ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☒ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s). 10

Rationale/Information Sources:

Under current livestock grazing management, this Standard is not being met in any of the pastures. The "North and Middle Fork Owyhee Subbasin Assessment and Total Maximum Daily Load" (TMDL) prepared by Idaho Department of Environmental Quality (DEQ) identified water bodies within the Trout Springs Allotment which exceed the criteria for stream temperatures. These include Middle Fork Owyhee River, North Fork Owyhee River, Pleasant Valley Creek, and Squaw Creek. DEQ also identified sediment and flow alteration as pollutants of concern for Middle Fork Owyhee River, Pleasant Valley Creek, and Squaw Creek.

Tributaries of Deep Creek and Red Canyon Creek were not considered in the TMDL, however thermograph data indicates that these streams probably do not meet the criteria for Salmonid Spawning and do not appear to meet the criteria for Cold Water Biota.

Thermal modification is probably the result of a loss of shade producing vegetation such as shrubs and herbaceous grasslike species at the waters edge. Utilization studies indicate herbaceous species commonly receive heavy to severe grazing and shrub species utilization varied considerably from site to site and from year to year by livestock. Additionally, streambank alteration caused by livestock trampling (pugging, shearing, etc.) tends to increase stream width and decrease depth which exposes more water to solar radiation thus increasing water temperature. Soil particles dislodged as a result of streambank trampling contributes to sedimentation.

Stream temperatures are not meeting TMDL, therefore, grazing management practices do not conform with Guideline #10.

## Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Check those that apply: [*One or more boxes must be checked.*] ☐ Standard doesn't apply

☐ Meeting the Standard

☐ Not Meeting the Standard, but Making Significant Progress towards

☐ Conforms with Guidelines for Livestock Grazing Management

☒ Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

☐ Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

☒ Does not conform with Guidelines for Livestock Grazing Management Guideline No(s). 5, 12

Rationale/Information Sources:

Approximately 14 percent or 5.7 miles of the 40.3 miles of stream riparian habitat within this allotment have been determined to be in proper functioning condition, therefore, this standard is likely not being met for most, if not all of those special status animal species dependant upon these habitats including redband trout, spotted frogs, neotropical migratory birds and others. A large unfenced meadow at the head of Cottonwood Creek is heavily grazed and trampled by livestock and not providing suitable habitat for many of these same dependant special status animal species. Within upland communities, the limited abundance and vigor of desirable native bunchgrasses and forbs and loss of shrubs and associated community structure would indicate that the habitat requirements of many special status animal species are not being adequately met throughout much of the allotment, likely resulting in reduced numbers and/or species diversity.

It is unknown whether the standard is being met for special status plant species. Dimeresia and Osgood Mountains milkvetch, both BLM "sensitive" plant species, are known from the area, however no threats were identified at the time of the observation. In general, available data collected from all sources at known locations of special status plants within the Trout Springs allotment indicate that impacts from livestock remain unknown.

## Determination:

I have determined that all of the applicable Standards for Rangeland Health are not being met and are not making significant progress and livestock management practices do not conform with all applicable Guidelines for Livestock Grazing Management in the Trout Springs (0539) allotment. Livestock grazing practices are a significant factor in achieving the Standards for Rangeland Health and do not conform with the Guidelines for Livestock Grazing Management.

Field Manager

Date 7/3/01

# #0453 Hanley FFR Allotment
# DETERMINATION DOCUMENT

## SECTION 1

___ All Standards are met or making significant progress towards meeting and there is conformance with the guidelines. (No Determination is required, review is complete)

_X_ One or more Standards is not being met or there is non-conformance with the guidelines. (An Authorized Officer's Determination is required, complete Section 2)

## SECTION 2

*1.* Documentation of causal factors *(other than livestock grazing).*

Juniper expansion is also a causal factor. The 2009 field assessment noted western juniper as a co-dominant (10-40% of the composition) species, in an ecological site that should be dominated by low sagebrush and tall perennial grasses. This increase in juniper compared to historical reference conditions is similar to that seen in many areas across the west. The invasive plant indicator was rated as moderate to extreme departure from expected, based on juniper encroaching. No quantitative data on juniper density is available, but photos from the 2009 field assessment and aerial photography (2009 NAIP image) show a moderately low density of primarily young juniper, with overall cover estimated at less than 10%.

*2a.* Is it more likely than not that existing grazing management practices or levels of grazing use are significant factors in failing to achieve the Standards or conform to the guidelines? *(Yes/No) Provide rationale.*

Yes. Juniper expansion and livestock management practices have played a significant role in the alteration of native plant communities; current as well as historic grazing management practices are the primary causal factor in not meeting standards 1, 4 and 8. Livestock grazing in this FFR is currently at the discretion of the permittee throughout the year.

The standard for watersheds (Standard 1) is not being met, but is making significant progress toward being met, based on an improvement (between 2001 and 2009) in some soil and hydrologic indicators. Frost heaving was evident by observed pedestalled rocks, while more historic pedestals were observed around Sandberg bluegrass plants. Areas of bare ground were small and moderately connected. Percent bare ground was more than what was expected while the amount of litter was less than what was expected. However, vegetation and gravel cover were adequate to prevent accelerated soil erosion. Although the current vegetation community is adequate in maintaining water infiltration, the lack of deep-rooted perennial grasses and juniper encroachment will eventually affect the immediate area's nutrient and hydrologic cycles.

The standard for native plant community health (Standard 4) is not being met, as shown by an abundance of Sandberg bluegrass (and juniper), and a deficit of bluebunch wheatgrass, Idaho fescue, perennial forb diversity, and litter amounts. Livestock grazing is logically the primary

factor contributing to the shift from more palatable species (bluebunch wheatgrass, Idaho fescue) to less palatable ones (Sandberg bluegrass, as well as juniper) and reduction of perennial forb diversity and litter. Since no significant improvement in the native plant community (based on a comparison of biotic integrity indicators between 2001 and 2009 assessments) is apparent, current livestock grazing (as well as historic) appears to be a significant factor in not meeting the standard.

The timing and intensity of livestock grazing can affect the long-term health and vigor of native and perennial plants. The spring/early summer use period coincides with the critical growth period of perennial bunchgrasses. Grazing during this period each year can affect the ability of perennial grasses to recover growth, set seed, and replace carbohydrate root reserves, especially of newly established plants. Over time, plants become weakened and are unable to withstand drought or other stresses.

The late fall/winter use period occurs during the dormant season for perennial grasses, which generally has little impact on vigor and health of these grasses. However, the combination of spring and fall use depletes root reserves more rapidly, and few plants are permitted to reach seed ripe/seed dispersal stages without being grazed. Consequently, perennial bunchgrasses become weaker, smaller, and eventually die. The loss of these plants from the community leaves open spaces exposing the soil surface to increased risk of wind and rain erosion, and leaves plant communities vulnerable to the introduction and spread of invasive species.

Livestock-induced changes to the native plant community (as discussed above) also contribute to the failure to meet the standard for special status animals (Standard 8). The conversion of a low sagebrush and tall bunchgrass community to one heavily influenced by low grasses (and juniper) has reduced the potential for these areas to support populations of special status animals.

*2b.* Is there conformance with Idaho Guidelines for Livestock Grazing Management? *(Yes/No) if not list the guidelines that are not in conformance and provide evidence)*

No. Livestock grazing management is not in compliance with the following guidelines:

> *Guideline 4 – Implement grazing management practices that provide periodic rest or deferment during critical growth stages to allow sufficient regrowth to achieve and maintain healthy, properly functioning conditions, including good plant vigor and adequate vegetative cover appropriate to site potential.*
>
> Historical season-long grazing and a lack of rest or deferment has likely affected plant species composition, causing a shift from deep rooted perennial bunch grasses to shallow rooted perennial grasses. A reduction in desirable native bunchgrasses has resulted in a reduction of litter amounts and adequate ground cover; it has also had an effect on plant production and vigor.
>
> *Guideline 9 – Apply grazing management practices to maintain adequate plant vigor for seed production, seed dispersal, and seedling survival of desired species relative to soil type, climate, and landform.*

See Number 4, above. The field assessment recorded the reproductive capability of perennial plants appears adequate for the current ecological site, but noted that Sandberg bluegrass has filled the niche vacated by Idaho fescue and bluebunch wheatgrass, and noted crown die-off in Idaho fescue and Sandberg bluegrass, suggesting low vigor and reproduction of tall perennial bunchgrasses under the current grazing management.

*Guideline 11- Use grazing management practices developed in recovery plans, conservation agreements, and Endangered Species Act, Section 7 consultations to maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals*

Current grazing management appears to be inadequate for maintaining or improving animal special species habitat. The conversion of a low sagebrush and tall perennial bunchgrass community to one heavily influenced by juniper and low grasses has reduced the potential for these areas to support populations of special status animals. Absence of a boundary fence between public and private land precludes direct management of public land within this custodial allotment. The minimal acreage of public land has not made it feasible or cost effective to fence off this small parcel.

*Guideline 12 – Apply grazing management practices and/or facilities that maintain or promote the physical and biological conditions necessary to sustain native plant populations and wildlife habitats in native plant communities.*

See Guidelines 9 and 11.

Buddy W Green

**Authorized Officer: Buddy W. Green**
**Owyhee Field Manager**

September 30, 2010
**Date**

## SUMMARY OF EVALUATION AND DETERMINATION

| Check Box 1, 2, 3, 4, or 5 (Do not add data or explanatory remarks here.) | STANDARDS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1) Meeting the Standard | | N/A | N/A | | N/A | N/A | N/A | |
| 2) Not Meeting the Standard, **but making significant progress towards** | X | | | | | | | |
| 3) Not Meeting the Standard, current livestock grazing management practices **are not** significant factors | | | | | | | | |
| 4) Not meeting the Standard, current livestock grazing management practices **are** a significant factor | | | | X | | | | X |
| 5) Not meeting the Standard, cause not determined | | | | | | | | |
| Guidelines for Livestock Grazing | | | | | | | | |
| 6) Conforms with Guidelines for Livestock Grazing Management | | | | | | | | No |
| 7) If no, list the guidelines not in conformance: 4, 9, 11, and 12. | | | | | | | | |

# EVALUATION REPORT

## Achieving the Idaho Standards for Rangeland Health

**Field Office**: ID-130 Owyhee Field Office

**Allotment Name and Number**: Hanley FFR #0453

**Name of Permittee(s)**: Hanley Ranch Partnership #1101414

### Introduction

The Hanley FFR Allotment (#0453) is located approximately 25 miles south of Jordan Valley, Oregon. The Hanley FFR Allotment consists of one pasture comprised of 63 federal acres and 598 private acres, totaling approximately 661 acres. Active permitted use totals 7 AUMs annually. The allotment is comprised of approximately 10% public land. Although current livestock grazing is authorized from December 1 through December 31 annually, the permit states "the number of livestock and season of use on the Fenced in Federal Range (FFR) Allotment #0453 is at your discretion." Therefore, the allotment is currently being used at the permittee's discretion.

### Applicable Standards:

The Standards for Rangeland Health and Guidelines for Livestock Grazing Management are used as management goals to maintain or improve biological and water resources, protect cultural resources, and sustain productivity of the land. Standards that are appropriate to a particular allotment provide information to determine the health and condition of public lands. This document is the evaluation of information presented in the rangeland health assessment used to determine whether rangeland health standards are being achieved. Significant factors or causal agents for standards not being met and whether livestock management practices are in conformance with applicable guidelines are presented in the Determination Document.

Standards 1 (Watersheds), 4 (Native Plant Communities), and 8 (Threatened and Endangered Species) apply to this allotment. Standards 2 (Riparian Areas and Wetlands), 3 (Streams Channels and Floodplains), 5 (Rangeland Seeding), 6 (Exotic Plant Communities), and 7 (Water Quality) do not apply.

## EVALUATION OF STANDARDS

### Standard 1: Watersheds

___ Standard does not apply

*Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

### Evaluation and Information Sources

The 2009 Field Evaluation consisted of one site visited by an IDT on 4/13/2009. Additionally, the 2000/2001 Assessment and Determination were also considered.

**Rangeland Health**
The Hanley FFR is entirely within the Middle Fork of the Owyhee River Sub-Basin (HUC: 17050107). One Rangeland Health Assessment was completed in 2009 on a shallow claypan 12-16" ecological site. Frost heaving was evident by observed pedestalled rocks, while more historic pedestals were observed around Sandberg bluegrass plants. Areas of bare ground were small and moderately connected. Percent bare ground was more than what was expected while the amount of litter was less than what was expected. However, vegetation and gravel cover were adequate to prevent accelerated soil erosion. Although the current vegetation community is adequate in maintaining water infiltration, the lack of deep-rooted perennial grasses and Juniper encroachment will eventually affect the immediate area's nutrient and hydrologic cycles.

**Rangeland Health Changes**
The 2000-2001 Assessment and Determination indicated the major indicators not meeting Rangeland Health Standards were water flow patterns, pedestals, bare ground, soil surface impacts, and plant community factors. Apparent rangeland health changes between 2000 and 2009 include improvement in the departure rating for water flow patterns, pedestals, and soil surface impacts. Ratings for bare ground, lack of perennial bunch grasses, and litter amounts were all similar between 2000 and 2009 field assessments. The 2000 field assessment identified a platy hard layer 2 to 4 inches in the soil profile. No compaction layer was identified in the 2009 assessment. Additionally, soil damage due to hoof action was not observed.

**Evaluation Finding** – Allotment/watershed is:
____ Meeting the Standard
_X_ Not Meeting the Standard, but making significant progress towards meeting
____ Not Meeting the Standard

**Rationale for Evaluation Finding**
Soil and hydrologic impacts were both rated none to slight. Some of the previously identified soil and hydrologic indicators appeared to improve. The overriding issue is the vegetation departure from what is expected for that ecological site, mainly the lack of deep-rooted perennial bunch grasses and the presence of juniper.

**Standard 2: Riparian Areas and Wetlands** X Standard does not apply
*Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

**Rationale:** No riparian areas or wetlands occur on the public land portion of the Hanley FFR.

**Standard 3: Stream Channel and Floodplains** X Standard does not apply
*Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

**Rationale:** No stream channels or floodplains occur on the public land portion of the Hanley FFR.

**Standard 4: Native Plant Communities** ___ Standard does not apply

*Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

**Evaluation and Information Sources**

The 2009 Field Evaluation consisted of one site visited by an IDT on 4/13/2009. No trend (nested frequency, density, or cover) data, utilization data, or actual use (use dates were submitted, but livestock numbers were not) records are available. The 2000/2001 Assessment and Determination were also considered. The 2000 Field Evaluation was one site visited 9/18/2000. A full Assessment document was completed May 2001, and the determination signed 7/5/2001.

**Rangeland Health**

The ecological site for all of the public land within the Hanley FFR Allotment is mapped as a shallow claypan 12-16" ARAR8/FEID. The expected vegetation for this site is low sagebrush (15-30% of composition, plus small amounts of other shrubs) with an understory of bluebunch wheatgrass (20-30% of composition) and Idaho fescue (another 20-30% composition) and lesser amounts of Sandberg or Nevada bluegrass (2-5% composition each), and other perennial grasses (squirreltail, Thurber's needlegrass, etc.). Forb diversity is expected to be high, of mostly perennial natives; collectively their composition is important, but no one or few species is expected to dominate. Functional/structural groups should be dominated by cool season deep-rooted perennial bunchgrasses, followed in dominance (respectively) by medium shrubs, then perennial forbs, and shallow-rooted bunchgrasses. Bare ground may be 40-50%, but more data are needed to define reference conditions.

Actual composition from the 2009 field evaluation indicates low sagebrush and Sandberg bluegrass are dominant, with western juniper and Idaho fescue subdominant, bitterbrush as a minor component, and bluebunch wheatgrass and other perennial grasses and forbs present in only trace amounts. This shows a distinct reduction in deep-rooted perennial grasses, especially bluebunch wheatgrass, and encroachment by western juniper. Forb diversity is apparently also reduced, although that may partially reflect the timing of the field visit. The current dominance by woody species (low sagebrush and juniper) and shallow-rooted perennial grasses (Sandberg bluegrass) with Idaho fescue indicates departure from expected conditions in both the plant community structure and function, and in species composition. The change in structure and composition also likely affect the annual production, which was indicated as slightly to moderately reduced from expected. No non-native plants (such as cheatgrass or other annual grasses) or noxious weeds were recorded (although an extensive or intensive inventory was not completed).

Mosses were recorded as present as a biological crust, but abundance was not noted; reference conditions do not have data on biological crusts expected, so departure is difficult to assess. Other soil attributes affecting biotic integrity, such as erosion and compaction, do not appear to be limiting plant growth, although reduced litter was indicated. Reduced litter production is likely a product of the change in species composition, particularly the decline in deep-rooted perennial bunchgrasses, although a field note indicated that the site has the potential to produce adequate litter.

The reproductive capability of perennial plants appeared adequate for the current ecological site, but slight to moderate plant mortality as indicated by crown die-out in some bunchgrasses was noted.

**Rangeland Health Changes**
The 2000-2001 Assessment and Determination indicated conditions similar to those described in 2009. Soil surface resistance to erosion, soil surface structure, soil compaction, and perennial plant reproduction indicators had higher departure than the 2009 field assessment, while the indicators for functional/structural groups, amount of litter, and invasive species had lower departure. The site was described as dominated by shrubs and increaser species, containing scattered western juniper, but with limited deep-rooted perennial grasses (Idaho fescue and bluebunch wheatgrass) and a lack of microbiotic crusts and perennial forbs. No noxious weeds were recorded. Bare ground was greater than expected, with a lack of litter and biotic crusts. Bunchgrass vigor and production were recorded as poor except under the protection of shrubs. Pockets of soil surface loss and weak structure were noted.

Apparent rangeland health changes between 2000 and 2009 include a slight improvement in soil characteristics related to biotic integrity, but declines in desirable functional/structural groups and litter (soil cover), and an increase in juniper encroachment. The differences between the two assessments may reflect actual changes in the vegetation and/or differences in the times of year visited. Based on the two field assessments, no significant improvement in the native plant community has occurred.

**Evaluation Finding** – Allotment/watershed is:
____ Meeting the Standard
____ Not Meeting the Standard, but making significant progress towards meeting
_X_ Not Meeting the Standard

**Rationale for Evaluation Finding**
The Hanley FFR is not meeting the Standard for native plant community health, as shown by an abundance of seral juniper and Sandberg bluegrass, and a deficit of bluebunch wheatgrass, Idaho fescue, perennial forb diversity, and litter amounts. Although soil factors (besides litter) do not appear to be limiting the native plant community, the change in structure from a tall bunchgrass community to one heavily influenced by juniper and low grasses indicates the Standard is not being met.

**Standard 5: Seedings** **X** Standard does not apply
*Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.*

**Rationale:** No seedings occur on the public land portion of the Hanley FFR.

**Standard 6: Exotic Plant Communities, Other than Seedings** **X** Standard does not apply
*Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants.*

**Rationale:** No significant exotic plant communities occur on the public land portion of the Hanley FFR.

**Standard 7: Water Quality** X Standard does not apply
*Surface and ground water on public lands comply with the Idaho Water Quality Standards.*

**Rationale:** No streams occur on the public land portion of the Hanley FFR.

**Standard 8: Threatened and Endangered Plants and Animals** ___ Standard does not apply
*Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.*

**Evaluation and Information Sources**
Information sources for plants and animals include Idaho Conservation Data Center GIS files, BLM clearance records and other rare plant and animals records, the 4/13/2009 Field Evaluation, and the 2000/2001Assessment. No botanical or wildlife surveys have been conducted.

**Rangeland Health**
***Plants***
No federally listed Threatened, Endangered, Proposed, or Candidate plant species are known or expected in the Hanley FFR Allotment. No specific records of special status plants occurrences within the allotment are known. Idaho CDC database includes a non-specific reference for reference for a 1977 collection of *Downingia bacigalupii* from Dougherty Creek, mapped as a large circle that includes this allotment. This plant's habitat is seasonally wet mudflats or reservoir edges; potential habitat could exist along the ephemeral drainage that runs through the center of the public land parcel, although it is unlikely. Other rare plants mapped nearby (within 5 miles) with potential habitat in the allotment include *Pyrrocoma linearis* and *Dimeresia howellii*. Habitat for *P. linearis* is wet to dry meadows or stream banks (often in alkaline soil). Habitat for *Dimeresia* is dry, rocky, cindery, or gravelly soils in desert foothills. Given this information and the small size of the public land parcel, the allotment likely has low (but not absent) potential to contain special status plant species.

***Wildlife***
No federally listed Threatened, Endangered, Proposed, or Candidate animal species have been documented within the Hanley FFR Allotment. However, several BLM Special Status Animal Species and State of Idaho Species of Greatest Conservation Need were recorded within one mile of the allotment in areas of similar habitat. BSU Herpetafauna Surveys (1997) and Breeding Bird Surveys (1997, 1998, 2003, 2005) documented several species (e.g., western toad, Brewer's sparrow, sage thrasher, Brewer's blackbird) that are likely to occur within the allotment due to proximity and habitat types that potentially are capable of supporting viable population of these species.

As described under Standard 4, perennial forbs are generally lacking and tall perennial bunchgrasses are limited. Interspatial herbaceous ground cover is generally lacking although fair woody structure and cover is provided by sagebrush and juniper. The limited cover and production of desirable herbaceous species adversely affects habitat for a diversity of species including sage-grouse, Brewer's sparrow, sage sparrows and others by reducing nesting and hiding cover and limiting the production and availability of forbs, seeds and insects that are critical food items many birds, bats

(insects only) and for small mammals that are critical prey for most raptors including prairie falcons, northern harriers and ferruginous hawks.

No sage-grouse leks have been documented within five miles of the allotment and the area provides poor to marginal breeding habitat for sage-grouse due to western juniper encroachment and low perennial bunchgrass cover. A general lack of forb species also indicates that potential brood-rearing habitat is limited. Although western juniper is reducing the suitability of sagebrush communities as habitat for sage-grouse and other shrub-dependant special status animal species, juniper woodland communities provide important habitat for a diversity of other special status birds and bats.

***Fish*: N/A**

**Rangeland Health Changes**

***Plants***

The 2001 Assessment/Determination considered the Hanley FFR Allotment within the potential range of *Spiranthes diluvialis*, a Threatened species. No systematic surveys had been conducted, but low potential for sensitive plants was assumed, due to a lack of specialized habitats.

Owyhee County is no longer considered potential habitat for *Spiranthes diluvialis*. No changes for range land health relating to species status plants are known.

***Wildlife***

The 2000-2001 Assessment and Determination indicated conditions similar to those described in 2009. The site was described as having limited cover, vigor and production of grasses, juniper encroachment, and a lack of perennial forbs which limits the its ability to provide suitable habitat for a diversity of special status animals species including sage-grouse, and other ground nesting and foraging birds.

Although apparent rangeland health changes between 2000 and 2009 include some improvement in the departure rating for biotic integrity, particularly in the native plant community understory, an increase in juniper indicates continuing conversion of the expected shrub steppe habitat types to seral juniper woodlands which limit populations of local sagebrush dependent special status animals species.

**Evaluation Finding** – Allotment/watershed is:

____ Meeting the Standard
____ Not Meeting the Standard, but making significant progress towards meeting
_X_ Not Meeting the Standard

**Rationale for Evaluation Finding**

The conversion of a low sagebrush and tall perennial bunchgrass community to one heavily influenced by juniper and low grasses has reduced the potential for these areas to support populations of special status animals. Therefore, the allotment is not meeting the Standard for special status animals.

# HANLEY FFR 00453

## INITIAL
## ALLOTMENT AND PERMIT/LEASE REVIEW
## and
## RANGELAND HEALTH ASSESSMENT

Field Office: **Owyhee** Date: September 2010

1. Allotment Name/Number: **Hanley FFR / 00453**
2. Name(s) of Permittee(s)/Preference Code: **Hanley Ranch Partnership / 1101414**
3. Permit Expiration Date(s): **2012**
4. Acres of: Public: **63** Private: **593** State: Other:
5. Percent public land in the allotment: **100% on permit. Approximately ten percent public land within the allotment.**
6. Is public land large contiguous block(s) of public land, isolated parcel(s) or both?

   **The allotment is primarily private land that includes one parcel of public land. The public land within the allotment is one separate tract bordered by allotment boundary fences and private land.**

7. Is the public land fenced separately from the private land? **NO**
8. Is any public land within the allotment identified for exchange/disposal in the land use plan? **YES** Percent of public land **100%** If yes, two year notification sent? **NO**
9. Does BLM have administrative access separate from the grazing permit/lease? **Yes**
10. Does public have legal access to the allotment? **Yes**
11. Is the public land physically isolated from the adjoining public land?

    **The 63 acres in the Hanley FFR are largely surrounded by private land. Portions to the south and west are adjacent to other public land parcels.**

12. What is the livestock grazing management category (M, I, or C)? **C**
13. List all Land Use Plan (LUP) objectives and decisions (consider resource list for No. 14 below for objectives and decisions in the LUP), other grazing decisions, and other NEPA documents pertaining to the allotment:
    - **1999 Owyhee Resource Management Plan**
    - **1997 Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management**
    - **March 12, 2002 Notice of Field Manager's Final Decision for the Trout Springs and Hanley FFR Allotments.**

14. Check the Standards, Guidelines, and Resources that are applicable to this allotment. Following ID Team disclosure of information and data (monitoring data, studies, inventories, etc., information from other agencies, local governments, and the public) and the ensuing discussions, briefly describe in the comment section any issues (with supporting information). This information will be used to determine if existing data is adequate, or if more information is needed to determine compliance with the Idaho Standards and Guidelines for Rangeland Health.

| **Standard, Guideline, or Resource Issue** | **Check ( if applicable)** | **Comments** |
|---|---|---|
| Watershed (Standard 1) | X | One RLH evaluation was completed in 2009 in a shallow claypan 12-16" ecological site. Frost heaving was evident by observed pedestalled rocks, while more historic pedestals were observed around Sandberg bluegrass plants. Areas of bare ground were small and moderately connected. Percent bare ground was more than what was expected while the amount of litter was less than what was expected. Vegetation and gravel cover were adequate to prevent accelerated soil erosion. The current vegetation community was adequate to maintain water infiltration. |
| Riparian Areas, Wetland (Standard 2) | | NA |
| Stream Channel, Flood Plains (Standard 3) | | NA |
| Native Plant Communities (Standard 4) | X | The main indicators relating to biotic integrity affecting the site are juniper encroachment, function/structural groups, and litter amount. The reference plant community for this ecological site (shallow claypan 12-16" ARAR8/FEID) is dominated by bluebunch wheatgrass, Idaho fescue, and low sagebrush, with a diversity of perennial forbs and other perennial grasses (including minor amounts of Sandberg bluegrass).<br><br>The site currently shows a substantial increase in western juniper and Sandberg bluegrass, and reductions in deep-rooted perennial grasses (particularly bluebunch wheatgrass) and the diversity of perennial forbs. Litter amounts are reduced (corresponding to the decline in large, deep-rooted perennial grasses), but other soil factors do not appear to be limiting the native plant community. |
| Seedings (Standard 5) | | NA |
| Exotic Plant Communities (Standard 6) | | NA |
| Water Quality (Standard 7) | | NA |

| | | |
|---|---|---|
| Threatened & Endangered Plant & Animals (Standard 8) | X | No special status plant inventories or specific occurrence locations are recorded within the Hanley FFR. Occurrences of three sensitive plants are known from within five miles of the allotment, and there may be potential habitat for these species within the Hanley FFR Allotment.<br><br>A number of special status animal species may occur within the Hanley FFR Allotment. However, no special status animal inventories have been completed. The 2006 Idaho sage-grouse plan identifies this area as key habitat undergoing juniper expansion. No sage grouse sign was observed during the field assessment.<br><br>Plant species composition, particularly the reduction in perennial grass and forb diversity has affected potential habitat for some species by reducing nesting and hiding cover and limiting important food sources. Western juniper is reducing the suitability of habitat for sagebrush dependent species. |

| Guidelines (1-20) | | Data Adequacy/Comments/Concerns |
|---|---|---|
| 1 | Use grazing management practices and/or facilities to maintain or promote significant progress toward adequate amounts of ground cover to support infiltration, maintain soil moisture storage and stabilize soils. | Minimal data exist. Grazing practices appear to be appropriate to maintain soil resources at this site. See Standard 1 above. |
| 2 | Locate livestock management facilities away from riparian areas wherever they conflict with achieving or maintaining riparian-wetland functions | NA |
| 3 | Use grazing management practices and/or facilities to maintain or promote soil conditions that support water infiltration, plant vigor, and permeability rates and minimize soil compaction appropriate to site potential. | See Number 1, above |
| 4 | Implement grazing management practices that provide periodic rest or deferment during critical growth stages to allow sufficient regrowth to achieve and maintain healthy, properly functioning conditions, including good plant vigor and adequate vegetative cover appropriate to site potential. | Lack of rest or deferment has likely affected plant species composition (reduction of tall bunchgrasses) and reduction of litter, with some reduction in production and vigor. |
| 5 | Maintain or promote grazing management practices that provide sufficient residual vegetation to improve, restore, or maintain healthy riparian-wetland functions and structure for energy dissipation, sediment capture, ground water recharge, streambank stability, and wildlife habitat appropriate to site potential. | NA |
| 6 | The development of springs, seeps or other projects affecting water and associated resources shall be designed to protect the ecological functions, wildlife habitat, and significant cultural and historical/ archaeological/ paleontological values associated with the water source. | NA |
| 7 | Apply grazing management practices to maintain, promote, or progress toward appropriate stream channel and streambank morphology and functions. Adverse impacts due to livestock grazing will be addressed. | NA |
| 8 | Apply grazing management practices that maintain or promote the interaction of the hydrologic cycle, nutrient cycle, and energy flow that will support the appropriate types and amounts of soil organisms, plants and animals appropriate to soil type, climate and landform. | See Number 1, above |

| | | |
|---|---|---|
| 9 | Apply grazing management practices to maintain adequate plant vigor for seed production, seed dispersal, and seedling survival of desired species relative to soil type, climate and landform. | Minimal data exist. Grazing practices appear to be affecting species composition. |
| 10 | Implement grazing management practices and/or facilities that provide for complying with the Idaho Water Quality Standards. | NA |
| 11 | Use grazing management practices developed in recovery plans, conservation agreements, and Endangered Species Act, Section 7 consultations to maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals. | Although data for sensitive plants and animals are incomplete, current grazing management may not be adequate for maintaining or improving special species habitat. Absence of a boundary fence between public and private land precludes direct management of public land within this custodial allotment. The minimal acreage of public land has not made it feasible or cost effective to fence off this small parcel. |
| 12 | Apply grazing management practices and/or facilities that maintain or promote the physical and biological conditions necessary to sustain native plant populations and wildlife habitats in native plant communities. | See Guidelines 9 and 11. |
| 13 | On areas seeded predominantly with non-native plants, use grazing management practices to maintain or promote the physical and biological conditions to achieve healthy rangelands. | NA |
| 14 | Where native communities exist, the conversion to exotic communities after disturbance will be minimized. | NA |
| 15 | Use non-native plant species for rehabilitation only in those situations where: a) native species are not readily available in sufficient quantities, b) native plant species cannot maintain or achieve the standards or c) non-native plant species provide for management and protection of native rangelands<br>Include a diversity of appropriate grasses, forbs, and shrubs in rehabilitation efforts. | NA |
| 16 | On burned areas, allow natural regeneration when it is determined that populations of native perennial shrubs, grasses, and forbs are sufficient to re-vegetated the site. Rest burned or rehabilitated areas to allow recovery or establishment of perennial plant species. | NA |
| 17 | Carefully consider the effects of new management facilities (e.g., water developments, fences) on healthy and properly functioning rangelands prior to implementation. | NA |
| 18 | Use grazing management practices, where feasible for wildfire control, and to reduce the spread of targeted undesirable plants (e.g., cheatgrass, medusahead wildrye, and noxious weeds) while enhancing vigor and abundance of desirable native or seeded species. | NA |
| 19 | Employ grazing management practices that promote natural forest regeneration and protect reforestation projects until the Idaho Forest Practices Act requirements for timber stand replacement are met. | NA |
| 20 | Design management fences to minimize adverse impacts, such as habitat fragmentation, to maintain habitat integrity and connectivity for native plants and animals. | NA |

| Land Use Plan Review | | |
|---|---|---|
| Livestock Grazing | X | Active Permitted Use - 7 AUMs<br><br>The Hanley FFR Allotment is identified by the 1999 Owyhee RMP as a "Custodial" category allotment. Approximately 10% of this allotment contains public lands intermingled with unfenced private lands. Livestock grazing is generally authorized as year-long and at the grazing permittee's discretion, as long as grazing management guidelines are adhered to. Pertinent RMP objectives include:<br><br>LVST 1: Provide for sustained level of livestock use compatible with meeting other resource objectives.<br>VEGE 1: Improve unsatisfactory and maintain satisfactory vegetation health/condition on all areas.<br>SOIL 1: Improve unsatisfactory and maintain satisfactory watershed health/condition on all areas.<br>SOIL 2: Achieve stabilization of current, and prevent the potential for future, localized accelerated soil erosion problems (particularly on streambanks, roads, and trails). |
| Botanical | X | There are no recorded sites within the allotment boundaries. |
| Cultural | X | There are no recorded sites within the allotment boundaries. |
| Fire, Fuel | | NA |
| Fisheries | | NA |
| Forestry | | NA |
| Land | X | Under Objective LAND 2 of the Owyhee RMP, the public land within this allotment is identified for disposal, including sale. |
| Minerals | | NA |
| Recreation | | NA |
| Special Status Species | X | See Botany and Wildlife |
| Wild Horses | | NA |
| Wildlife | X | WLDF1: Maintain or enhance the condition, abundance, structural stage and distribution of plant communities and special habitat features required to support a high diversity and desired populations of wildlife. |
| Water Quality | | NA |
| Riparian | | NA |
| Soils/Watershed | X | SOIL 1-Improve unsatisfactory and maintain satisfactory watershed health/condition on all areas. |

15. Describe BLM's ability or inability to manage the allotment by considering the following, as applicable: Whether there is legal access; whether % federal land comprises majority of the allotment; whether the public land acreage is small (less than 640 acres) and surrounded by private land(isolated); whether the federal land is fenced separate from the private land; etc.

    **The allotment is accessible but contains only 63 acres of public land, which account for approximately 10 percent of the total allotment acreage. The BLM has legal access to the allotment. BLM is unable to effectively manage the allotment due to its limited land ownership and a lack of fence separating private/public lands. The actions on the private lands determine how the allotment is used and managed.**

**Based on the information above the following is recommended to the field manager: (check the appropriate category)**

1. ____ Review of existing information indicates that there is no livestock grazing or other issue. Available information is adequate to complete the evaluation and determination. (see numbers 5,6,7,8, 11, and 15 above). **This is the RHA. Complete the evaluation/Determination Form.**

2. __X_ Review of available information indicates that grazing or other issues are known to exist. However, the allotment has no or limited potential for management (see numbers 5, 6, 7, 8, 11, and 15 above). Available information is adequate to complete the evaluation and determination. **This is the RHA for this allotment. Complete the Evaluation/Determination form and consider the public land for disposal.**

3. ____ Review of existing information indicates the physical characteristics (e.g., slope, rock, location on the landscape, and lack of livestock forage) of the tract deter livestock grazing use on the public land. **Consider not issuing a new livestock grazing permit or lease. Further documentation is not recommended.**

4. ____ Review of existing information indicates that an issue(s) may or may not exist. The allotment is considered manageable (see #s 5,6,7,8,11, and 15 above). **Available information is adequate to complete the RHA. Complete RHA and the evaluation/determination.**

5. ____Review of existing information indicates that an issue(s) exists. The allotment is considered manageable (see #s 5,6,7,8,11, and 15 above). More information is needed to determine current conditions. **Gather additional information and data. Complete the RHA and evaluation/determination.**

**List the names and title of the member of the ID team involved with this review**:

| Name | Title |
|---|---|
| Mike McGee | Wildlife Biologist |
| Beth Corbin | Botanist/Ecologist |
| Raul Trevino | Rangeland Management Specialist |
| Richard Jackson | Natural Resource Specialist |
| Brian McCabe | Archaeology |
| Melissa Richert | Rangeland Management Specialist |
| Chris Robbins/Jake Vialpando | Supervisory Rangeland Management Specialist |
| Steven Jirik | Assistant Field Manager |

**Prepared by:** OFO ID Team March 30, 2010

**Modified by:** OFO ID Team September 29, 2010

**Field Manager's Finding and Rationale:**

Based on the limited information/data available, the Hanley FFR Allotment's soil stability and hydrologic function appear to be close to expected values, since rock cover and vegetation provide adequate soil stabilization. Biotic integrity has been altered from reference conditions, as indicated by juniper encroachment, changes in species composition (structural/functional groups), and a lack of litter. The site is dominated by Sandberg bluegrass and subdominated by western juniper, with a relative lack of bluebunch wheatgrass, a low diversity of forbs, and less Idaho fescue than expected. Given the low potential for efficient management of this allotment, we recommend pursuing disposal for this parcel. We recommend that this document suffice for the RHA.

This allotment includes only 10% federal land (63 BLM, and 593 private). The BLM has legal access to the allotment but is unable to effectively manage the allotment due to its limited land ownership and lack of fence separating private/public lands. The actions on the private lands largely determine how the allotment is used and managed.

Therefore, my conclusion is to: (1) accept the above-mentioned recommendation from the ID Team that there are grazing or other issues known to exist, however, the allotment has limited potential for management; (2) acknowledge that the available information is adequate to complete the evaluation and determination; (3) accept this Initial Allotment Review as the Rangeland Health Assessment; and (4), move forward and complete the Evaluation and Determination for this allotment.

Buddy W. Green
**Field Manager**

September 30, 2010
**Date**

# Appendix B – Trout Springs Streams by Pasture

**Appendix B.** Stream segments by pasture under the 2001 Trout Springs Determination and under various Alternatives in this Environmental Assessment.

| | Pasture Identification | | | | | | |
|---|---|---|---|---|---|---|---|
| **2001 Determination** | **1** | | **2** | | **3** | **4 (V-Pasture)** | **5 (Fairylawn)** |
| **Alternative A** | **1A** | **1B** | **2** | | **3** | **Removed** | **4 (Fairylawn)** |
| **Alternatives B-E** | **Middle Fork 1A** | **Thomas Creek 1B** | **Grave Creek 2B** | **Cottonwood 3** | **Twin Spring 2A** | **Removed** | **Fairylawn 4** |
| **Stream Segments** | Middle Fork Owyhee River & Tributaries<br>Hells Creek &Tributaries<br>Squaw Creek<br>Salt Creek | Thomas Creek<br>Little Thomas Creek Tributary<br>Smith Creek & Tributaries<br>Little Smith Creek & Tributaries<br>West Fork Red Canyon Creek | Squaw Creek & Tributaries<br>Twin Springs Creek<br>Headwaters of Cottonwood Creek*<br>Grave Creek* | Cottonwood Creek*<br>North Fork Owyhee River | Squaw Creek & Tributaries<br>Pleasant Valley Creek & Tributaries<br>Twin Springs Creek<br>Little Thomas Creek | Squaw Creek | None |

* Intermittent stream

# Appendix C – Response to Comments

## Appendix C. Responses to Scoping Comments

BLM response to comments received from the August 14, 2009 scoping document for EA #ID-130-2009-EA3680 Term Permit Renewals for Livestock Grazing in Trout Springs and Hanley FFR Allotments

The following guidelines were used by Owyhee Field Manager and Trout Springs ID Team in considering, reviewing, and responding to Scoping Document comments:

> *1) considered pertinent suggestions which could be incorporated into the alternatives;*
> *2) considered as Other Alternatives Considered, but not analyzed;*
> *3) considered as issues to be addressed in the effects analysis;*
> *4) considered as indicators of where BLM needed to provide better clarification in the environmental assessment; or,*
> *5) considered concerns in which BLM provided a specific response to in Appendix C.*

The Trout Springs ID Team met on September 22-23, 2009, and reviewed Scoping Comments received from the following:

- Western Watershed Projects, Katie Fite received via email on August 26, 2009.
- Western Watershed Projects, Katie Fite received via email on August 31, 2009.
- Owyhee Range Service, Chad Gibson received via email on September 2, 2009.
- State of Idaho, Dept. Of Agriculture, Ron Kay received via email on September 14, 2009.
- Hanley Ranch, Mike Hanley received via hardcopy on September 15, 2009.
- Western Watershed Projects received via fax/email on September 22, 2009.

Comments which were categorized under Guidelines No. 1-4 above have been considered and/or addressed in the final EA. The following responses address comments which were categorized as Guideline No. 5 above.

Mike Hanley – Hanley Ranch Comments:

1. *Monitoring of the two years of rest (2008-2009) on the allotment show positive recovery and should be included in the document. Also it should be mentioned that BLM and permittees in 2002 agreed to divide pasture 1 into two parts. This was to provide every other year rest to the pastures 1A and 1B. Also it was stressed that it would enhance riparian issues in both pastures and allows relaxation of stringent riparian policy in the use pasture.*

   Monitoring of the allotment has shown improvement to resources from the 2 plus years of rest and is included in the document. Pasture 1 was split into Pastures 1A and 1B to provide rest every other year in each pasture; improvement to riparian conditions would occur during the rest years, but we have no information to show that the pastures were actually rested. Management indicators such as percent utilization, stubble height, stream bank alteration, etc. identified in the EA are used to periodically evaluate whether terms and conditions (particularly animal numbers and dates) are resulting in the expected management effects, and apply during years of use in all pastures, and are not negated or relaxed due to the presence of rest the year before or after it is used. Relaxing these criteria during use years would diminish any improvements made during the rest years.

2. *The document doesn't mention the well Hanley Ranch established and developed on its Fairylawn deeded land. The well, with its environmentally correct solar power, provides stockwater for three sections adjacent to formerly unwatered federal land in the allotment. The well was drilled after the 2002 decision and its contribution must be recognized. It has resulted in even distribution of grazing on the north western segment of the allotment adjacent to the Fairylawn.*

   The well's overall effect on livestock distribution and subsequent range condition are accounted for in the utilization and trend studies for the allotment.

3. *For years I have tried to get BLM to recognize the northern boundary of the allotment as the southern rim of the north fork canyon. To graze the river but it's used as a limiting factor for grazing on the allotment. I want the boundary changed to the rim as proposed.*

   The North Fork of the Owyhee River is the established North Boundary of the Trout Springs Allotment. Livestock access is limited to only a few known locations.

4. *Establishing proposed fencing will facilitate management. I don't think it necessary to tear out the old fence in Hanley holding field upon completion of the extension. Leaving the old fence allows for management.*

   Alternatives B, D, and E would include an exclosure around a portion of headwaters of Cottonwood Creek to facilitate improvements on the riparian area and headcuts. To accomplish this, most of the old fence will serve as a boundary of the exclosure and the holding field.

5. *I know it's a lot to suggest but I believe it would help if Range Cons went over boundary fences prior to turnout.*

   It is the responsibility of the permittee to ensure ALL boundary and pasture fences are maintained prior to livestock turnout per 43 CFR 4120.3. It is the BLM's responsibility to ensure the permittee complies with the federal regulations that require maintenance.

6. *Recreation use in the area has increased, putting more demand on the land. It's relatively easy to manage grazing, hunting, and tree cutting because permits are issued that can be managed. However, it is difficult to manage RV use that is increasing by leaps and bounds. Not only does it result in new roads and trails, which cause erosion, but brings in invasive species. I don't know how to manage it but as a permittee I'm a fixed target while other users have minimal restrictions. Permittees have an Act of Congress (Taylor Grazing Act) authorizing us…others on the allotment don't.*

   Recreational use is beyond the scope of this document. However, the Owyhee Field Office is aware of and shares your concerns on the inappropriate and misuse of recreational vehicles. The Owyhee Field Office has recently completed two Travel Management Plans for portions of the Owyhee Front to address these concerns. All of Owyhee County will undergo travel planning as directed by Congress in the Omnibus Public Lands Act that was passed on March 30, 2009.

Chad Gibson – Owyhee Range Service Comments:

1. *Standard 1 (Watersheds). The Scoping document should note that past grazing practices (prior to 2000) not livestock grazing in general "appear to have" contributed to loss of upland forage etc. The RHE procedure does not lead to scientifically verifiable conclusion that some condition does or does not in fact exist or that some particular factor did or did not directly cause that condition. The RHE only provides a subjective indication of site conditions and suggests potential causal factors. The scoping document should not definitively state that that a Range Health Standard is not being met but should state that conclusions based on qualitative RHE information indicate that a standard or standards were not being met. The RHE does not provide quantitative statistically verifiable results but provides subjective qualitative information, which can only support a subjective conclusion. The representation of RHE results in the Scoping Document purports a level of certainty that is not supported by the process or the available data. A more accurate representation of the data and conclusions would not change the outcome in regard to management changes but would allow the reader to better understand and consider the reported results.*

   It is correct to conclude that the RHE (Rangeland Health Evaluation) is "subjective," but it is a tool that the BLM utilizes to aid in the determination of rangeland health conditions. The purpose of the scoping document was to "inform the grazing permittees, local government, tribes and interested public of the proposal and to solicit comments for consideration in preparation of the environmental assessment." It was not practical, nor possible to include all monitoring data for the entire allotment within the scoping document. Data was still being collected and analyzed during the scoping development process. The scoping document stated that "no Standards are being met and livestock grazing management practices are significant causal factors" as per the Trout Springs Allotment Rangeland Health Determination of 2001. The Determination was updated in 2012, and based on the data outlined in the appendices and analysis outlined in the Affected Environment and Environmental Consequences – Alternative A, the Standards for Rangeland Health are expected to not be met and livestock grazing practices are expected to be significant factors. Therefore, not only past grazing practices (prior to 2000), but also livestock grazing prior to 2008 has contributed to poor resource conditions.

2. *Under Livestock Grazing bullet #3. There is no Objective of this nature on page 24 of the Owyhee RMP in regard to livestock grazing. The ORMP does not provide a method for estimating utilization during the growing season. The ORMP and the EIS repeatedly state that the method for completing utilization studies is the Key Forage Plant Method, which cannot be used when cattle leave a pasture prior to the end of the growing season. Thus, it cannot be relied on to measure utilization during the growing season and still conform to the ORMP. The only applicable method for evaluating grazed plant removal during the growing season would be to clip and weight forage species, which would require placement of a large number of exclosure sites. It is highly unlikely that such utilization studies would ever be completed and even if they were they would not conform to the method required by the ORMP. Since, it is virtually certain that Objective bullet #3 as stated in the Scoping Document will never be measured it should be*

*removed and replaced with the objective actually stated in the ORMP Livestock 1, page 24, which can be reasonably evaluated.*

You are correct, the upland utilization (and key browse utilization) Livestock Grazing Objective should have referenced ORMP, WDLF 1, page 16, #4. The Key Forage Plant Method does not state that it cannot be used when livestock leave a pasture prior to the end of the growing season. Utilization cages, exclosures, or fenced areas may be used to reference ungrazed plant growth compared to grazed plants. The examiner must be able to distinguish the growth of the plant in its ungrazed state on the same site (ie. utilization cage) and compare it to the grazed area, as long as the study is conducted prior to any regrowth. It is Boise District policy that utilization within allotments be conducted within two weeks of the off-date unless it is after the growing season.

<u>Ron Kay—Idaho Department of Agriculture Comments</u>:

1. *The third paragraph on page 15, under Redband Trout appears to be speculative on if red band trout exist or not. There is no reference when the trout had been in the streams and no information on existing conditions. Since there have been changes in the grazing system, plus rest for the past couple of years, the statements are very absolute with very little current or past information.*

   Riparian monitoring information and other data collected by BLM and Idaho Department of Fish and Game indicate that the stream segments in question could provide habitat for red band trout whether the fish currently occupy these areas or not. Additionally, Fish and Game have previously identified red band trout occurrence in various stream segments throughout the Trout Springs Allotment as shown on Map No. 6 in the EA.

2. *Pages 23 -25 address the Preliminary Resource Issues and Preliminary Livestock Management Issues. You have addressed three alternative, juniper management and range improvements to address these issues, but this document does not show how these alternatives or projects will mitigate the issues identified. These mitigations measures can also become the bases for the rationale section in your decision documents for the grazing permit.*

   The effects of the alternative grazing management systems, juniper treatments, and range improvement projects on resources are discussed in the analysis. Alternatives were developed to mitigate impacts to the resources, while meeting the purpose and need.

3. *The Social and Economic section on page 22 should address the three alternatives and note how each alternative is economically effecting the ranch operation. You mention the season of use which is your proposal, but you do not mention the season of use that the permittees have proposed. This section should use the document that you referenced to analysis the economic effects to the ranches on the changes that will occur in each alternative to the grazing permits.*

   The alternatives are analyzed in the Socio-economics analysis and other sections of the EA.

<u>Western Watershed Projects – August 26, 2009, Comments</u>:

1. *Please systematically collect adequate baseline data on the current health of these lands, watersheds and waters, and the role of livestock as a causal agent in: any habitat, hazardous fuels, understory depletion, desertification, rangeland health, woody species "invasion" and other problems that may exist on these lands. There is no evidence that this has been done in a comprehensive way.*

   Baseline data used for this analysis come from a variety of sources of the best available science, well within BLM's standard procedures. Primary information sources include:
   - Trout Springs Rangeland Health Assessment summary (2000)
   - Trout Springs Determination of Rangeland Health (2001)
   - Trout Springs Evaluation and Determination of Rangeland Health (2012)
   - Hanley FFR Rangeland Health Assessments (2000 and 2009)
   - Hanley FFR Determinations of Rangeland Health (2001 and 2010)
   - Rangeland Trend data from 1986-2012
   - Utilization data (2006 & 2007)
   - Actual use, based on the permittee's yearly actual grazing use reports (2002-2007)
   - Riparian MIM data collected ( 2008)
   - Properly Function Condition – Lentic Assessment (2008)
   - Riparian Greenline Transects (2002)
   - Corporate GIS layers (vegetation, ecological sites, springs, fire history, etc.)
   - Academic studies specific to this area – Bunting 2007, Miller 2004, Furniss 1985, etc.
   - Extensive relevant literature - see Literature Cited.
   - Resource-specific field surveys (ex: Botany 2009 & 2010, Archaeology 2009, Juniper & understory density plots 2009, Goshawk Surveys 2010, Columbia Spotted Frog Surveys 2010)
   - NRCS (Natural Resources Conservation Service) Ecological Site Descriptions
   - Idaho's Conservation Data Center (for known rare plant and animal locations)

2. *Restoration of native vegetation communities and ecological processes must be the goal of all treatments. Restoration means restoring and maintaining ecological integrity. Ecological integrity is the ability of an ecosystem to support and maintain a balanced, adaptive community of organisms having a species composition, diversity and functional organization comparable to that of natural habitats within the region.*

   We agree, and the management actions developed for the various alternatives reflect that.

3. *We believe that until effective answers are found for the vexing problems of noxious weeds and exotic annual grasses, a cautious and prudent fire suppression plan must be in place. This is also necessary because of the dramatically altered and unnatural condition of many sites caused by 150 years of livestock grazing. We ask that you develop a full range of actions based on a precautionary approach.*

   The risk of noxious and invasive weed infestations associated with wild and prescribed fire is addressed in the 2011 Boise District Fire Management Plan for the Fire Management Units throughout the Boise District. This EA analyzes a range of alternatives including no prescribed fire and a combination of cutting and prescribed fire.

4. *Due to drought, insect infestations, climate change, grazing degradation/desertification of sites, there have been recent large-scale die-offs of pinyon, and increasingly western juniper, aspen, and sagebrush in many western lands. Western juniper in the Owyhees is now suffering from die-offs in some areas – something that had not been observed up until a few years ago. WWP has raised this issue repeatedly, and BLM has not addressed it.*

   BLM has addressed these WWP claims in the past, and found no evidence to support them. To date, no substantial die-offs of western juniper have occurred or are occurring in the Owyhee Uplands. In 2002-2003 BLM personnel observed some individual juniper trees which appeared to be topped or killed by bark beetles. BLM was not able to find any information about these beetles. This infestation was rare and has not diminished the unprecedented expansion of western juniper. BLM knows of no other insects, fungus, or diseases affecting juniper. Aspen and sagebrush health issues in this area are strongly related to shading and competition effects of juniper, and the alternatives incorporating juniper management are intended to restore long-term health of those species by treating the juniper.

5. *The role of continued livestock grazing post-treatment in continuing weed invasion must be addressed – how will this foreseeably increase the chemicals used?*

   Livestock grazing does affect the potential for weed invasion; see the environmental effects discussion. The amount of livestock use proposed is not more than has occurred in the past, so an increase in the rate of weed invasion is not expected, and no significant increase in chemical treatment of noxious weeds is anticipated. Chemical treatment of noxious weeds is covered in the District's noxious weed EA and is beyond the scope of this analysis.

6. *Current agency enforcement of grazing closure restrictions is often lax. The problems of dealing with trespass livestock are enormous. Thus, we have no assurances that any livestock-related post-treatment measures will be followed, and these can not be used as "mitigation" for treatments.*

   The Owyhee Field Office takes appropriate action when unauthorized livestock grazing (trespass) occurs in accordance with 43 CFR 4140.1 (Acts Prohibited on Public Lands). The Field Office has pursued four trespasses since last fall and will continue to take appropriate action when unauthorized livestock grazing is identified.

7. *Please develop a comprehensive monitoring plan, with all monitoring to be funded as part of the original "treatment" cost over an extended period of time. Otherwise, timely and necessary monitoring will never occur.*

   Upland monitoring will be in accordance with the Idaho Minimum Monitoring Standards and IM ID-2008-022 (USDI, BLM 2008). Riparian monitoring will occur on the same 3-5 year cycle as the upland trend monitoring, and as funding permits. See Section 2.2.1.1 in the EA.

8. *What is meant by "encroached", or "invaded", and what is the evidence of this?*

Juniper encroachment or invasion into sagebrush, aspen, and mahogany stands is defined as the expansion of its range and increase in density since about 1870 (post-settlement), caused primarily by the disruption in the natural fire cycle. The evidence of this encroachment is discussed in the EA.

Western Watershed Projects – August 31, 2009, Comments:

1. *The BLM documents are not Scoping. Each is a fully fleshed out proposal for continuing gross and abusive overstocking of the public lands. It was clearly worked out to overwhelmingly benefit a single permittee at the expense of ALL the other important values of the public lands.*

   BLM manages the public lands for multiple use, not a single use. The purpose of a scoping document is to notify the public and solicit their comments on a proposed action. As such, a scoping document needs to contain enough information to provide for meaningful public input. All comments including yours were considered. Relevant comments were addressed in a number of ways. They were either: considered pertinent suggestions which were incorporated into the alternatives of the EA, were developed into alternatives considered by not analyzed in detail, were used as issues to be addressed in the effects analysis, were used as indicators of where BLM needed to provide better clarification in the EA, or were considered concerns which BLM responded to in this Appendix.

2. *The document lacks critical information necessary to understand the assessment process. Why has BLM suddenly stopped sending out draft assessments for the public? Stopped conducting real scoping? Is this really Scoping/Draft Assessment – or is it just a near-final EA to rubberstamp massive killing of woody vegetation and gross overstocking of the public lands?*

   BLM has followed its current Scoping Process. When one compares the scoping document against the EA, it is evident the scoping document is nowhere near a final EA. Scoping comments that we received were seriously considered. Relevant comments were used by Interdisciplinary Team in developing a wider range of and additional alternatives. In addition, a Draft EA was released in 2012, before the final EA, providing an additional comment period.

Western Watershed Projects – September 22, 2009, Comments:

1. *WWP requests that both of these documents be withdrawn and revised to allow for full public scoping. The documents as issued are not scoping documents, but rather full fledged Environmental Assessment equivalents with well-developed alternatives that prejudice the public's ability to affect the agency's consideration of reasonable alternatives through scoping in compliance with the National Environmental Policy Act (NEPA).*

   WWP's allegation that the scoping document is equivalent to a fully fledged Environmental Assessment with well-developed alternatives that prejudice the public's ability to affect the agency's consideration of reasonable alternatives through scoping in

compliance with the National Environmental Policy Act (NEPA) is an inaccurate statement. BLM has followed their current Scoping Process and there are no plans to withdraw the Scoping Document. In addition, BLM granted WWP request for an additional week in which to provide further comments during the scoping process. Their comments and other interested public comments obtained during the scoping process were considered in the development of this EA.

2. *WWP is especially concerned that the BLM has already committed to one pre-determined outcome for livestock management on each of these allotments. The already completed surveying of fencing locations and stock tanks and pipelines on the Pole Creek allotment creates an incentive if not a conclusion that the management decision has already been made. This makes the need for reasonable alternatives all the more necessary in any NEPA compliant analysis including an acknowledgment and analysis of the impacts of the already completed surveying.*

   We assume you mean Trout Springs Allotment. No pipelines are proposed, but additional stock tanks for water haul sites are identified. The surveying of potential fences incorporated in some of the alternatives was necessary to determine their feasibility on the ground and to accurately analyze their effects. For instance the effects of a fence line that crosses a sensitive plant or cultural site would need to be adequately analyzed or moved to a different location.

   The process that the BLM has carried out in preparing the EA has been transparent, inclusive, and iterative. An examination of this process does not provide evidence to support the claim that BLM is committed to a pre-determined outcome. Various alternatives presented in the EA were developed in response to scoping. Subsequent efforts by the ID team have led to the development of additional alternatives and their ensuing analysis according to NEPA. The final decision will be based on this analysis.

3. *The BLM needs to include in all alternatives specific and annually measurable mandatory terms and conditions to address all of the failures to comply with the ISHR due to livestock mismanagement. The mandatory terms and conditions need to include minimum allowable stubble heights of vegetation in all riparian areas including mesic meadows and mesic floodplain areas; bank trampling standards, woody browse utilization standards and sage grouse nesting, brood rearing and wintering habitat needs.*

   In accordance with 43 CFR 4130.3 and 4130.3-2, the alternatives identified in the scoping document and subsequent EA contain terms and conditions that will help achieve the purpose and need, and will make progress towards meeting Rangeland Health Standards and Guidelines for Livestock Grazing Management. All alternatives contain mandatory terms and conditions that specify the kind and number of livestock, the period(s) of use, the allotment(s) to be used, and the amount of use (animal unit months) for every grazing permit or lease. The authorized officer may also specify in grazing permits or leases other terms and conditions which will assist in achieving management objectives, provide for proper range management or assist in the orderly administration of the public rangelands.

Stubble heights, bank trampling, woody browse utilization, etc. are included as terms and conditions in Alternatives B and E, and as management objectives in Alternatives A and D.

4. *The BLM needs to include and analyze in all alternatives the establishment of livestock-free areas that can used as reference areas in order to provide a benchmark for BLM management of livestock in similar unprotected areas on the allotments. For example, if a degraded stream is to grazed by livestock under any alternative, the BLM should create an exclosure on that stream of at least half of its watershed that can be monitored to ensure that recovery of the grazed area comports to the recovery in the ungrazed area. The BLM needs to establish a measurable and annually quantifiable protocol to ensure meeting a fixed percentage of recovery in grazed areas as compared with ungrazed areas of similar character. WWP recommends that all alternatives have mandatory terms and conditions that all grazed areas that have been determined not to meet the ISHR and where livestock are the cause be recovered at an annual rate not less than 80% of the rate of recovery of areas that are ungrazed by livestock and used as a reference area.*

   The Cottonwood Headwaters Exclosure would be established to protect the area from livestock impacts. Additionally, the exclosure could be used as an upland reference area. Mandatory terms and conditions are discussed above.

5. *In any alternatives in which the BLM is advocating resting certain area on either of these allotments the NEPA analysis needs to address the effect of higher concentrations of livestock in the areas that are still being made available to livestock grazing where the total authorized use is proposed to be the same as currently authorized (as currently proposed in these documents). Those impacts will affect whether significant progress is being made to meet the ISHR.*

   All of the alternatives (except A) include resting one or more pastures every other year. If a pasture(s) is/are rested one year, the AUMs are also rested. The AUMs from the rested pasture(s) is/are NOT used on a different pasture that is utilized that year. The analysis for each critical element for each alternative is fully analyzed in detail within the EA for the appropriate use proposed in each pasture.

6. *The BLM must establish and analyze in all alternatives the specific annual, three-year, five-year and ten year monitoring that will be carried out to ensure that significant progress will be made each of those periods of time to meet or exceed the ISHR. The "scoping" documents as provided do not provide for monitoring of the impacts of livestock grazing on any schedule whatsoever.*

   Monitoring is discussed in the Section 2.2.1 – Management Common to Multiple Alternatives.

7. *All alternatives developed by the BLM for these two allotments need to analyze management of livestock so that the objective for all wildlife and aquatic habitats is excellent condition and not just good condition as described by the Zoellick and Cade Condition rating protocol of 2006.*

   The objective is to improve habitat conditions over time, making measurable progress toward excellent habitat conditions. This is something that will take years to accomplish and measurable progress toward excellent habitat conditions would be the expected outcome of the selected alternative. However, there is no requirement that all alternatives analyzed must lead to the development of excellent wildlife habitat or aquatic conditions.

There will be differences in alternatives and that is why some alternatives are preferred over others.

8. *All alternatives need to provide and analyze the consequences that will occur if any terms and conditions of the grazing permit are not met. This is especially important for annual terms and conditions as well as three, five and ten-year mandatory terms and conditions of the permit.*

   The comment that all alternatives need to provide and analyze the consequences that will occur if any terms and conditions of the grazing permit are not met is not necessary. Our current grazing regulations (43 CFR 4100) provide for enforcement when prohibited acts or violations occur on the public lands. Specifically, 43 CFR 4140.1 clearly identify the acts that are prohibited on public lands along with 43 CFR 4150.1 which explains unauthorized grazing use on public lands. The authorized officer shall determine whether a violation has occurred and violators are liable in damages to the United States.

9. *In all alternatives the BLM must assess the values to wildlife of keeping juniper dominant areas intact.*

   The value of juniper to wildlife is discussed in the document, as are the negative effects of juniper expansion into other habitat types. The treatment of juniper as proposed would leave 30 to 50% of existing juniper across the treatment area and provide for a diversity of habitat that would benefit wildlife more than the current condition. Joy Belsky (1996) of the Oregon Natural Desert Association stated that biodiversity most likely would be optimized by a landscape containing a mosaic of woodlands, grasslands, and intermediate seral communities.

   The values of not treating juniper are identified in the appropriate sections of the document but there is no requirement that they be repeated in each alternative.

   Changing grazing management (including extended rest) without treating juniper would not make significant progress toward meeting all Standards and identified objectives in the long term because shrub steppe, aspen, and riparian communities would continue to be replaced by expanding juniper. Because western juniper expansion is a major causal factor for the allotment not meeting Standards, forgoing juniper treatments within the Trout Springs Allotment would not address long-term resource objectives. This alternative would not move the allotment toward meeting Standards, would not meet the ORMP objectives, and would be inconsistent with the 2006 Idaho Sage-grouse Conservation Plan, 2004 Owyhee County Sage-grouse LWG Plan, 2004 North American Mule Deer Conservation Plan, and 2005 Coordinated Implementation Plan for Bird Conservation in Idaho, as discussed in the EA.

10. *BLM must provide in each alternative what the timeframe is for reaching all wildlife and aquatic habitat objectives. Currently the BLM has no timeframe developed for attaining these objectives.*

    Timeframes for achieving wildlife and aquatic habitat objectives will vary by alternative. Habitat objectives currently being met will be maintained. Objectives that aim at improving or enhancing habitat would be realized during the term of the permit. The

various alternatives were designed to reach objectives at different paces. Consequently, some alternatives will reach objectives sooner than others. However, ultimately it is the intent of the prescribed management to accomplish and/or make significant progress toward achieving all objectives within the term of the permit.

# Appendix D – Trout Springs Water Quality Restoration Plan

## Trout Springs Allotment

### A. Introduction

This water quality restoration plan is for portions of the North Fork and Middle Fork of the Owyhee River Sub-Basin (HUC 17050107) and the Upper Owyhee Sub-Basin (HUC 17050104).

Streams on the Trout Springs Allotment include all or portions of the following streams: North Fork of the Owyhee River, Pleasant Valley Creek, Squaw Creek, Cottonwood Creek, Middle Fork of the Owyhee River, West Fork of Red Canyon Creek, Little Thomas Creek, Thomas Creek, Smith Creek, and Little Smith Creek and all associated tributaries.

The North and Middle Forks of the Owyhee River generally drain to the west, from Idaho into Oregon. The Middle Fork of the Owyhee River drains the western slope of Juniper Mountain, while the North Fork of the Owyhee River drains the north slope of Juniper Mountain and south slope of South Mountain. Red Canyon drains the south slope of Juniper Mountain. Primary uses for the streams listed above are water for livestock and habitat for fish and wildlife.

The 2010 Integrated Report by Idaho Department of Environmental Quality (IDEQ) lists impared waters and the current status of state waters. The North Fork and Middle Fork Owyhee Rivers, Pleasant Valley Creek and tributaries, and Red Canyon Creek were classified by the Environmental Protection Agency (EPA) under 303(d) of the Clean Water Act, as water quality limited due to exceedances in water temperature and flow alterations.

Water temperature exceedances are the result of streambank damage and a loss of streambank shade, due to livestock grazing (see North and Middle Fork Owyhee Subbasin Assessment and Total Maximum Daily Load and Upper Owyhee Watershed Subbasin Assessment and Total Maximum Daily Loads).

The IDEQ identified existing uses for the North Fork of the Owyhee River and its tributaries, as well as the Middle Fork of the Owyhee River to include the following:

- cold water biota;
- salmonid spawning and rearing for redband trout;
- secondary contact recreation;
- agricultural water supply.

Existing uses for the North and Middle Forks of the Owyhee River also include primary contact recreation, domestic water supply, and special resource waters. Existing uses for Red Canyon Creek include: primary contact recreation, domestic water supply, salmonid spawning, aesthetics and wildlife habitat.

All water bodies are required to meet Idaho water quality standards for designated beneficial uses within the State of Idaho. According to Section 401, of the Clean Water Act, in the case of interstate waters where State criteria differ, the more restrictive standard must be met at the border. In the case of the North and Middle Forks of the Owyhee River, which flow through Idaho and Oregon, the State of Oregon included the North Fork of the Owyhee River on their

2004 303(d) list, due to high stream temperatures. Therefore, the North Fork of the Owyhee River must meet standards for the State of Oregon at the Idaho-Oregon border.

Stream temperature data collected from water bodies within the North Fork Owyhee Hydrologic Unit indicate that stream temperatures exceed the current Idaho and Oregon water quality standards for cold water biota, and salmonid rearing and spawning during the designated spawning period. For this reason, the "North and Middle Fork Subbasin Assessment and Total Maximum Daily Load (TMDL)" document was prepared. EPA does not require flow alteration to be addressed as a TMDL pollutant; therefore flow alteration is not addressed.

All pollutants listed on the 303(d) list are non-point sources, originating on public, state, or private lands within fifth order hydrologic units (HUC 17050107.06 &.08); which in part, include the North and Middle Forks of the Owyhee River and their tributaries, and HUC 17050104.01, which includes Red Canyon Creek in southwest Idaho.

## B. Recovery Goals and Objectives

Recovery goals include compliance with the Clean Water Act and Idaho Water Quality Standards on all streams crossing public lands in the Trout Springs Allotment.

Objectives include: reduce streambank damage; reduce bacteria contamination of the streams; improve herbaceous and woody species diversity, composition, density, vigor, cover, structure and root mass.

The vegetative community needed to meet the standard for temperature is expected to be:

- Increase woody species density and canopy cover providing stream shading;
- A preponderance of late seral hydric herbaceous and woody species along the streambanks.

## C. Restoration Plan

The following Best Management Practices, to address pollutant sources, are in compliance with the Natural Resources Conservation Service, Conservation Practice Standards for Prescribed Grazing, Code 528A:

- The Trout Springs Allotment would be grazed according to the proposed management in Alternative H described in this EA. Secure pasture boundaries, a pasture addition, and juniper treatment will aid in stream recovery. A gap fence preventing livestock access from the Trout Spring Allotment to the North Fork Owyhee River would aid in riparian vegetation growth and development.
- Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant species, playa, or water development.
- Utilization of key upland herbaceous forage species by livestock of no more than 50% if pasture includes rest or deferred rotation.
- Utilization of key upland herbaceous forage species by livestock of no more than 40% if pasture is grazed during the critical growth period (when perennial grasses are actively growing) every year.
- Utilization of key browse species of no more than 30% in deer winter range and no more than 50% in other habitats.

- Streambank alteration by hoof impacts less than 10% in linear area.
- Herbaceous riparian residual stubble height of at least 4" (where applicable) at the end of the growing season.
- Utilization of riparian willows less than 25% on shrubs under five feet in height.
- Seral juniper mortality of 50-70% within Phase 2 and 3 juniper encroachment areas post-treatment.
- Post-broadcast burn canopy and ground cover of herbaceous vegetation at least 80% of what is found in the unburned islands and adjacent areas after the second growing season.
- Post-broadcast burn aspen leaders an average height of at least four feet on areas accessible to livestock after the second growing season.

## D. Margin of Safety

Grazing management proposed in Alternative H will allow for reduced forage utilization and less grazing pressure on the streams through rotation and rest, reduced livestock numbers, and fall season of use (compared to previous management). Pasture rest from grazing would aid in riparian vegetation health, vigor, reproduction and establishment. Herbaceous riparian vegetation is typically less likely to be overgrazed in the fall because of cooler air temperatures, livestock water demands tend to be lower, and may shift use to the uplands. Due to fall season of use and the high elevation (approximately 6,700 feet) of the area, livestock would tend to leave riparian areas for uplands because the air temperature in riparian areas tends to be colder than in the uplands. Less time in the riparian areas would equate to less streambank damage due to hoof impacts and decreased utilization of riparian vegetation. Lower stocking rates would decrease overall grazing pressure on riparian vegetation, while resting Pastures 1A, 1B and 2A every other year would improve riparian vegetation recruitment, reproduction, and vigor (USDI-BLM 2006) along with reducing potential streambank damage.

The grazing schedule would result in five years of rest from grazing in Pastures 1A, 1B, and 2A. Grazing would occur after the critical growing period in all pastures for upland grasses and forbs, allowing for reproduction, improved vigor and health. Pasture rest from grazing would aid in riparian vegetation health, vigor, reproduction and establishment. Retention of at least 4 inches of stubble height on herbaceous riparian species and 75% of the current year's growth of shrubs at the end of the grazing season would result in improved vegetation composition, vigor, cover, structure, density and root mass. Utilization of woody species would be reduced, at least partially due to pasture rest, thus allowing them opportunity for maximum growth during the critical growth period. Improved vegetative conditions would result in improved buffering of erosive forces of high flows and increased filtering of sediment allowing for bank stabilization and aggradation, improved shade, water storage, and riparian expansion. Streambank stability would improve, water infiltration and bank storage would increase, and water quality and fishery habitat would improve. The narrowing and deepening of the streams associated with bank stabilization and aggradation along with improved stream cover (shade) would improve the fluvial morphology and reduce water temperature.

Juniper treatments are likely to increase availability of herbaceous plants in the uplands and would induce livestock to spend more time out of the riparian zone, thus reduce the use of riparian plants and reduce the amount of soil compaction and bank trampling. Rest associated with juniper treatments would also allow time for riparian vegetation to establish and grow.

## E. Implementation Plan

The grazing system will be implemented in 2013.

## F. Estimated Recovery Time

Observed vegetative response to the management changes could be as soon as 5 to 10 years and full recovery would be expected in 30 or more years. Although there is extensive rest from livestock grazing, fencing and juniper treatments, changes to channel formation due to aggradation from vegetation improvement in conjunction with livestock grazing is a slow process.

## G. Cumulative impacts of past, present, and future management

Past and present management have resulted in degraded stream and riparian conditions, increased streambank erosion and decreased riparian vegetation. It is expected that all streams in the Trout Springs Allotment would recover from past and present impacts under the proposed management system. The Trout Springs Allotment represents 16.5% of the North Fork Owyhee hydrologic unit, and 7% of the Middle Fork Owyhee hydrologic unit, or 9.3% of the public land in the Middle Owyhee HUC# 17050107. It also includes 7% of the Nickel Creek hydrologic unit, 3% of the Red Canyon hydrologic unit, and 0.2% of the Deep Creek hydrologic unit of the Upper Owyhee HUC# 17050104. Although the Trout Springs Allotment constitutes only small percentages of several watersheds, it serves as the headwaters for this larger area and greatly influences downstream waters.

BLM land management throughout the watersheds is incorporating best management practices, which would eventually result in overall improved water quality. Juniper treatment effects combined with the grazing schemes would work synergistically causing plant communities to move closer to reference environmental conditions for the four watersheds. These effects would improve the capture, storage, and safe release of precipitation; and improve energy flow and nutrient cycling in the area. Also, improved grazing and juniper treatments planned in the Pole Creek Allotment would move portions of the watersheds closer to reference conditions. Eventually, with the increased cover of deep rooted species such as sedges, rushes and willows, the streambanks would begin to stabilize and channels would deepen and narrow. This would provide for better stream shading and subsequent lowering of stream temperatures, and reduced sediment input, improving water quality on a watershed scale.

## H. Monitoring Plan

MIM and modified MIM sites have been established on:

- Hells Creek
- Middle Fork Owyhee River
- Pleasant Valley Creek
- Smith Creek
- Squaw Creek
- West Fork of Red Canyon Creek

All MIM monitoring will be in accordance with Technical Reference 1737-23 (Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation, 2009) and conducted in 5 year intervals. Modified MIM monitoring typically includes herbaceous stubble height, woody browse, stream bank alteration, and possibly other fluvial morphological attributes.

Stream temperatures will be monitored on Middle Fork Owyhee River, Pleasant Valley Creek, Squaw Creek, and West Fork Red Canyon Creek at 5 year intervals, or as deemed necessary to gather data and to determine compliance with Idaho Water Quality Standards.

Functioning Condition assessments will be conducted in 10 year intervals or when a change in functioning condition is apparent, whichever occurs first.

All monitoring is subject to future funding and available personnel.

# Appendix E – Trout Springs Actual Use Record

**Appendix E.**

**Trout Springs Allotment (0539) – 2002- 2007 Actual Use**

| Year | Actual Use (AUMs) |
|---|---|
| 2002 | 2,012 |
| 2003 | 1,851 |
| 2004 | 1,998 |
| 2005 | 2,179 |
| 2006 | 2,133 |
| 2007 | 1,754 |
| 2008 | Pastures 1, 2, & 3 were closed |
| 2009 | Pastures 1, 2, & 3 were closed |
| **Average (2002-2007)** | ***1,988** |

* The average actual use was calculated using actual use submitted by the permittee from 2002-2007. No actual use was submitted in 2008 and 2009 because Pastures 1, 2, and 3 were closed per a Full Force and Effect (FFE) Final Decision issued on May 5, 2008.

**Hanley FFR Allotment (0453) – 2004- 2008 Actual Use**

| Year | Actual Use (Season) |
|---|---|
| 2004 | 6/15 – 11/20 |
| 2005 | 6/15 – 11/20 |
| 2006 | 6/15 – 6/20, 10/15 – 11/15 |
| 2007 | 6/1 – 12/30 |
| 2008 | 6/12 – 11/15 |
| 2009 | Not submitted |

Livestock numbers were not submitted in the actual use forms. Therefore, no AUMs could be calculated, but the form was used to determine when livestock grazed the Hanley FFR Allotment.

# Appendix F – Trout Springs 2002 - 2007 Utilization Record

**Appendix F. Trout Springs Allotment (0539) – 2006 & 2007 Utilization**

**2006: Pasture 2 (only)**

| Site Stop No. | Date | Species | % Utilization | Comments |
|---|---|---|---|---|
| 1 | 11/3/2006 | Feid | 53.8 | Photo 1 |
| 2 | 11/3/2006 | Feid | 63.7 | Photo 2 |
| 3 | 11/3/2006 | Feid | 71.9 | Photo 3 |
| 4 | 11/3/2006 | Feid | 74.3 | Photo 4 |
| 5 | 11/3/2006 | Feid | 65.8 | Photos 5-6 |
| 6 | 11/3/2006 | Unidentified Perennial | 62.9 | Photo 7 |

**2007: Pastures 2, Gathering Field, 3, and 1A/1B (see Attached Map)**

| Site Stop No. | Date | Species | % Utilization | Comments |
|---|---|---|---|---|
| **Pasture 2** | | | | |
| 1 | 10/2/2007 | Pose | 40 | Photo 1 |
| 2-3 | 10/2/2007 | Agsp | 30 | Photos 2-3 |
| 4-5 | 10/2/2007 | Pose | 40 | Photos 4-5 |
| 6 | 10/2/2007 | Agsp – Pose | 65 | Photo 6 |
| 7-8 | 10/2/2007 | Agsp – Pose | 95 & 75 resp. | Photos 7-8 |
| 9-10 | 10/3/2007 | Agsp – Pose | 75 | Photos 9-10 |
| 11 | 10/3/2007 | Agsp | 40 | Photo 11 |
| 12 | 10/4/2007 | Agsp – Pose | 65 | Photo 12 |
| **Gathering Field** | | | | |
| 13 | 10/4/2007 | Agsp | 15 | Photo 13 |
| 14 | 10/4/2007 | Agsp | 15 | Photo 14 |
| **Pasture 3** | | | | |
| 15 | 10/4/2007 | Agsp | 20 | Photo 15 |
| 16 | 10/4/2007 | Agsp – Pose | 30 | Photo 16 |
| 17 | 10/9/2007 | Pose | 65 | Photo 17 |
| 18 | 10/9/2007 | Pose | 65 | Photo 18 |
| 19 | 10/9/2007 | Pose | 65 | Photo 19 |
| 20 | 10/9/2007 | Pose | 65 | Photo 20 |
| **Pasture 1A** | | | | |
| 21 | 10/9/2007 | NA | NA | NA |
| **Pasture 1B** | | | | |
| 22 | 10/10/2007 | Pose | 65 | Photo 22 |
| 23 | 10/10/2007 | Pose | 65 | Photo 23 |
| 24 | 10/10/2007 | Pose | 65 | Photo 24 |
| 25 | 10/10/2007 | Agsp – Pose | 65 | Photo 25 |
| 26 | 10/10/2007 | Agsp – Pose | 65 | Photo 26 |

* See file records for photos of each utilization site.

# Appendix G – Trout Springs Trend Summary

**Trout Springs Allotment**
**Trend Data – Summary, Analysis, and Discussion**
Beth Corbin
9/11/2012

**Monitoring Sites:**
Nine trend monitoring sites have been established in the Trout Springs Allotment. Four of these sites are nested plot frequency sites and five are photo trend sites. The nested frequency plots are in the loamy 13-16" mountain big sagebrush/bluebunch-Idaho fescue ecological site, while the photo plots are in either that ecological site or the mahogany savanna ecological site, based on vegetation and soils (not necessarily as mapped at the scale in BLM's GIS layer). No plots are located in a low sagebrush ecological site, although low sagebrush ecological sites are mapped as about 17% of the allotment. Plots are in Pastures 1A (Middle Fork), 2 (Cottonwood), and 3 (Twin Springs) (using Alternative A pasture numbers). No plots are in Pasture 1B (Thomas Creek) or Pasture 4 (Fairylawn). See Figure 1 – Map of Monitoring Locations.

**Trout Springs Trend Monitoring Sites: North to South**

| Monitoring Plot | Pasture # | Type | Ecological Site | Dates Read (post 1990) |
|---|---|---|---|---|
| 10S05W04 | 2 | NPFT | Loamy 13-16" ARTRV/PSSPS-FEID | 7/11/1995<br>7/11/2000<br>8/8/2005<br>7/21/2009<br>7/25/2012 |
| 10S05W27 | 2 | NPFT | Loamy 13-16" ARTRV/PSSPS-FEID | 7/12/1995<br>6/28/2000<br>8/1/2005<br>7/15/2009<br>7/25/2012 |
| 11S05W02B | 3 | PP | Mahogany savanna 16-22" CELE3-SYOR2/FEID-STIPA | 7/13/1995<br>6/28/2000<br>8/1/2005<br>7/14/2009<br>7/23/2012 |
| 11S05W02A | 3 | PP | Mahogany savanna 16-22" CELE3-SYOR2/FEID-STIPA | 7/12/1995<br>6/28/2000<br>8/1/2005<br>7/14/2009<br>7/23/2012 |
| 11S05W11A | 3 | NPFT | Loamy 13-16" ARTRV/PSSPS-FEID | 7/12/1995<br>6/28/2000<br>7/28/2005<br>7/14/2009<br>7/23/2012 |
| 11S05W11B | 1A | PP | Loamy 13-16" ARTRV/PSSPS-FEID | 7/12/1995<br>6/28/2000<br>7/28/2005<br>7/14/2009<br>7/24/2012 |
| 11S05W24A | 1A | PP | Mahogany savanna 16-22" CELE3-SYOR2/FEID-STIPA | 7/13/1995<br>6/23/2000<br>7/25/2005<br>7/13/2009<br>7/24/2012 |

| Monitoring Plot | Pasture # | Type | Ecological Site | Dates Read (post 1990) |
|---|---|---|---|---|
| 11S05W24B | 1A | PP | Mahogany savanna 16-22" CELE3-SYOR2/FEID-STIPA | 7/13/1995<br>6/28/2000<br>7/25/2005<br>7/13/2009<br>7/24/2012 |
| 11S05W25 | 1A | NPFT | Loamy 13-16" ARTRV/PSSPS-FEID | 7/14/1995<br>6/28/2000<br>7/27/2005<br>7/13/2009<br>7/24/2012 |

**Frequency:**

***Methods***

Trend data for the four nested frequency monitoring sites within the Trout Springs Allotment were summarized and analyzed. Each of these four sites has data collected for five different years over an 18-year period (1995, 2000, 2005, 2009, and 2012). Earlier data are also available for these sites, but were not included in the statistical analysis because they are less relevant to the current decision.

A non-statistical display shows the frequency of the most frequent species for each site. This gives an overall visual of apparent trend and an implication of relative abundance, which may be useful for qualitative assessment, but is not statistically meaningful. See Figure Set 2 – Frequency Graphs. In Pasture 2, the graphs for the two sites show Sandberg bluegrass with generally higher frequency than other grasses, while larger bunchgrasses (bluebunch wheatgrass, Idaho fescue, and needlegrass) have low frequency, but appear mostly stable (needlegrass increasing at one site in 2012). Sagebrush appears more or less stable to declining, while forbs appear variable, with no apparent trend. In Pasture 3, the site shows needlegrass as the most frequent grass and apparently increasing since 2005; other bunchgrasses are apparently stable or variable. Sagebrush appears generally stable in frequency, and forbs appear variable. The site in Pasture 1A shows melicgrass and needlegrass as the most frequent grasses in most years, again with variable apparent trend, and other bunchgrasses as moderate frequency with apparently variable to increasing trend. (It appears there may be inconsistencies with some grasses recorded as melicgrass or needlegrass between years.) Sagebrush and juniper appear stable with low frequency, but juniper seedlings are more frequent. Lupine is the most abundant forb and appears stable; other forbs are variable. (The plants recorded as Agoseris and Microseris are probably the same plants, so the apparent decline of Agoseris is an artifact.)

To statistically compare frequency between years, the most abundant and/or ecologically important grasses, shrub, and forbs were selected for further analysis. Where present at a site in multiple years, these species were used:

Large bunchgrasses: Idaho fescue, bluebunch wheatgrass, needlegrass
Medium bunchgrasses/sedge: squirreltail, melicgrass, Ross' sedge
Small bunchgrass: Sandberg bluegrass, bulbous bluegrass
Shrub: Mountain big sagebrush
Perennial forbs: Lupine, phlox (longleaf and/or Hood's), Agoseris/Microseris

At each site and for each species, the total number of hits for the 20 quadrats per belt was used as the sampling unit, providing an n=5 for each site/species/year combination. The largest plot size (plot 4, 50 cm x 50 cm) of the nested frequency set was used for each species, except for

Sandberg bluegrass an additional comparison using plot 2 (25cm x 25 cm) was used where plot 4 frequencies approached 20 (100%). The five samples per site were averaged, and the standard deviation calculated. Then a paired, two-tailed Student's T test was run (using Excel) to determine whether the difference between the means of the two consecutive sampling years (i.e. 1995 to 2000, 2000 to 2005, 2005 to 2009, and 2009 to 2012) was significantly different at $p<0.1$. The Student's T test assumes that the two populations sampled have similar variances, and that samples for each mean are normally distributed. For this analysis, these parameters were assumed, but not tested or verified. The attached table shows the result of the T test comparisons: See Figure Set 3 – Statistical Comparison of Differences between Frequency Means for Representative Species.

***Results***

In Pasture 2, the two sites showed no significant change in Idaho fescue, needlegrass, and bluebunch wheatgrass between years, except needlegrass showed a significant increase between 2009 and 2012 at one site; note that bluebunch numbers were so low that the statistics are questionably applicable. Squirreltail showed a significant drop in frequency between 1995 and 2000 at both sites, but a significant increase (rebound) in frequency between 2005 and 2009 at both sites, and then declined again in 2012 at one of the two sites while remaining stable at the other. Sandberg bluegrass was generally stable at one site, and showed a decrease between 2000 and 2005 (significant at the plot 4 but not plot 2 frame), an increase between 2005 and 2009 (significant at plot 2 but not plot 4 frame), and decrease between 2009 and 2012 at the other site. The Sandberg bluegrass figures are confounded by the fact that bulbous bluegrass was lumped with Sandberg bluegrass before 2005, so these data should be viewed with caution. Bulbous bluegrass was stable at both sites between 2005 and 2009, and increased at one site (stable at the other) between 2009 and 2012. Mountain big sagebrush had low frequency with a stable trend at both sites in Pasture 2. Lupine was stable at one site; at the other site, lupine had a significant increase between 1995 and 2000, a significant decrease between 2000 and 2005, an insignificant increase in 2009, and a significant increase in 2012. Phlox was stable with low frequency at one site, and showed a significant drop between 2000 and 2005, an increase between 2005 and 2009, and significant drop again in 2012 at the other site.

In Pasture 3, the one site showed a significant decrease in frequency of Idaho fescue and bluebunch wheatgrass between 2000 and 2005, although bluebunch wheatgrass rebounded between 2005 and 2009 and was stable between 2009 and 2012; Idaho fescue was statistically unchanged from 2005 to 2009 and 2009 to 2012. Needlegrass showed significant increases from 1995 to 2000, 2005 to 2009, and from 2009 to 2012; it decreased (although not significantly) between 2000 and 2005. Squirreltail was stable between all years. Sandberg bluegrass declined between 1995 and 2000, rebounded in 2005, declined in 2009, and increased in 2012; note that the combination with bulbous bluegrass (apparently before 2000) confounds earlier numbers. Bulbous bluegrass showed significant increases from 2000 to 2005 and 2005 to 2009, with an insignificant drop in 2012. Mountain big sagebrush was stable between all years. Lupine was stable except for a significant increase between 2009 and 2012; likewise, longleaf phlox showed a significant increase between 2005 and 2009 and was otherwise statistically stable.

In Pasture 1A, Idaho fescue was not recorded at the one monitoring site. Melicgrass was generally the most frequent bunchgrass, and showed a significant drop between 2000 and 2005, a significant increase between 2005 and 2009, and significant drop again in 2012. Needlegrass increased from 1995 to 2000, and 2009 to 2012, but was otherwise stable. The apparent drop in melicgrass and increase in needlegrass in 2012 may be an artifact of differences in how certain bunchgrasses have been identified over the years. Bluebunch wheatgrass disappeared in 2009,

from very low frequencies in 2000, 2005, and 2012 (not statistically significant). Ross' sedge increased significantly in 2000 and 2005 from previous readings; it also increased in 2009 and again in 2012, although not significantly. Squirreltail decreased between 1995 and 2000 but was otherwise stable. Sandberg bluegrass and bulbous bluegrass were recorded at too low frequencies for changes to be statistically meaningful. Mountain big sagebrush also had very low frequency and was mostly stable, but showed a decline between 2000 and 2005. Lupine increased between 2000 and 2005 and decreased from 2005 to 2009, but was otherwise stable. Agoseris/Microseris decreased between 1995 and 2000, and increased between 2005 and 2009; it had non-significant decreases from 2000 to 2005 and 2009 to 2012.

***Interpretation***

No clear trend is obvious, either within a given pasture or site or for any particular species (or species group) across sites between multiple readings. However, looking in particular at the more recent reading (from 2005 to 2009 and 2009 to 2012), large and medium bunchgrasses were either statistically stable or increased in frequency. This may reflect the recovery that is occurring in the absence of (authorized) grazing between 2008 and 2012. This is somewhat complicated by unauthorized (trespass) grazing in 2009 and 2012, although presumably this unauthorized use is at a much lower level than previously used. The disappearance of bluebunch wheatgrass in 2009 from the site in Pasture 1A and one of the two sites in Pasture 2, although not statistically significant because it was at such low frequency to begin with, is troubling and curious; however, bluebunch wheatgrass reappeared (again at very low frequency) in 2012, so that trend is within its very low but somewhat variable pattern. Forb trends are similarly mostly stable to improving between 2005 and 2009, with statistical increases in frequency for phlox (two of three sites) and Agoseris (one site), although lupine frequency decreased at one site (stable at the other three sites). Note that these general stable or increases in frequency in 2009 follow a trend of mostly stable to decreasing frequency between 2000 and 2005. Forbs were generally stable or variable between 2009 and 2012. The 2005 reading showed reduced frequency (compared to 2000) at one site each for Idaho fescue, bluebunch wheatgrass, melicgrass, sagebrush, lupine, and phlox, while Ross' sedge and lupine showed an increase in frequency in 2005 at one site each. Most other species and sites were statistically stable between 2000 and 2005. Sandberg bluegrass results were mixed, with one decrease, one increase, and two stable frequencies each in 2005, 2009 and 2012, compared to previous readings, but because Sandberg bluegrass readings are confounded with bulbous bluegrass, these results are questionable. (See the weed section for discussion on bulbous bluegrass.)

To summarize, plot data showed generally stable to decreasing frequency trends between 2000 and 2005, during a time when grazing use was about 1,750-2,200 AUMs (See EA Appendix E), while plot data showed generally stable to increasing frequency trends between 2005 and 2009 (a time period with similar use for two years, followed by no authorized use) and between 2009 and 2012 (no authorized use).

Notice that bluebunch wheatgrass has low frequency at all four monitoring sites. This species is expected to be dominant or co-dominant grass under reference conditions, but has been highly reduced, presumably due to past grazing management and juniper encroachment. It did improve at one monitoring site (Pasture 3) in 2009, but disappeared (from previously very low numbers) at two other monitoring sites, reappearing in low frequency at all sites in 2012. Its ecological function providing large bunchgrass structure has apparently been replaced by Idaho fescue (which is expected to be co-dominant with bluebunch wheatgrass), needlegrass, and/or melicgrass.

Sandberg bluegrass is recorded as the most frequent bunchgrass at the two sites in Pasture 2, through 2009, indicating that large bunchgrasses have mainly been replaced by this low bunchgrass. In 2012, needlegrass was slightly more frequent than Sandberg bluegrass at one site, and bulbous bluegrass was more frequent at the other site.

Mountain big sagebrush frequency is mostly stable at these four sites, although Pasture 1A showed a decline in frequency between 2000 and 2005, followed by a non-statistically significant rebound in 2009. Sagebrush frequency is low (3-17%) at all sites, reflecting replacement by juniper canopy. Compare the sagebrush frequency to sagebrush density data, described below.

Forb species show similar trends to the grasses, but with more variability. Forb species richness (indicated by the number of species recorded) is moderate to moderately high. Most forbs are native perennials with a few common native annuals; non-native weeds are few, and noxious weeds absent (see below). Lupine is one of the most common forbs, and its nitrogen fixation potentially increases soil nutrients.

**Photo Plots**

Photographs were taken each monitored year at each of the nine monitoring sites, both photo trend and nested plot frequency sites. At each monitoring site, photographs were taken of the fixed 3'x3' photo plot, and landscape photos from each end of the monitoring baseline (centerline). A sketch of plants, rocks, etc. within the photo plot was also made.

Additional photos were taken in August 2012 at site 10S05W04 after the Grasshopper wildfire (2,730 acres), which burned over this location just a few weeks after it had been read. This is the only trend monitoring site within the fire perimeter. Both pre-burn and post-burn photos of this site from 2012 are shown below. Overall, the fire burned in a mosaic pattern, killing mostly small patches (a few acres) of juniper and sagebrush and leaving other areas unburned.

Most of the photos show high juniper cover, although two (11S05W24A and 11S05W24B) are in openings that had burned sometime recently before the 1986 photographs. Most sites show low cover of sagebrush, except the burned openings, which showed moderate to high sagebrush cover by about 2000. Bunchgrass density appears moderate to sparse, as do perennial forbs. Bare ground appears to range from high to moderately low.

Comparing photographs between years for the last four readings, the 2012 and 2009 photographs generally show somewhat higher grass vigor and somewhat reduced bare ground compared to 2005 in most photos, reflecting the recent rest. These changes are fairly subtle in the photographs, however. Little difference between 2000 and 2005 is apparent in the photos. Examples of 2009 and 2012 photos from three sites each are shown below. None of the 2009 or 2012 photos show evidence of recent cattle grazing.

Site 11S05W25  July 13, 2009

Site 11S05W02B  July 14, 2009

Site 11S05W24B July 13, 2009

Site 10S05W27  July 25, 2012

Site 11S05W11A  July 23, 2012

Site 10S05W04  July 25, 2012 – Pre-burn

Site 10S05W04 August 21, 2012 – Post-burn

**Weeds**
Bulbous bluegrass, a non-native perennial grass, was often lumped within Sandberg bluegrass in data before 2005, so only 2005, 2009, and 2012 nested frequency data for bulbous bluegrass are consistently available. It appears with low to moderately high frequency in those three years. It is never the most frequent, or dominant, grass in these plots (except one site in 2012), but in some cases is co-dominant with native bunchgrasses. The increases at site 10S05W04 in 2012 and at site 11S05W11A in 2009 are statistically significant; other changes between consecutive samplings are not statistically significant ($p>0.1$).

**Bulbous bluegrass Frequency**

| Site | 2005 % Frequency | 2009 % Frequency | 2012 % Frequency |
|---|---|---|---|
| 10S05W04 | 48 | 37 | 78 |
| 10S05W27 | 8 | 11 | 16 |
| 11S05W11A | 32 | 56 | 41 |
| 11S05W25 | 1 | 2 | 3 |

Because annuals were generally not recorded before 2000, long-term trends in annuals cannot be determined. However, the 2005, 2009, and 2012 data show few non-native annuals, each with low frequency and most only appearing one year. These species include cheatgrass (1 site), unspecified brome grass (2 sites), tumble mustard (1 site), prickly lettuce (1 site), dandelion (1 site), salsify (2 sites), spring draba (1 site), forget-me-not (1 site), and ventenata (1 site). Because they are present in such low abundance, these annual weeds are having little or no impact to native plant communities.

No weeds (non-native plants) besides bulbous bluegrass (only at a few sites) are obvious in the photos.

No noxious weeds were recorded in trend plots in 2005, 2009, or 2012. In 2000, houndstongue was recorded in one plot at one site. No further observations of this plant have been recorded in the Trout Springs Allotment, so it does not appear to have persisted (if in fact it really was houndstongue).

BLM's noxious weed GIS layer shows a few small infestations of whitetop and Canada thistle on BLM lands in the Trout Springs Allotment. Leafy spurge and Russian knapweed are recorded near but not on BLM lands in the allotment. The new invader sulfur cinquefoil occurs on BLM and private lands near Mud Flat Road within the allotment, as well as medusahead and ventenata.

**Shrub and Tree Density:**
Shrub and tree densities were counted in two 0.01-acre plots at each nested frequency monitoring site. Data are shown in Figure Set 4 – Shrub and Tree Density. No statistical tests were run on these data, since only two samples per site were taken, so interpretations are only visual. Density should logically show similar trends to frequency for the woody species measured, but the difference in plot sizes between the two methods may influence the results. Similar to the frequency data, juniper (in either the mature or seedling class) were too uncommon in the density plots to reliably show trend. It appears that the monitoring sites specifically avoided dense juniper areas, so the density values shown probably do not represent juniper density across the allotment. It also appears that in 2009, juniper was not recorded in three of the four sites but only because it was not considered a shrub, not because it was absent.

Based on simple graph interpretation, mature sagebrush appears to be stable through 2009 and then declining at one site (Pasture 1A), steadily declining until a slight increase in 2012 at another (Pasture 2), variable with a sharp decline in 2009 at a third site (Pasture 2), and stable with a sharp increase in 2009 then stable in 2012 at the fourth site (Pasture 3). The decline in sagebrush frequency seen in 2005 in Pasture 1A data is not reflected in sagebrush density data. The density data is sampled at a more appropriate plot site for shrubs than frequency data, so is likely more representative, although the sample size is low. Sagebrush density appears somewhat variable overall, with no clear trend. Sagebrush seedlings were rarely recorded.

The density of mature juniper is more or less stable, with one site showing a steady increase, two with single year decreases, and the other site unchanged. Juniper seedlings were infrequently recorded before 2012, except at one site (Pasture 1A) in 2000; apparently few of the 2000 juniper seedlings survived into 2005. In 2012, juniper seedlings were absent in density plots at two sites, and ranged from 200 to 5000 plants/acre at the other two sites.

**Ground Cover and Canopy Cover:**
Ground cover and canopy cover were compared for 2000 to 2005, 2005 to 2009, and 2009 to 2012 at each of the four nested frequency monitoring sites. Ground and canopy cover are recorded as a point intercept for 80 points at each of the five belts, resulting in 400 hits per site. At each point, ground cover, herbaceous perennial canopy cover, and woody canopy cover were recorded. Paired, two-tailed Student's T tests were calculated on the mean percentages of each belt. Changes were considered statistically significant at $p<0.1$. See Figure Set 5 – Ground Cover Comparisons.

Until 2012, each of the four sites showed little significant changes in bare ground between years; only one site (Pasture 3) showed a significant drop in bare ground between 2000 and 2005. This decline in bare ground was replaced by an increase in non-persistent litter at this site. In 2012, three of the four sites showed a significant decrease in bare ground compared to 2009, and at the fourth site, bare ground was also reduced (although not significantly at $p<0.1$). Bare ground averaged from 7% to 27.5% at the four sites in various years.

Basal perennial vegetation, primarily perennial grasses and forbs, showed mixed trends. There was a significant increase in ground cover between 2005 and 2009 at three of the four sites. This may reflect an improvement in perennial grass conditions as a result of no (authorized) grazing in 2008 and 2009. However, between 2009 and 2012, one site significantly increased basal perennial vegetation, one site significantly decreased, and the other two sites were statistically unchanged, indicating that expected improvements from extended rest are not apparent. One of the four sites (Pasture 3) showed a significant decrease in basal vegetation ground cover between 2000 and 2005, while the other three sites were statistically unchanged between those years. Basal perennial vegetation was generally low, ranging from zero (one site in one year) to 19% ground cover.

Stable ground cover elements (besides vascular vegetation) are gravel, rock, persistent litter, and biological crust. The ground cover of these elements combined shows an inconsistent declining pattern through 2009, with cover at two of the four sites decreasing between 2000 and 2005, and the other two sites decreasing between 2005 and 2009; other changes were not statistically significant. Between 2009 and 2012, all sites had increased stable ground cover elements, but changes were significant at only one of the four sites. Stable ground cover elements were generally moderately high, with averages ranging from 26% to 72% combined ground cover.

Non-persistent litter is the most ephemeral of the ground covers, and can reflect precipitation and invasion of annual weeds (which are not a factor in this allotment; see above). Non-persistent litter patterns in this allotment appear to have somewhat of an inverse relationship to the stable ground cover elements, with three sites showing increased non-persistent litter between 2000 and 2005. In 2009, one site showed an increase and one a decrease in non-persistent litter, compared to 2005. Between 2009 and 2012, one site had reduced non-persistent litter. Other changes were not statistically significant. Non-persistent litter cover ranged from approximately 8% to 59%.

Overall, this suggests that between 2000 and 2005, ground cover elements showed somewhat of a replacement of more stable ground cover elements with less stable (non-persistent litter) cover at two of the four sites, while bare ground and basal vegetation were stable at three sites and declining at one site (Pasture 3). Considering that many elements were statistically stable, this suggests a slightly declining system, from a watershed standpoint. Between 2005 and 2009, the increase in basal vegetation at three of four sites indicates ground cover improvement, although stable ground cover elements declined at two sites, bare ground was statistically unchanged, and non-persistent litter had variable trends between sites, suggesting more ambiguous results. Between 2009 and 2012, the reduction in bare ground and somewhat increased stable ground cover elements may indicate improving watershed conditions, but basal vegetation cover (where most improvement is expected without grazing) show mixed trends.

Perennial herbaceous canopy cover ("middle layer") was grouped for analysis into structural groups of large, medium, and small bunchgrasses and perennial forbs. (Annual plants are by definition non-persistent litter.) Data are available only for 2005, 2009, and 2012, so only two potential changes are indicated. See Figure Set 6 – Perennial Herbaceous Canopy Cover. Large bunchgrass canopy cover was fairly low, ranging between 0.75% and 18% cover; between 2005 and 2009 it was virtually unchanged at three of the four sites, and declined at one site (Pasture 3). Between 2009 and 2012, large bunchgrass canopy cover significantly increased at three of four sites; at the fourth site it decreased, but not significantly. Medium bunchgrass canopy cover was very low, ranging between zero and 9% cover; from 2005 to 2009, it increased at two sites, decreased at one site, and was statistically unchanged at the fourth site. Between 2009 and 2012, medium bunchgrass canopy increased significantly at two sites, decreased significantly at one site, and was statistically unchanged at the fourth site. Small bunchgrass canopy cover ranged from zero to 17% cover; it decreased at two sites and was stable at two sites between 2005 and 2009. Between 2009 and 2012, small bunchgrass canopy cover increased at the same two sites that had decreased previously, indicating a rebound, while this cover was statistically unchanged at the other two sites. Perennial forb canopy cover averages ranged from approximately 3% to 10% canopy cover, and were statistically unchanged at all sites between 2005 and 2009 and between 2009 and 2012. Overall, these data indicate generally stable trends for perennial herbaceous canopy cover from 2005 to 2009, and somewhat improving trends, particularly in large bunchgrasses, between 2009 and 2012. Note that herbaceous canopy cover can vary more within a year than other elements measured, because it is affected by seasonal growth and utilization.

Woody canopy cover showed no significant change between 2005 and 2009, and between 2009 and 2012, but two of the four sites (Pastures 1A and 2) had a significant increase in woody canopy cover between 2000 and 2005. Woody canopy cover varied from approximately 23% to 65% cover, and was primarily juniper.

**Summary:**
The various metrics show a generally stable to improving trend in the two most recent readings (2009 and 2012) compared to the previous reading for each. Some of the most important metrics include increasing large bunchgrass frequency (for needlegrass, at least) and canopy cover, and reduced bare ground. However, the fact that large bunchgrass frequency did not universally increase, and basal perennial vegetation cover did not consistently increase, for example, indicates that not all measured values are improving. There may be a number of reasons why improvements in perennial vegetation are not as dramatic as might be expected after extended rest in the Trout Springs Allotment; these reasons are not mutually exclusive, and it is likely that several or all may contribute.

- Juniper: The density of juniper present may be impacting the recovery of perennial bunchgrasses.
- Unauthorized Grazing: Trespass cattle present on the allotment in 2009 and 2012 (at least) may be impeding vegetation recovery, although cattle utilization was not evident when the sites were monitored.
- Time: It is highly likely that the allotment simply has not been rested long enough to show significant change in grass frequency and cover.
- Bulbous bluegrass: It's possible that the presence of bulbous bluegrass is impeding large bunchgrass recovery, at least in some areas within the allotment.

Reduced precipitation has not been an issue in the rested years, with Owyhee Mountains generally near or above average since 2008.

**Attached Figures:**

- Figure 1 - Map of Monitoring Locations
- Figure Set 2 – Frequency Graphs
- Figure Set 3 – Statistical Comparison of Differences between Frequency Means for Representative Species
- Figure Set 4 – Shrub and Tree Density
- Figure Set 5 – Ground Cover Comparisons
- Figure Set 6 – Perennial Herbaceous Canopy Cover

**Figure 2 - Frequency Graphs: Page 1**

August 2012

**Trout Springs Allotment - Site 10S05W04** Pasture 2

All Species

| | Percent Frequency - Plot 4 | | | | | |
|---|---|---|---|---|---|---|
| **Species Codes** | **1986** | **1995** | **2000** | **2005** | **2009** | **2012** |
| AGOSE | | 1 | | | 4 | |
| AGSP | 11 | 1 | 4 | 7 | 5 | 4 |
| ALLIU | 1 | 2 | | | 2 | 1 |
| AMSIN2/AMSINK | | | | | 3 | |
| ANTEN | | 6 | 7 | 9 | 4 | 5 |
| ARAR8 | | | | | 2 | 1 |
| ARTR/ARTR2 | | | 6 | 5 | | |
| ARTRV | 5 | 6 | | | | |
| ARTRW | | | | | 1 | 2 |
| ASTRA/ASTRAG | 5 | 5 | 1 | 2 | 4 | 8 |
| BROMU | | | | 1 | | |
| BRTE | | | | 2 | 2 | 11 |
| COLLIN | | | | | | 37 |
| COLLO | | | | 4 | | |
| CREPI | | 1 | | 5 | | |
| DRVE2 | | | | | | 4 |
| EPILO/EPPA2 | | | | 2 | 5 | |
| ERIOG | | | | | 1 | |
| FEID | 14 | 10 | 12 | 14 | 8 | 13 |
| JUOC | 4 | 4 | 2 | 5 | 4 | 3 |
| LITHO | | | | | | 1 |
| LOMAT2 | | 1 | | | | 1 |
| LUPIN/LUPINE | 59 | 36 | 46 | 34 | 41 | 47 |
| MADIA | | | | | | 1 |
| MICRO8 | | 3 | | | | 9 |
| MIGR | | | | | | 13 |
| PHHO | 4 | 3 | 1 | | 2 | 2 |
| PHLO2 | 1 | | | | 2 | 1 |
| POBU | | | | 48 | 37 | 78 |
| PODO | | | | | | 1 |
| POSA3 | 86 | 89 | 95 | 67 | 80 | 60 |
| PPFF | 4 | | | | | |
| PUTR | | | | | 1 | |
| RIGIO | | | | | | 1 |
| SIHY | 33 | 42 | 17 | 9 | 28 | 10 |
| SISYM | | | | 2 | | |
| STIPA | 3 | 5 | 1 | | | 2 |
| UNKN1/UNKN2 | | 1 | | | 8 | |
| VEDU | | | | | | 3 |
| VULPIA | | | | | | 1 |
| XJUOC | | | | | 2 | 3 |
| ZYGAD | | | | | 2 | 6 |

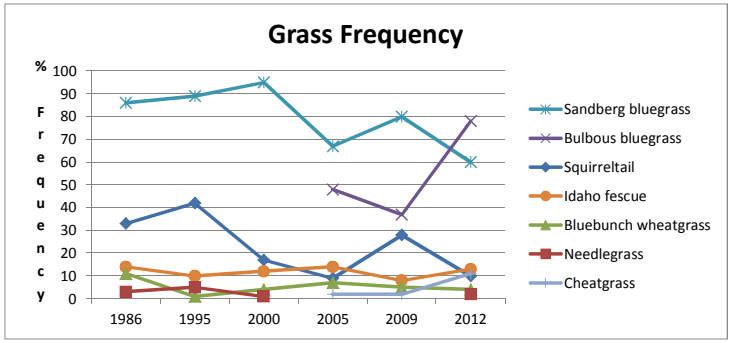
**Percent Frequency - Plot 4**

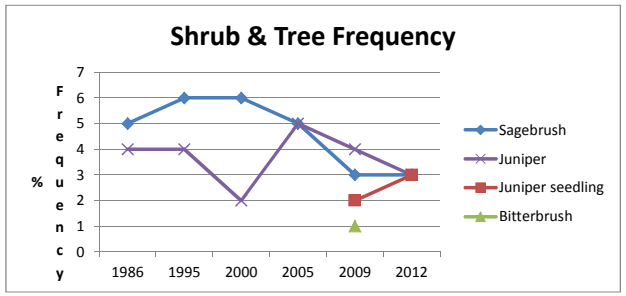
| **Grasses** | **1986** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|---|
| Bluebunch wheatgrass | 11 | 1 | 4 | 7 | 5 | 4 | AGSP |
| Idaho fescue | 14 | 10 | 12 | 14 | 8 | 13 | FEID |
| Sandberg bluegrass | 86 | 89 | 95 | 67 | 80 | 60 | POSA3 |
| Needlegrass | 3 | 5 | 1 | | | 2 | STIPA |
| Squirreltail | 33 | 42 | 17 | 9 | 28 | 10 | SIHY |
| Bulbous bluegrass | | | | 48 | 37 | 78 | POBU |
| Cheatgrass | | | | 2 | 2 | 11 | BRTE |
| Brome | | | | 1 | | | BROMU |
| Ventenata | | | | | | 3 | VEDU |
| Vulpia | | | | | | 1 | VULPIA |

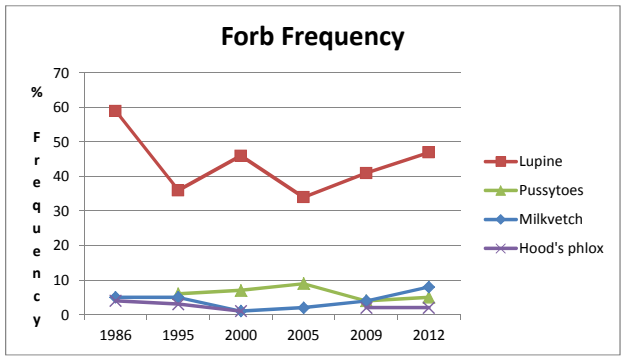
| **Shrubs & Trees** | **1986** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|---|
| Sagebrush | 5 | 6 | 6 | 5 | 3 | 3 | ARAR8, ARTR, ARTR2, ARTRV, ARTRW |
| Bitterbrush | | | | | 1 | | PUTR |
| Juniper | 4 | 4 | 2 | 5 | 4 | 3 | JUOC |
| Juniper seedling | | | | | 2 | 3 | XJUOC |

| **Forbs** | **1986** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|---|
| Pussytoes | | 6 | 7 | 9 | 4 | 5 | ANTEN |
| Milkvetch | 5 | 5 | 1 | 2 | 4 | 8 | ASTRA,ASTRAG |
| Lupine | 59 | 36 | 46 | 34 | 41 | 47 | LUPIN, LUPINE |
| Hood's phlox | 4 | 3 | 1 | | 2 | 2 | PHHO |
| Longleaf phlox | 1 | | | | 2 | 1 | PHLO2 |
| Agoseris | | 1 | | | 4 | | AGOSE |
| Onion | 1 | 2 | | | 2 | 1 | ALLIU |
| Fiddleneck | | | | | 3 | | AMSINK,AMSIN2 |
| blue eyed Mary | | | | | | 37 | COLLIN |
| Collomia | | | | 4 | | | COLLO |
| Hawksbeard | | 1 | | 5 | | | CREPI |
| Spring draba | | | | | | 4 | DRVE2 |
| Willowherb | | | | 2 | 5 | | EPILO, EPPA2 |
| Buckwheat | | | | | 1 | | ERIOG |
| Woodland star | | | | | | 1 | LITHO |
| Bisquitroot | | 1 | | | | 1 | LOMAT2 |
| Tarweed | | | | | | 1 | MADIA |
| Microseris | | 3 | | | | 9 | MICRO8 |
| Slender phlox | | | | | | 13 | MIGR |
| Douglas' knotweed | | | | | | 1 | PODO |
| Wireweed | | | | | | 1 | RIGIO |
| Tumblemustard | | | | 2 | | | SISYM |
| Death camas | | | | | 2 | 6 | ZYGAD |
| Unknown | 4 | 1 | | | 8 | | UNKN1,UNKN2,PPFF |

**Trout Springs Allotment - Site 10S05W04**




Most abundant forbs only

**Figure 2 - Frequency Graphs: Page 2** 8/20/2012

**Trout Springs Allotment - Site 10S05W27** Pasture 2

All Species

| | Percent Frequency - Plot 4 | | | | |
|---|---|---|---|---|---|
| **Species Codes** | **1995** | **2000** | **2005** | **2009** | **2012** |
| ACMI2 | 20 | 21 | 1 | 1 | |
| AGOSE | | | 2 | 2 | |
| AGSP | | 4 | 1 | | 1 |
| ALLIU | 9 | 6 | 12 | 1 | 1 |
| AMSINK | | | | 12 | |
| ANFORB | | | | 17 | 4 |
| ANTEN | 2 | 2 | 2 | 2 | 7 |
| ARABI | | | | | 4 |
| ARENA | 4 | 4 | | 3 | |
| ARNIC | 33 | 20 | | 31 | 8 |
| ARTRV | 7 | 7 | 4 | 4 | 7 |
| BASA3/BASA | 6 | 2 | 5 | 4 | 6 |
| CAREX | 2 | 1 | | 5 | 6 |
| CLPE | | | | 1 | |
| COLLIN | | | | | 57 |
| COLLO | 3 | | 43 | 54 | 13 |
| CREPI | 3 | 2 | 18 | 4 | 1 |
| DELPH | | 1 | | 1 | |
| EPILO/EPPA2 | | | 2 | | |
| ERIGE2 | 1 | 1 | | | |
| ERIOG | 4 | 6 | | 6 | 9 |
| FEID | 16 | 13 | 17 | 18 | 18 |
| GERAN | 1 | | | | 1 |
| GEUM | | 1 | | | 1 |
| HYDRO4 | | | | | 1 |
| JUOC | 5 | 2 | 3 | 3 | 1 |
| LASE | | | | 1 | |
| LOMAT | | | | 4 | |
| LUPIN/LUPINE | 48 | 45 | 42 | 34 | 23 |
| MERTE | | | | | 15 |
| MICRO | | | | 14 | 12 |
| MIGR | | | | | 17 |
| MELIC | | 3 | | 3 | |
| MYOSO | | | | | 1 |
| PERID | | | | 1 | |
| PHLOX | | 27 | | | |
| PHLO2 | 23 | | 15 | 28 | 20 |
| POA | | | | 63 | |
| POBU | | 1 | 8 | 11 | 16 |
| POSA3 | 67 | 68 | 68 | 11 | 58 |
| PODO | | | | 68 | 30 |
| SENEC | | | | | 11 |
| SIHY | 35 | 18 | 24 | 33 | 28 |
| SISYM | | | 10 | | |
| SISYR | 5 | 16 | | 38 | 48 |
| STIPA/STTH2 | 37 | 43 | 38 | 36 | 59 |
| STIPA2/STCON | | | | 14 | 1 |
| UNKN1/UNKN2/UNK | | | | 26 | |
| VIOLA | 1 | | | 1 | |
| WYETH | 2 | 2 | | 2 | 2 |
| XARTRV | | 1 | | 4 | 4 |
| XJUOC | | 3 | 8 | 7 | 6 |
| ZYGAD | 1 | | | 5 | 3 |

**Percent Frequency - Plot 4**

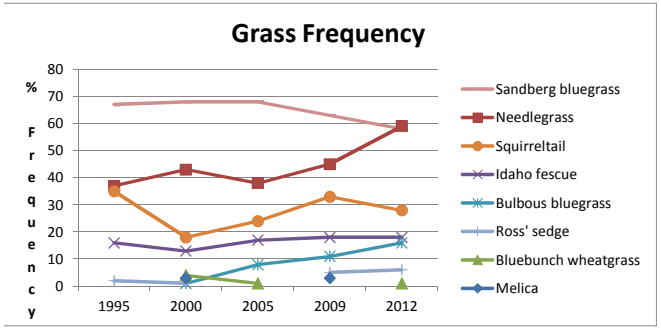
| **Grasses** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|
| Bluebunch wheatgrass | | 4 | 1 | | 1 | AGSP |
| Idaho fescue | 16 | 13 | 17 | 18 | 18 | FEID |
| Sandberg bluegrass | 67 | 68 | 68 | 63 | 58 | POSA3, POA |
| Needlegrass | 37 | 43 | 38 | 45 | 59 | STIPA,STTH2,STIPA2* |
| Bulbous bluegrass | | 1 | 8 | 11 | 16 | POBU |
| Melica | | 3 | | 3 | | MELIC |
| Ross' sedge | 2 | 1 | | 5 | 6 | CAREX |
| Squirreltail | 35 | 18 | 24 | 33 | 28 | SIHY |

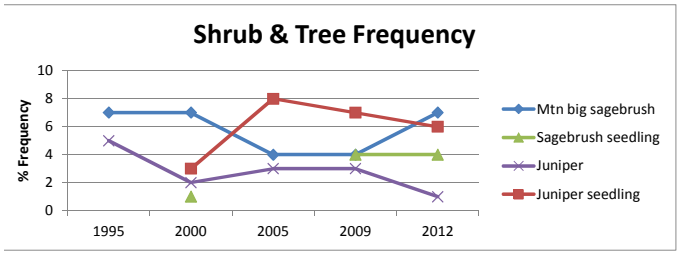
| **Shrubs & Trees** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|
| Mtn big sagebrush | 7 | 7 | 4 | 4 | 7 | ARTRV |
| Sagebrush seedling | | 1 | | 4 | 4 | XARTRV |
| Juniper | 5 | 2 | 3 | 3 | 1 | JUOC |
| Juniper seedling | | 3 | 8 | 7 | 6 | XJUOC |

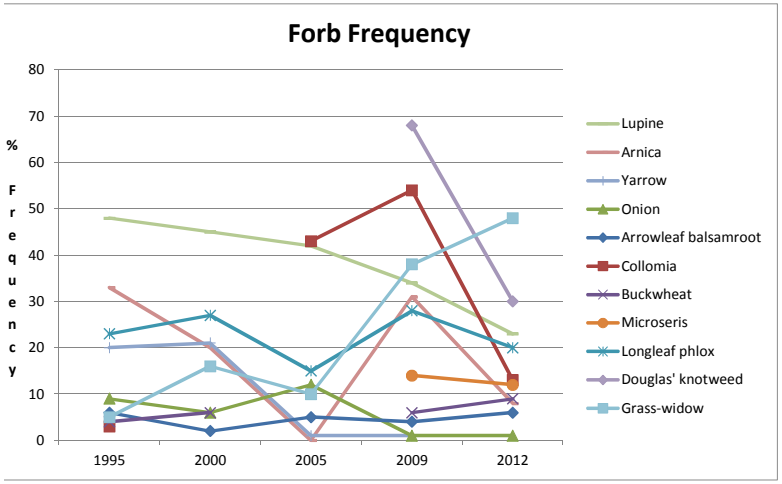
| **Forbs** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|
| Yarrow | 20 | 21 | 1 | 1 | | ACMI2 |
| Onion | 9 | 6 | 12 | 1 | 1 | ALLIU |
| Arnica | 33 | 20 | | 31 | 8 | ARNIC |
| Arrowleaf balsamroot | 6 | 2 | 5 | 4 | 6 | BASA |
| Collomia | 3 | | 43 | 54 | 13 | COLLO |
| Buckwheat | 4 | 6 | | 6 | 9 | ERIOG |
| Lupine | 48 | 45 | 42 | 34 | 23 | LUPIN, LUPINE |
| Microseris | | | | 14 | 12 | MICRO |
| Longleaf phlox | 23 | 27 | 15 | 28 | 20 | PHLO2, PHLOX |
| Douglas' knotweed | | | | 68 | 30 | PODO |
| Grass-widow | 5 | 16 | 10 | 38 | 48 | SISYR, "SISYM" |
| Agoseris | | | 2 | 2 | | AGOSE |
| Fiddleneck | | | | 12 | | AMSINK |
| Pussytoes | 2 | 2 | 2 | | 7 | ANTEN |
| Rock cress | | | | | 4 | ARABI |
| Sandwort | 4 | 4 | | 3 | | ARENA |
| Miner's lettuce | | | | 1 | | CLPE |
| Blue eyed Mary | | | | | 57 | COLLIN |
| Hawksbeard | 3 | 2 | 18 | 4 | 1 | CREPI |
| Willowherb | | | 2 | | | EPILO, EPPA2 |
| Fleabane | 1 | 1 | | | | ERIGE2 |
| Geranium | 1 | | | | 1 | GERAN |
| Geum | | 1 | | | 1 | GEUM |
| Waterleaf | | | | | 1 | HYDRO4 |
| Prickly lettuce | | | | 1 | | LASE |
| Bisquitroot | | | | 4 | | LOMAT |
| Bluebells | | | | | 15 | MERTE |
| Slender phlox | | | | | 17 | MIGR |
| Forget-me-not | | | | | 1 | MYOSO |
| Yampah | | | | 1 | | PERID |
| Groundsel | | | | | 11 | SENEC |
| Death camas | 1 | | | 5 | 3 | ZYGAD |
| Unknown | | | | 31 | 4 | UNKN1,UNKN2,ANFORB |
| Violet | 1 | | | 1 | | VIOLA |
| Mule-ears | 2 | 2 | | 2 | 2 | WYETH |

*Stipa species were combined (based on raw data) for this analysis.

**Trout Springs Allotment - Site 10S05W27**




Forbs were graphed only if they occurred with ≥ 5% frequency in 2 or more years.

**Figure 2 - Frequency Graphs: Page 3**

August 2012

**Trout Springs Allotment - Site 11S05W11A** Pasture 3

All Species

| | Percent Frequency - Plot 4 | | | | |
|---|---|---|---|---|---|
| **Species Codes** | **1995** | **2000** | **2005** | **2009** | **2012** |
| ACMI2 | 1 | 1 | 1 | 2 | |
| AGOSE | 19 | 22 | 18 | 2 | 2 |
| AGSP | 24 | 13 | 5 | 15 | 14 |
| AMSINK | | | | 9 | |
| ANTEN | 1 | 2 | 2 | 11 | 2 |
| ARABI | | | | | 2 |
| ARTRV | 15 | 17 | 15 | 13 | 14 |
| BAHO | | 1 | | | |
| BASA3/BASA | 6 | 4 | 6 | 10 | 8 |
| BERBE/BERE/MARE11 | 1 | 1 | 1 | 1 | 1 |
| CALOC | | | | | 1 |
| CAREX | 14 | 12 | 21 | 24 | 27 |
| COLLO | | | 10 | 25 | 3 |
| COLLIN | | | | 5 | 46 |
| CREPI | 1 | 2 | | 1 | |
| CYNOG | | 1 | | | |
| DELPH | | | | 19 | 3 |
| EPILO | | | | | 1 |
| ERIGE2 | 15 | | | | 1 |
| ERIOG | | | | 1 | |
| FEID | 38 | 40 | 24 | 35 | 34 |
| HYDRO4 | | | | 2 | 3 |
| JUOC | 2 | 2 | 4 | 1 | 4 |
| LOMAT | | | | 5 | 1 |
| LUPIN/LUPINE | 21 | 17 | 25 | 31 | 41 |
| MERTE/MERTEN | | 16 | 11 | 33 | 30 |
| MELIC | | 2 | | 10 | 2 |
| MICRO | | | | 48 | 23 |
| MIGR | | | | | 35 |
| PHLO2 | 50 | 52 | 43 | 54 | 61 |
| POA | | | | 7 | |
| POBU | | 12 | 32 | 56 | 41 |
| POSA3 | 28 | 18 | 35 | 3 | 50 |
| PODO | | | | 70 | 2 |
| PPFF | 3 | | | | |
| SENEC | | | | | 5 |
| SIHY | 44 | 32 | 35 | 33 | 24 |
| SISYR | 19 | 41 | | 53 | 65 |
| STIPA/STTH2 | 37 | 76 | 63 | 80 | 89 |
| TAOF | | | | 1 | |
| TRAGO/TRDU | 1 | 1 | 9 | 1 | |
| UNKN1/UNK | | | | 27 | |
| VIOLA | | | | 5 | 5 |
| XARTRV | | 1 | 7 | 8 | 3 |
| XJUOC | | | | | 2 |
| ZYGAD | | | | 1 | 1 |

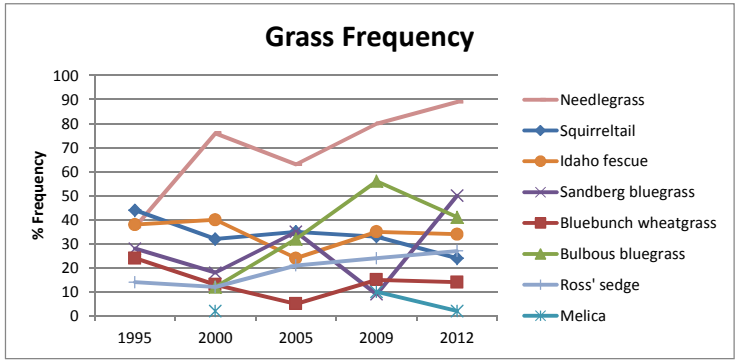
Percent Frequency, Plot 4

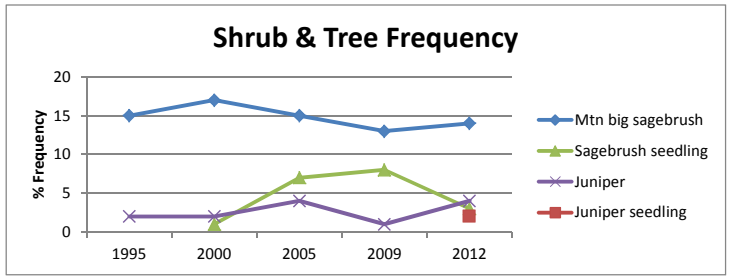
| **Grasses** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|
| Bluebunch wheatgrass | 24 | 13 | 5 | 15 | 14 | AGSP |
| Idaho fescue | 38 | 40 | 24 | 35 | 34 | FEID |
| Sandberg bluegrass | 28 | 18 | 35 | 9 | 50 | POSA3, POA |
| Needlegrass | 37 | 76 | 63 | 80 | 89 | STIPA,STTH2 |
| Bulbous bluegrass | | 12 | 32 | 56 | 41 | POBU |
| Melica | | 2 | | 10 | 2 | MELIC |
| Ross' sedge | 14 | 12 | 21 | 24 | 27 | Carex |
| Squirreltail | 44 | 32 | 35 | 33 | 24 | SIHY |

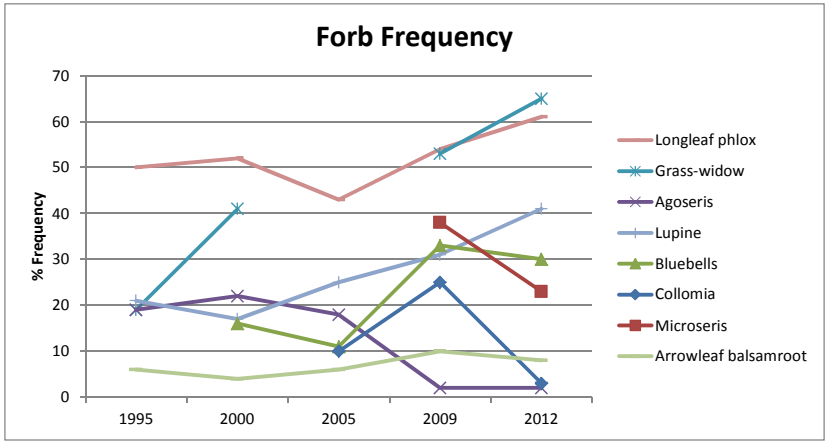
| **Shrubs & Trees** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|
| Mtn big sagebrush | 15 | 17 | 15 | 13 | 14 | ARTRV |
| Sagebrush seedling | | 1 | 7 | 8 | 3 | XARTRV |
| Juniper | 2 | 2 | 4 | 1 | 4 | JUOC |
| Juniper seedling | | | | | 2 | XJUOC |

| **Forbs** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|
| Agoseris | 19 | 22 | 18 | 2 | 2 | AGOSE |
| Arrowleaf balsamroot | 6 | 4 | 6 | 10 | 8 | BASA3/BASA |
| Collomia | | | 10 | 25 | 3 | COLLO |
| Lupine | 21 | 17 | 25 | 31 | 41 | LUPIN, LUPINE |
| Bluebells | | 16 | 11 | 33 | 30 | MERTE,MERTEN |
| Microseris | | | | 38 | 23 | MICRO |
| Longleaf phlox | 50 | 52 | 43 | 54 | 61 | PHLO2 |
| Grass-widow | 19 | 41 | | 53 | 65 | SISYR |
| Yarrow | 1 | 1 | 1 | 2 | | ACMI2 |
| Fiddleneck | | | | 9 | | AMSINK |
| Pussytoes | 1 | 2 | 2 | 11 | 2 | ANTEN |
| Rock cress | | | | | 2 | ARABI |
| Hooker's balsamroot | | 1 | | | | BAHO |
| Oregon grape | 1 | 1 | 1 | 1 | 1 | BERBE/BERE/MARE11 |
| Mariposa lily | | | | | 1 | CALOC |
| Blue-eyed Mary | | | | 5 | 46 | COLLIN |
| Hawksbeard | 1 | 2 | | 1 | | CREPI |
| Hound's tongue | | 1 | | | | CYNOG |
| Larkspur | | | | 19 | 3 | DELPH |
| Willowherb | | | | | 1 | EPILO |
| Fleabane | 15 | | | | 1 | ERIGE2 |
| Buckwheat | | | | 1 | | ERIOG |
| Waterleaf | | | | 2 | 3 | HYDRO4 |
| Bisquitroot | | | | 5 | 1 | LOMAT |
| Slender phlox | | | | | 35 | MIGR |
| Douglas' knotweed | | | | 70 | 2 | PODO |
| Groundsel | | | | | 5 | SENEC |
| Dandelion | | | | 1 | | TAOF |
| Salsify | 1 | 1 | 9 | 1 | | TRAGO/TRDU |
| Unknown | 3 | | | 27 | | PPFF,UNK,UNKN1 |
| Violet | | | | 5 | 5 | VIOLA |
| Death camas | | | | 1 | 1 | ZYGAD |

**Trout Springs Allotment - Site 11S05W11A**




Forbs were graphed only if they occurred with ≥ 5% frequency in 2 or more years.

**Figure 2 - Frequency Graphs: Page 4**

August 2012

**Trout Springs Allotment - Site 111S05W25** Pasture 1A

All Species

| | Percent Frequency - Plot 4 | | | | | |
|---|---|---|---|---|---|---|
| **Species Codes** | **1987** | **1995** | **2000** | **2005** | **2009** | **2012** |
| AGOSE | | 58 | 34 | 24 | 9 | |
| AGSP | 13 | | 1 | 9 | | 2 |
| ALLIU | | 3 | 3 | | | 12 |
| AMSINK | | | | | 12 | |
| ANFORB | | | | | 21 | |
| ARTRV | 4 | 4 | 6 | 3 | 6 | 3 |
| BAHO | | | 1 | | | |
| BASA3/BASA | | 1 | | 3 | 2 | 2 |
| BROMU | | 3 | | | | |
| CAREX | 8 | 21 | 26 | 31 | 36 | 44 |
| CASTI | | | | | | 1 |
| COLLIN | | | | | 2 | 55 |
| COLLO | | 4 | | 2 | 15 | 1 |
| CREPIS/CRAC2 | 73 | | 2 | 6 | 2 | 1 |
| DELPH | 26 | 3 | | | 7 | |
| DESCU | | 1 | | | | |
| ELYMUS | | | | | 1 | |
| ERIOG | 6 | 7 | 12 | 5 | 17 | 17 |
| GAAP2 | | | | | 4 | |
| GERAN | 1 | 1 | | 1 | | 1 |
| GEUM | | | 3 | | | |
| GRIND | | 1 | | | | |
| HYDRO4 | 35 | 4 | | | 9 | 13 |
| JUOC | 4 | 6 | 2 | 1 | 4 | 2 |
| LARA | | | | | | 2 |
| LUPIN/LUPINE | 74 | 73 | 66 | 74 | 66 | 70 |
| MADIA | | | | | 1 | |
| MELIC | | 68 | 62 | 30 | 57 | 3 |
| MERTE | | 6 | | | 7 | 18 |
| MICRO | | | | | 44 | 34 |
| MIGR | | | | | | 24 |
| POA | 73 | | | | 11 | |
| POBU | | | 1 | 1 | 2 | 3 |
| POCU3 | | | | | 1 | |
| POSA3 | 4 | 2 | | | | 4 |
| PODO | | | | | 57 | 56 |
| PPFF | 66 | | | | | |
| RIBES | | | | | | 1 |
| SENEC | 1 | 4 | | | | 1 |
| SIHY | 39 | 40 | 15 | 22 | 27 | 37 |
| STIPA/STTH2 | 34 | 28 | 58 | 43 | 48 | 69 |
| STCON | | | | | | 11 |
| SYMPH | | 3 | 2 | 2 | 2 | 1 |
| UNKN4 | | | | | 1 | |
| TRAGO | | 1 | | | | |
| VICIA | | 1 | | | | |
| VIOLA | | 36 | 24 | 15 | 37 | 12 |
| XARTRV | | | 2 | | | 1 |
| XJUOC | 13 | 12 | 10 | 16 | 17 | 24 |
| XSYMPH | | | | | | 2 |

Percent Frequency, Plot 4

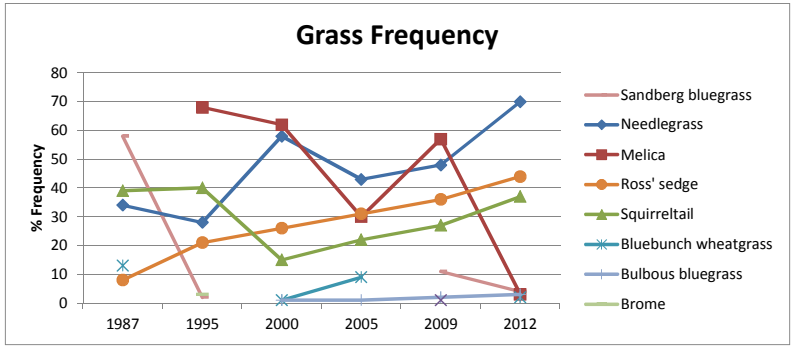
| **Grasses** | **1987** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|---|
| Bluebunch wheatgrass | 13 | | 1 | 9 | | 2 | AGSP |
| Wildrye | | | | | 1 | | ELYMUS |
| Sandberg bluegrass | 58 | 2 | | | 11 | 4 | POSA3, POA |
| Needlegrass | 34 | 28 | 58 | 43 | 48 | 70 | STIPA,STTH2, STCON* |
| Bulbous bluegrass | | | 1 | 1 | 2 | 3 | POBU |
| Melica | | 68 | 62 | 30 | 57 | 3 | MELIC |
| Ross' sedge | 8 | 21 | 26 | 31 | 36 | 44 | Carex |
| Squirreltail | 39 | 40 | 15 | 22 | 27 | 37 | SIHY |
| Brome | | 3 | | | | | BROMU |

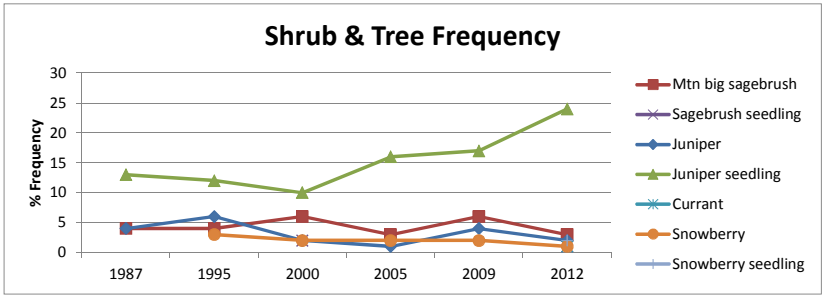
| **Shrubs & Trees** | **1987** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|---|
| Mtn big sagebrush | 4 | 4 | 6 | 3 | 6 | 3 | ARTRV |
| Sagebrush seedling | | | 2 | | | 1 | XARTRV |
| Juniper | 4 | 6 | 2 | 1 | 4 | 2 | JUOC |
| Juniper seedling | 13 | 12 | 10 | 16 | 17 | 24 | XJUOC |
| Currant | | | | | | 1 | RIBES |
| Snowberry | | 3 | 2 | 2 | 2 | 1 | SYMPH |
| Snowberry seedling | | | | | | 2 | XSYMPH |

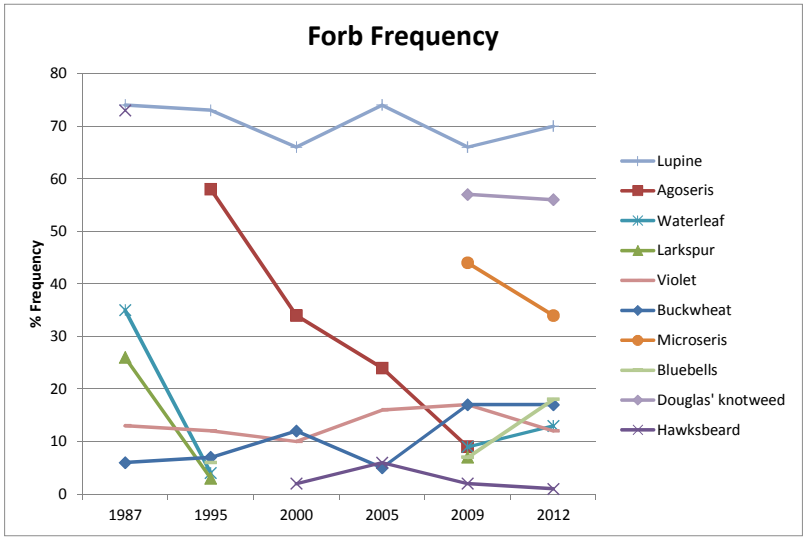
| **Forbs** | **1987** | **1995** | **2000** | **2005** | **2009** | **2012** | Codes |
|---|---|---|---|---|---|---|---|
| Agoseris | | 58 | 34 | 24 | 9 | | AGOSE |
| Hawksbeard | 73 | | 2 | 6 | 2 | 1 | CREPIS/CRAC2 |
| Larkspur | 26 | 3 | | | 7 | | DELPH |
| Buckwheat | 6 | 7 | 12 | 5 | 17 | 17 | ERIOG |
| Waterleaf | 35 | 4 | | | 9 | 13 | HYDRO4 |
| Lupine | 74 | 73 | 66 | 74 | 66 | 70 | LUPIN/LUPINE |
| Bluebells | | 6 | | | 7 | 18 | MERTE,MERTEN |
| Violet | 13 | 12 | 10 | 16 | 17 | 12 | VIOLA |
| Microseris | | | | | 44 | 34 | MICRO |
| Douglas' knotweed | | | | | 57 | 56 | PODO |
| Onion | | 3 | 3 | | | 12 | ALLIUM |
| Fiddleneck | | | | | 12 | | AMSINK |
| Hooker's balsamroot | | | 1 | | | | BAHO |
| Arrowleaf balsamroot | | 1 | | 3 | 2 | 2 | BASA3/BASA |
| Paintbrush | | | | | | 1 | CASTI |
| Blue-eyed Mary | | | | | 2 | 55 | COLLIN |
| Collomia | | 4 | | 2 | 15 | 1 | COLLO |
| Tansymustard | | 1 | | | | | DESCU |
| Bedstraw | | | | | 4 | | GAAP2 |
| Geranium | 1 | 1 | | 1 | | 1 | GERAN |
| Prarie smoke | | | 3 | | | | GEUM |
| Gumweed | | 1 | | | | | GRIND |
| Tarweed | | | | | 1 | | MADIA |
| Slender phlox | | | | | | 24 | MIGR |
| Groundsel | 1 | 4 | | | | 1 | SENEC |
| Unknown | | | | | 21 | | PPFF,UNK,UNKN1,ANFORB |
| Salsify | | 1 | | | | | TRAGO/TRDU |
| Vetch | | 1 | | | | | VICIA |

*Stipa species were combined (based on raw data) for this analysis.

**Trout Springs Allotment - Site 111S05W25**




Forbs were graphed only if they occurred with ≥ 5% frequency in 2 or more years.

**Figure Set 3. Statistical Comparison of Difference between Frequency Means for Representative Species**

**T-Test using # hits out of 20 (not frequency)** **Trout Springs Allotment** 8/28/2012

**Site 10S05W04**

| Idaho Fescue_ Plot 4 | | | | | | | Sandberg bluegrass_ Plot 4 | | | | | Sandberg bluegrass_ Plot 2 | | | | | Squirreltail - Plot 4 | | | | | Bulbous bluegrass_ Plot 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | year | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 2005 | 2009 | 2012 |
| 1 | 1 | 5 | 2 | 3 | 3 | | 15 | 18 | 11 | 19 | 17 | 8 | 13 | 10 | 17 | 13 | 6 | 3 | 4 | 2 | 0 | 11 | 10 | 15 |
| 2 | 3 | 2 | 4 | 2 | 1 | | 20 | 19 | 14 | 19 | 13 | 15 | 16 | 13 | 15 | 8 | 9 | 2 | 2 | 8 | 5 | 7 | 11 | 19 |
| 3 | 3 | 2 | 2 | 3 | 6 | | 20 | 20 | 14 | 15 | 13 | 16 | 19 | 9 | 12 | 11 | 6 | 3 | 2 | 10 | 4 | 15 | 7 | 12 |
| 4 | 3 | 3 | 4 | 0 | 1 | | 17 | 20 | 14 | 13 | 11 | 10 | 16 | 9 | 9 | 10 | 8 | 3 | 1 | 3 | 1 | 10 | 9 | 16 |
| 5 | 0 | 0 | 2 | 0 | 2 | | 17 | 18 | 14 | 14 | 6 | 13 | 8 | 10 | 12 | 4 | 13 | 6 | 0 | 5 | 0 | 5 | 0 | 16 |
| average | 2 | 2.4 | 2.8 | 1.6 | 2.6 | | 17.8 | 19 | 13.4 | 16 | 12 | 12.4 | 14.4 | 10.2 | 13 | 9.2 | 8.4 | 3.4 | 1.8 | 5.6 | 2 | 9.6 | 7.4 | 15.6 |
| S | 1.414214 | 1.81659 | 1.095445 | 1.516575 | 2.073644 | | 2.167948 | 1 | 1.341641 | 2.828427 | 4 | 3.361547 | 4.159327 | 1.6431677 | 3.082207 | 3.420526 | 2.880972 | 1.516575 | 1.48324 | 3.361547 | 2.345208 | 3.847077 | 4.393177 | 2.50998 |
| p | | 0.688457 | 0.688457 | 0.283511 | 0.2302 | | | 0.208 | 0.000391 | 0.199009 | 0.034109 | | 0.362892 | 0.1079388 | 0.072855 | 0.090996 | | 0.005024 | 0.256044 | 0.094803 | 0.011411 | | 0.340422 | 0.015733 |

***1995 & 2000 Include POBU; separate since 2005********

**Site 10S05W27**

| Idaho Fescue_ Plot 4 | | | | | | | Sandberg bluegrass_ Plot 4 | | | | | Sandberg bluegrass_ Plot 2 | | | | | Squirreltail - Plot 4 | | | | | Bulbous bluegrass_ Plot 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | year | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 2005 | 2009 | 2012 |
| 1 | 2 | 0 | 4 | 3 | 1 | | 14 | 13 | 11 | 10 | 15 | 9 | 9 | 7 | 6 | 4 | 6 | 2 | 2 | 4 | 3 | 3 | 0 | 2 |
| 2 | 2 | 0 | 2 | 1 | 0 | | 14 | 11 | 13 | 14 | 15 | 8 | 4 | 8 | 13 | 10 | 9 | 5 | 6 | 8 | 4 | 1 | 2 | 3 |
| 3 | 4 | 4 | 3 | 4 | 4 | | 15 | 15 | 12 | 16 | 13 | 13 | 12 | 9 | 14 | 11 | 8 | 6 | 6 | 8 | 7 | 0 | 1 | 0 |
| 4 | 4 | 4 | 2 | 6 | 5 | | 14 | 15 | 18 | 15 | 10 | 11 | 10 | 14 | 9 | 8 | 4 | 4 | 3 | 5 | 8 | 3 | 3 | 3 |
| 5 | 4 | 5 | 6 | 4 | 8 | | 10 | 14 | 14 | 11 | 5 | 4 | 5 | 12 | 5 | 3 | 8 | 1 | 7 | 8 | 6 | 1 | 5 | 8 |
| average | 3.2 | 2.6 | 3.4 | 3.6 | 3.6 | | 13.4 | 13.6 | 13.6 | 13.2 | 11.6 | 9 | 8 | 10 | 9.4 | 7.2 | 7 | 3.6 | 4.8 | 6.6 | 5.6 | 1.6 | 2.2 | 3.2 |
| S | 1.095445 | 2.408319 | 1.67332 | 1.81659 | 3.209361 | | 1.949359 | 1.67332 | 2.701851 | 2.588436 | 4.219005 | 3.391165 | 3.391165 | 2.9154759 | 4.037326 | 3.563706 | 2 | 2.073644 | 2.167948 | 1.949359 | 2.073644 | 1.341641 | 1.923538 | 2.949576 |
| p | | 0.373901 | 0.495354 | 0.86053 | 1 | | | 0.871219 | 1 | 0.77805 | 0.476621 | | 0.298015 | 0.3571724 | 0.820864 | 0.004181 | | 0.043439 | 0.388309 | 0.000844 | 0.429973 | | 0.621308 | 0.2302 |

***1995 & 2000 Include POBU; separate since 2005********

**Site 11S05W11A**

| Idaho Fescue_ Plot 4 | | | | | | | Sandberg bluegrass_ Plot 4 | | | | | Sandberg bluegrass_ Plot 2 | | | | | Squirreltail - Plot 4 | | | | | Bulbous bluegrass_ Plot 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | year | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 2000 | 2005 | 2009 | 2012 |
| 1 | 9 | 14 | 11 | 11 | 11 | | 7 | 4 | 7 | 3 | 5 | 7 | 3 | 6 | 2 | 4 | 9 | 4 | 6 | 7 | 6 | 2 | 5 | 11 | 17 |
| 2 | 4 | 5 | 0 | 5 | 5 | | 5 | 3 | 10 | 4 | 3 | 2 | 3 | 6 | 4 | 2 | 12 | 4 | 8 | 4 | 5 | 4 | 8 | 12 | 17 |
| 3 | 7 | 8 | 3 | 4 | 4 | | 8 | 3 | 7 | 0 | 17 | 4 | 0 | 6 | 0 | 14 | 7 | 7 | 4 | 6 | 0 | 5 | 12 | 17 | 4 |
| 4 | 9 | 8 | 10 | 8 | 7 | | 5 | 3 | 5 | 1 | 15 | 3 | 1 | 5 | 0 | 10 | 7 | 7 | 10 | 8 | 6 | 1 | 5 | 10 | 3 |
| 5 | 9 | 5 | 0 | 7 | 7 | | 3 | 5 | 6 | 1 | 10 | 3 | 0 | 3 | 1 | 7 | 9 | 10 | 7 | 8 | 7 | 0 | 2 | 6 | 0 |
| average | 7.6 | 8 | 4.8 | 7 | 6.8 | | 5.6 | 3.6 | 7 | 1.8 | 10 | 3.8 | 1.4 | 5.2 | 1.4 | 7.4 | 8.8 | 6.4 | 7 | 6.6 | 4.8 | 2.4 | 6.4 | 11.2 | 8.2 |
| S | 2.19089 | 3.674235 | 5.357238 | 2.738613 | 2.683282 | | 1.949359 | 0.894427 | 1.870829 | 1.643168 | 6.082763 | 1.923538 | 1.516575 | 1.3038405 | 1.67332 | 4.774935 | 2.04939 | 2.50998 | 2.236068 | 1.67332 | 2.774887 | 2.073644 | 3.781534 | 3.962323 | 8.167007 |
| p | | 0.798966 | 0.077742 | 0.254567 | 0.373901 | | | 0.154273 | 0.029867 | 0.000874 | 0.074907 | | 0.060813 | 0.0028622 | 0.008971 | 0.101192 | | 0.241982 | 0.7102 | 0.739581 | 0.194929 | | 0.00877 | 0.000213 | 0.460051 |

***1995 Includes POBU; separate since 2000********

**Site 11S05W25**

| Melica - Plot 4 | | | | | | | Sandberg bluegrass_ Plot 4 | | | | | Ross' sedge_ Plot 4 | | | | | Squirreltail - Plot 4 | | | | | Bulbous bluegrass_ Plot 4 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | year | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 2000 | 2005 | 2009 | 2012 |
| 1 | 13 | 13 | 0 | 12 | 1 | | 1 | 0 | 0 | 4 | 0 | 4 | 5 | 7 | 6 | 5 | 8 | 2 | 3 | 3 | 7 | 0 | 0 | 0 | 2 |
| 2 | 17 | 11 | 6 | 10 | 2 | | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 4 | 7 | 8 | 8 | 2 | 9 | 6 | 7 | 0 | 0 | 0 | 1 |
| 3 | 15 | 18 | 10 | 13 | 0 | | 0 | 0 | 0 | 6 | 2 | 6 | 7 | 9 | 11 | 12 | 9 | 2 | 7 | 6 | 7 | 0 | 0 | 0 | 0 |
| 4 | 10 | 14 | 10 | 15 | 0 | | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 8 | 8 | 14 | 10 | 4 | 1 | 7 | 13 | 0 | 0 | 0 | 0 |
| 5 | 13 | 6 | 4 | 7 | 0 | | 1 | 0 | 0 | 2 | 2 | 3 | 3 | 3 | 4 | 5 | 5 | 5 | 2 | 5 | 3 | 1 | 1 | 2 | 0 |
| average | 13.6 | 12.4 | 6 | 11.4 | 0.6 | | 0.4 | 0 | 0 | 2.4 | 0.8 | 4.2 | 5.2 | 6.2 | 7.2 | 8.8 | 8 | 3 | 4.4 | 5.4 | 7.4 | 0.2 | 0.2 | 0.4 | 0.6 |
| S | 2.607681 | 4.393177 | 4.242641 | 3.04959 | 0.894427 | | 0.547723 | 0 | 0 | 2.607681 | 1.095445 | 1.30384 | 1.788854 | 2.5884358 | 2.588436 | 4.086563 | 1.870829 | 1.414214 | 3.435113 | 1.516575 | 3.577709 | 0.447214 | 0.447214 | 0.894427 | 0.894427 |
| p | | 0.624612 | 0.028693 | 0.033118 | 0.001956 | | | 0.177808 | 1 | 0.108701 | 0.177808 | | 0.034109 | 0.0890093 | 0.2302 | 0.241982 | | 0.016778 | 0.530178 | 0.561438 | 0.220415 | | 1 | 0.373901 | 0.77805 |
| | | | | | | | | Questionably Applicable | | | | | | | | | | | | | | | Questionably Applicable | | |

No FEID in 11S05W25

***1995 Includes POBU; separate since 2000********

Significant change at p<0.1

**Site 10S05W04**

| | Needlegrass - Plot 4 | | | | | Mountain big sagebrush - Plot 4 | | | | | Lupine - Plot 4 | | | | | Phlox (longleaf or Hood's) - Plot 4 | | | | | Bluebunch wheatgrass - Plot 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 |
| 1 | 4 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 6 | 11 | 6 | 8 | 8 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 1 | 8 | 10 | 7 | 7 | 9 | 3 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| 3 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 2 | 1 | 1 | 6 | 8 | 7 | 12 | 14 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 9 | 9 | 6 | 5 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 |
| 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 8 | 8 | 9 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 3 |
| average | 1 | 0.2 | 0 | 0 | 0.4 | 1.2 | 1.2 | 1 | 0.6 | 0.4 | 7.2 | 9.2 | 6.8 | 8.2 | 9.4 | 0.6 | 0.2 | 0 | 0.6 | 0.6 | 0.2 | 0.8 | 1.4 | 1 | 1 |
| S | 1.732051 | 0.447214 | 0 | 0 | 0.547723 | 1.30384 | 1.30384 | 1 | 0.547723 | 0.547723 | 1.30384 | 1.30384 | 0.83666 | 2.588436 | 2.966479 | 1.341641 | 0.447214 | 0 | 0.894427 | 0.894427 | 0.447214 | 0.83666 | 1.67332 | 1.414214 | 1.414214 |
| p | | 0.373901 | 0.373901 | 1 | 0.177808 | | 1 | 0.621308 | 0.476621 | 0.621308 | | 0.07513 | 0.051217 | 0.245492 | 0.032678 | | 0.373901 | 0.373901 | 0.208 | 1 | | 0.304559 | 0.607168 | 0.739581 | 1 |
| | | | | | | | | | | | | | | | | | Questionably Applicable | | | | | Questionably Applicable | | | |

**Site 10S05W27**

| | Needlegrass - Plot 4 | | | | | Mountain big sagebrush - Plot 4 | | | | | Lupine - Plot 4 | | | | | Longleaf phlox - Plot 4 | | | | | Bluebunch wheatgrass - Plot 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 |
| 1 | 16 | 18 | 18 | 17 | 19 | 0 | 2 | 1 | 1 | 1 | 12 | 9 | 8 | 8 | 8 | 3 | 6 | 2 | 4 | 4 | 0 | 0 | 0 | 0 | 1 |
| 2 | 10 | 12 | 5 | 9 | 11 | 1 | 1 | 0 | 0 | 2 | 11 | 10 | 8 | 8 | 3 | 6 | 5 | 5 | 5 | 3 | 0 | 1 | 0 | 0 | 0 |
| 3 | 5 | 8 | 6 | 7 | 15 | 2 | 2 | 0 | 1 | 1 | 9 | 10 | 9 | 7 | 8 | 3 | 3 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 0 |
| 4 | 2 | 3 | 3 | 3 | 7 | 3 | 0 | 2 | 1 | 2 | 8 | 10 | 10 | 5 | 2 | 3 | 4 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 0 |
| 5 | 4 | 2 | 6 | 0 | 7 | 1 | 2 | 1 | 1 | 1 | 8 | 6 | 7 | 6 | 2 | 8 | 9 | 7 | 12 | 9 | 0 | 2 | 0 | 0 | 0 |
| average | 7.4 | 8.6 | 7.6 | 7.2 | 11.8 | 1.4 | 1.4 | 0.8 | 0.8 | 1.4 | 9.6 | 9 | 8.4 | 6.8 | 4.6 | 4.6 | 5.4 | 3 | 5.6 | 4 | 0 | 0.8 | 0.2 | 0 | 0.2 |
| S | 5.639149 | 6.618157 | 5.94138 | 6.496153 | 5.215362 | 1.140175 | 0.894427 | 0.83666 | 0.447214 | 0.547723 | 1.81659 | 1.732051 | 1.140175 | 1.30384 | 3.130495 | 2.302173 | 2.302173 | 2.915476 | 3.781534 | 3 | 0 | 0.83666 | 0.447214 | 0 | 0.447214 |
| p | | 0.235496 | 0.605967 | 0.818327 | 0.021149 | | 1 | 0.426317 | 1 | 0.208 | | 0.552889 | 0.304559 | 0.159553 | 0.130162 | | 0.294256 | 0.032678 | 0.064986 | 0.03492 | | 0.099301 | 0.208 | 0.373901 | 0.373901 |
| | | | | | | | | | | | | | | | | | | | | | | Questionably Applicable | | | |

**Site 11S05W11A**

| | Needlegrass - Plot 4 | | | | | Mountain big sagebrush - Plot 4 | | | | | Lupine - Plot 4 | | | | | Longleaf phlox - Plot 4 | | | | | Bluebunch wheatgrass - Plot 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 |
| 1 | 6 | 12 | 13 | 14 | 17 | 3 | 5 | 4 | 4 | 5 | 5 | 4 | 8 | 10 | 13 | 9 | 11 | 13 | 15 | 15 | 9 | 3 | 0 | 5 | 4 |
| 2 | 10 | 19 | 11 | 17 | 17 | 7 | 5 | 6 | 6 | 2 | 8 | 4 | 3 | 5 | 6 | 9 | 10 | 9 | 13 | 11 | 3 | 2 | 2 | 3 | 2 |
| 3 | 9 | 16 | 16 | 19 | 19 | 1 | 2 | 2 | 1 | 5 | 4 | 4 | 5 | 3 | 6 | 11 | 12 | 10 | 10 | 13 | 3 | 4 | 1 | 2 | 4 |
| 4 | 4 | 15 | 10 | 15 | 17 | 2 | 3 | 3 | 1 | 1 | 0 | 0 | 3 | 6 | 6 | 11 | 6 | 7 | 7 | 9 | 3 | 3 | 2 | 3 | 4 |
| 5 | 8 | 14 | 13 | 15 | 19 | 2 | 2 | 0 | 1 | 1 | 4 | 5 | 6 | 7 | 10 | 10 | 13 | 4 | 9 | 13 | 6 | 1 | 0 | 2 | 0 |
| average | 7.4 | 15.2 | 12.6 | 16 | 17.8 | 3 | 3.4 | 3 | 2.6 | 2.8 | 4.2 | 3.4 | 5 | 6.2 | 8.2 | 10 | 10.4 | 8.6 | 10.8 | 12.2 | 4.8 | 2.6 | 1 | 3 | 2.8 |
| S | 2.408319 | 2.588436 | 2.302173 | 2 | 1.095445 | 2.345208 | 1.516575 | 2.236068 | 2.302173 | 2.04939 | 2.863564 | 1.949359 | 2.12132 | 2.588436 | 3.193744 | 1 | 2.701851 | 3.361547 | 3.193744 | 2.280351 | 2.683282 | 1.140175 | 1 | 1.224745 | 1.788854 |
| p | | 0.001296 | 0.199009 | 0.021461 | 0.087645 | | 0.58705 | 0.476621 | 0.476621 | 0.883461 | | 0.405023 | 0.140357 | 0.235496 | 0.034109 | | 0.789282 | 0.404666 | 0.097185 | 0.263493 | | 0.189367 | 0.056 | 0.061199 | 0.798966 |

**Site 11S05W25**

| | Needlegrass - Plot 4 | | | | | Mountain big sagebrush - Plot 4 | | | | | Lupine - Plot 4 | | | | | Agoseris/Microseris - Plot 4 | | | | | Bluebunch wheatgrass - Plot 4 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belt | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 | 1995 | 2000 | 2005 | 2009 | 2012 |
| 1 | 6 | 13 | 7 | 9 | 16 | 1 | 2 | 1 | 3 | 1 | 12 | 13 | 15 | 13 | 12 | 14 | 5 | 2 | 9 | 12 | 0 | 1 | 6 | 0 | 0 |
| 2 | 4 | 17 | 7 | 13 | 18 | 1 | 1 | 0 | 0 | 0 | 15 | 14 | 16 | 14 | 15 | 10 | 11 | 6 | 9 | 10 | 0 | 0 | 3 | 0 | 0 |
| 3 | 5 | 10 | 10 | 7 | 10 | 1 | 1 | 1 | 2 | 0 | 15 | 12 | 15 | 13 | 13 | 14 | 7 | 5 | 10 | 8 | 0 | 0 | 0 | 0 | 2 |
| 4 | 5 | 7 | 5 | 6 | 9 | 1 | 2 | 1 | 1 | 1 | 12 | 11 | 11 | 11 | 12 | 10 | 5 | 7 | 10 | 1 | 0 | 0 | 0 | 0 | 0 |
| 5 | 8 | 11 | 14 | 13 | 17 | 0 | 0 | 0 | 0 | 1 | 19 | 16 | 17 | 15 | 18 | 10 | 6 | 4 | 6 | 3 | 0 | 0 | 0 | 0 | 0 |
| average | 5.6 | 11.6 | 8.6 | 9.6 | 14 | 0.8 | 1.2 | 0.6 | 1.2 | 0.6 | 14.6 | 13.2 | 14.8 | 13.2 | 14 | 11.6 | 6.8 | 4.8 | 8.8 | 6.8 | 0 | 0.2 | 1.8 | 0 | 0.4 |
| S | 1.516575 | 3.714835 | 3.507136 | 3.286335 | 4.1833 | 0.447214 | 0.83666 | 0.547723 | 1.30384 | 0.547723 | 2.880972 | 1.923538 | 2.280351 | 1.48324 | 2.54951 | 2.19089 | 2.48998 | 1.923538 | 1.643168 | 4.658326 | 0 | 0.447214 | 2.683282 | 0 | 0.894427 |
| p | | 0.037006 | 0.258651 | 0.54568 | 0.004181 | | 0.177808 | 0.070484 | 0.208 | 0.373901 | | 0.134702 | 0.03492 | 0.01613 | 0.294256 | | 0.046477 | 0.154273 | 0.011056 | 0.384373 | | 0.373901 | 0.195138 | 0.208 | 0.373901 |
| | | | | | | | | | | | | | | | | | | | | | | Questionably Applicable | | | |
| | | | | | | | | | | | | | | | | | No Phlox in 11S05W25 | | | | | | | | |

significant change at p<0.1

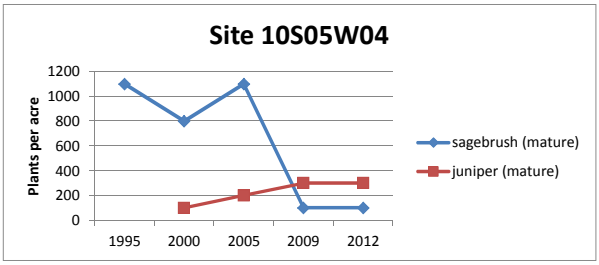
**Figure Set 4 - Shrub and Tree Density**

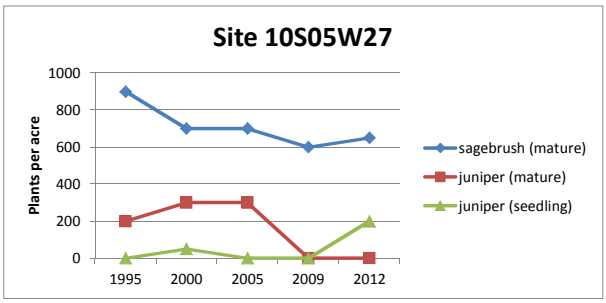
## Trout Springs Shrub and Tree Density

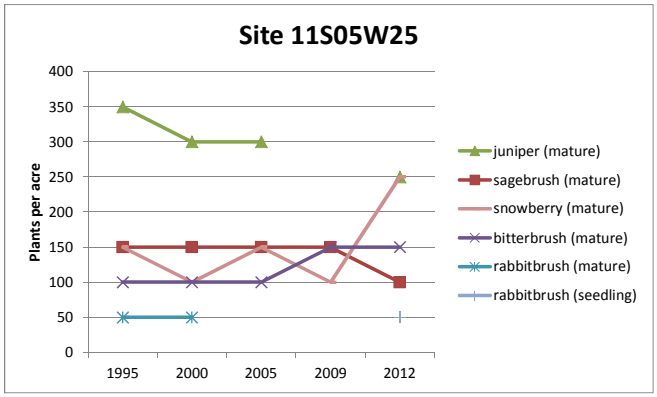
8/28/2012

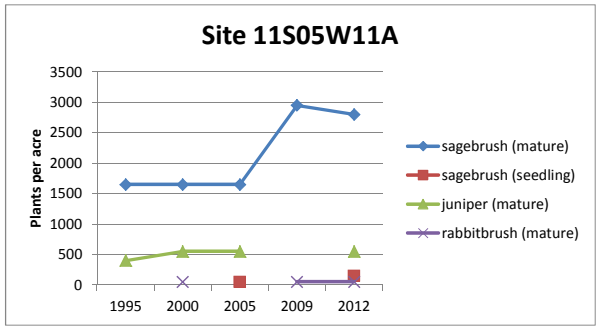
Plants per acre, from the mean of two plots

| Site | Species | 1995 | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|---|---|
| 10S05W04 | | | | | | |
| | sagebrush (mature) | 1100 | 800 | 1100 | 100 | 100 |
| | juniper (mature) | | 100 | 200 | 300 | 300 |
| 10S05W27 | | | | | | |
| | sagebrush (mature) | 900 | 700 | 700 | 600 | 650 |
| | juniper (mature) | 200 | 300 | 300 | 0 | 0 |
| | juniper (seedling) | 0 | 50 | 0 | 0 | 200 |
| 11S05W11A | | | | | | |
| | sagebrush (mature) | 1650 | 1650 | 1650 | 2950 | 2800 |
| | sagebrush (seedling) | | | 50 | | 150 |
| | juniper (mature) | 400 | 550 | 550 | | 550 |
| | rabbitbrush (mature) | | 50 | | 50 | 50 |
| 11S05W25 | | | | | | |
| | sagebrush (mature) | 150 | 150 | 150 | 150 | 100 |
| | juniper (mature) | 350 | 300 | 300 | | 250 |
| | rabbitbrush (mature) | 50 | 50 | | | |
| | rabbitbrush (seedling) | | | | | 50 |
| | buckwheat (mature) | 200 | | | | |
| | bitterbrush (mature) | 100 | 100 | 100 | 150 | 150 |
| | snowberry (mature) | 150 | 100 | 150 | 100 | 250 |
| | juniper (seedling) | | 500 | 50 | | 5000 |




Note: Blanks for juniper in 2009 do not necessarily reflect zero, but rather that juniper was not counted with the shrubs at three sites
Juniper seedlings graphed separately because of scale.

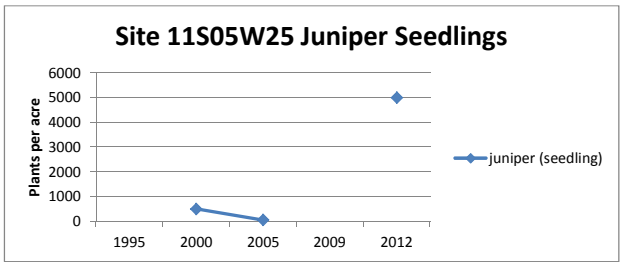


**Figure Set 5 - Ground Cover Comparisons**

# Trout Springs Allotment - Ground Cover

8/28/2012

## Site 10S05W04 - Percent Bare Ground

| | Year | | | |
|---|---|---|---|---|
| Belt | 2000 | 2005 | 2009 | 2012 |
| 1 | 16.25 | 47.5 | 31.25 | 3.75 |
| 2 | 12.5 | 38.75 | 20 | 7.5 |
| 3 | 25 | 7.5 | 8.75 | 8.75 |
| 4 | 20 | 3.75 | 8.75 | 8.75 |
| 5 | 2.5 | 2.5 | 26.25 | 6.25 |
| Average | 15.25 | 20 | 19 | 7 |
| S: | 8.496323 | 21.4148 | 10.17042 | 2.09165 |
| T-test P: | | 0.668736 | 0.90356 | 0.092167 |

**Percent Basal Vegetation**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 8.75 | 0 | 0 | 7.50 |
| 2 | 3.75 | 0 | 0 | 11.25 |
| 3 | 10 | 6.25 | 0 | 6.25 |
| 4 | 7.5 | 1.25 | 0 | 11.25 |
| 5 | 5 | 8.75 | 0 | 10.00 |
| Average | 7 | 3.25 | 0 | 9.25 |
| S: | 2.592055 | 4.011702 | 0 | 2.270738 |
| T-test P: | | 0.147462 | 0.144294 | 0.000806 |

**Percent Gravel, Rock, Persistent Litter, and Biological Crust (combined)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 46.25 | 30 | 16.25 | 50 |
| 2 | 45 | 31.25 | 30 | 40 |
| 3 | 45 | 55 | 27.5 | 33.75 |
| 4 | 46.25 | 58.75 | 56.25 | 58.75 |
| 5 | 45 | 48.75 | 11.25 | 22.5 |
| Average | 45.5 | 44.75 | 28.25 | 41 |
| S: | 0.684653 | 13.38726 | 17.46872 | 14.07014 |
| T-test P: | | 0.906594 | 0.079758 | 0.080123 |

**Percent Non-persistent Litter**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 28.75 | 22.5 | 52.5 | 38.75 |
| 2 | 38.75 | 30 | 50 | 41.25 |
| 3 | 20 | 31.25 | 63.75 | 51.25 |
| 4 | 26.25 | 36.25 | 35 | 33.75 |
| 5 | 47.5 | 40 | 62.5 | 61.25 |
| Average | 32.25 | 32 | 52.75 | 45.25 |
| S: | 10.87572 | 6.649718 | 11.60549 | 10.98294 |
| T-test P: | | 0.958003 | 0.025363 | 0.048935 |

**Percent Total Vegetation (basal + canopy)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 21.25 | 12.5 | 40 | 38.75 |
| 2 | 37.5 | 32.5 | 25 | 42.5 |
| 3 | 20 | 22.5 | 55 | 32.5 |
| 4 | 21.25 | 22.5 | 25 | 48.75 |
| 5 | 40 | 53.75 | 20 | 51.25 |
| Average | 28 | 28.75 | 33 | 42.75 |
| S: | 9.866294 | 15.66246 | 14.40486 | 7.572566 |
| T-test P: | | 0.854841 | 0.742943 | 0.371417 |

**Percent Canopy Cover**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 12.5 | 12.5 | 40 | 31.25 |
| 2 | 37.5 | 32.5 | 25 | 33.75 |
| 3 | 12.5 | 16.25 | 55 | 30 |
| 4 | 15 | 21.25 | 25 | 40 |
| 5 | 36.25 | 52.5 | 20 | 43.75 |
| Average | 22.75 | 27 | 33 | 35.75 |
| S: | 12.94218 | 16.11967 | 14.40486 | 5.902859 |
| T-test P: | | 0.297187 | 0.660203 | 0.768878 |

Significant change at p<0.1

## Site 10S05W27 - Percent Bare Ground

| | Year | | | |
|---|---|---|---|---|
| Belt | 2000 | 2005 | 2009 | 2012 |
| 1 | 11.25 | 0 | 11.25 | 1.25 |
| 2 | 31.25 | 5 | 11.25 | 10 |
| 3 | 23.75 | 28.75 | 26.25 | 16.25 |
| 4 | 13.75 | 21.25 | 15 | 6.25 |
| 5 | 13.75 | 22.5 | 33.75 | 8.75 |
| Average | 18.75 | 15.5 | 19.5 | 8.5 |
| S: | 8.477912 | 12.3301 | 10.06231 | 5.477226 |
| T-test P: | | 0.656932 | 0.327406 | 0.046438 |

**Percent Basal Vegetation**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 0 | 2.5 | 10 | 10 |
| 2 | 0 | 0 | 11.25 | 5 |
| 3 | 2.5 | 0 | 26.25 | 16.25 |
| 4 | 2.5 | 0 | 15 | 8.75 |
| 5 | 2.5 | 0 | 33.75 | 7.5 |
| Average | 1.5 | 0.5 | 19.25 | 9.5 |
| S: | 1.369306 | 1.118034 | 10.33048 | 4.201934 |
| T-test P: | | 0.373901 | 0.018541 | 0.092379 |

**Percent Gravel, Rock, Persistent Litter, and Biological Crust (combined)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 87.5 | 47.5 | 50 | 46.25 |
| 2 | 55 | 52.5 | 38.75 | 61.25 |
| 3 | 57.5 | 25 | 22.5 | 32.5 |
| 4 | 73.75 | 31.25 | 32.5 | 41.25 |
| 5 | 76.25 | 30 | 16.25 | 20 |
| Average | 70 | 37.25 | 32 | 40.25 |
| S: | 13.60721 | 12.0026 | 13.30531 | 15.39582 |
| T-test P: | | 0.01425 | 0.214973 | 0.12779 |

**Percent Non-persistent Litter**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 1.25 | 50 | 28.75 | 41.25 |
| 2 | 13.75 | 42.5 | 45 | 23.75 |
| 3 | 16.25 | 46.25 | 41.25 | 35 |
| 4 | 10 | 47.5 | 43.75 | 43.75 |
| 5 | 7.5 | 47.5 | 41.25 | 63.75 |
| Average | 9.75 | 46.75 | 40 | 41.5 |
| S: | 5.822907 | 2.738613 | 6.495191 | 14.64155 |
| T-test P: | | 0.000525 | 0.160604 | 0.852322 |

**Percent Total Vegetation (basal + canopy)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 25 | 37.5 | 42.5 | 41.25 |
| 2 | 23.75 | 33.75 | 27.5 | 28.75 |
| 3 | 35 | 32.5 | 41.25 | 52.5 |
| 4 | 26.25 | 31.25 | 32.5 | 48.75 |
| 5 | 26.25 | 41.25 | 41.25 | 61.25 |
| Average | 27.25 | 35.25 | 37 | 46.5 |
| S: | 4.454632 | 4.088857 | 6.649718 | 12.2602 |
| T-test P: | | 0.061416 | 0.525423 | 0.083336 |

**Percent Canopy Cover**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 25 | 36.25 | 33.75 | 32.5 |
| 2 | 23.75 | 33.75 | 23.75 | 23.75 |
| 3 | 32.5 | 32.5 | 33.75 | 46.25 |
| 4 | 23.75 | 31.25 | 33.75 | 46.25 |
| 5 | 25 | 41.25 | 33.75 | 56.25 |
| Average | 26 | 35 | 31.75 | 41 |
| S: | 3.68697 | 3.952847 | 4.472136 | 12.82088 |
| T-test P: | | 0.027808 | 0.25105 | 0.105064 |

## Site 11S05W11A - Percent Bare Ground

| | Year | | | |
|---|---|---|---|---|
| Belt | 2000 | 2005 | 2009 | 2012 |
| 1 | 27.5 | 20 | 10 | 8.75 |
| 2 | 30 | 3.75 | 8.75 | 7.5 |
| 3 | 32.5 | 20 | 18.75 | 12.5 |
| 4 | 20 | 7.5 | 13.75 | 16.25 |
| 5 | 27.5 | 12.5 | 15 | 6.25 |
| Average | 27.5 | 12.75 | 13.25 | 10.25 |
| S: | 4.677072 | 7.310096 | 4.0117016 | 4.0888568 |
| T-test P: | | 0.009146 | 0.8723897 | 0.208 |

**Percent Basal Vegetation**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 3.75 | 0 | 12.5 | 12.5 |
| 2 | 6.25 | 2.5 | 15 | 2.5 |
| 3 | 5 | 0 | 12.5 | 17.5 |
| 4 | 3.75 | 0 | 11.25 | 10 |
| 5 | 2.5 | 1.25 | 13.75 | 10 |
| Average | 4.25 | 0.75 | 13 | 10.5 |
| S: | 1.425219 | 1.118034 | 1.4252193 | 5.4198708 |
| T-test P: | | 0.004636 | 1.038E-06 | 0.4340055 |

**Percent Gravel, Rock, Persistent Litter, and Biological Crust (combined)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 45 | 20 | 27.5 | 42.5 |
| 2 | 47.5 | 50 | 43.75 | 56.25 |
| 3 | 43.75 | 33.75 | 38.75 | 32.5 |
| 4 | 52.5 | 41.25 | 43.75 | 37.5 |
| 5 | 48.75 | 31.25 | 32.5 | 36.25 |
| Average | 47.5 | 35.25 | 37.25 | 41 |
| S: | 3.423266 | 11.22915 | 7.1479892 | 9.244931 |
| T-test P: | | 0.054472 | 0.4381987 | 0.4505527 |

**Percent Non-persistent Litter**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 23.75 | 60 | 50 | 36.25 |
| 2 | 16.25 | 43.75 | 32.5 | 33.75 |
| 3 | 18.75 | 46.25 | 30 | 37.5 |
| 4 | 23.75 | 51.25 | 31.25 | 37.5 |
| 5 | 21.25 | 55 | 38.75 | 47.5 |
| Average | 20.75 | 51.25 | 36.5 | 38.5 |
| S: | 3.259601 | 6.555055 | 8.2632469 | 5.258921 |
| T-test P: | | 8.43E-05 | 0.001283 | 0.6541475 |

**Percent Total Vegetation (basal + canopy)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 30 | 27.5 | 38.75 | 37.5 |
| 2 | 35 | 27.5 | 37.5 | 20 |
| 3 | 20 | 22.5 | 30 | 42.5 |
| 4 | 30 | 23.75 | 33.75 | 42.5 |
| 5 | 40 | 43.75 | 42.5 | 55 |
| Average | 31 | 29 | 36.5 | 39.5 |
| S: | 7.416198 | 8.542175 | 4.7925724 | 12.673792 |
| T-test P: | | 0.425595 | 0.0298524 | 0.6270334 |

**Percent Canopy Cover**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 26.25 | 27.5 | 31.25 | 30 |
| 2 | 31.25 | 27.5 | 25 | 17.5 |
| 3 | 15 | 22.5 | 21.25 | 31.25 |
| 4 | 27.5 | 23.75 | 26.25 | 36.25 |
| 5 | 38.75 | 43.75 | 32.5 | 50 |
| Average | 27.75 | 29 | 27.25 | 33 |
| S: | 8.633148 | 8.542175 | 4.6266889 | 11.74601 |
| T-test P: | | 0.611285 | 0.5436325 | 0.2672843 |

## Site 11S05W25 - Percent Bare Ground

| | Year | | | |
|---|---|---|---|---|
| Belt | 2000 | 2005 | 2009 | 2012 |
| 1 | 16.25 | 7.5 | 15 | 10 |
| 2 | 28.75 | 5 | 15 | 8.75 |
| 3 | 13.75 | 18.75 | 13.75 | 16.25 |
| 4 | 7.5 | 8.75 | 12.5 | 7.5 |
| 5 | 26.25 | 2.5 | 11.25 | 7.5 |
| Average | 18.5 | 8.5 | 13.5 | 10 |
| S: | 8.856495 | 6.212387 | 1.629801 | 3.644345 |
| T-test P: | | 0.173512 | 0.138781 | 0.087036 |

**Percent Basal Vegetation**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 1.25 | 0 | 6.25 | 2.5 |
| 2 | 0 | 1.25 | 6.25 | 0 |
| 3 | 2.5 | 0 | 5 | 7.5 |
| 4 | 0 | 0 | 5 | 7.5 |
| 5 | 3.75 | 0 | 8.75 | 7.5 |
| Average | 1.5 | 0.25 | 6.25 | 5 |
| S: | 1.629801 | 0.559017 | 1.530931 | 3.535534 |
| T-test P: | | 0.2302 | 0.001187 | 0.50833 |

**Percent Gravel, Rock, Persistent Litter, and Biological Crust (combined)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 75 | 33.75 | 28.75 | 38.75 |
| 2 | 63.75 | 32.5 | 26.25 | 36.25 |
| 3 | 76.25 | 52.5 | 20 | 11.25 |
| 4 | 90 | 63.75 | 7.5 | 8.75 |
| 5 | 56.25 | 75 | 47.5 | 50 |
| Average | 72.25 | 51.5 | 26 | 29 |
| S: | 12.91196 | 18.56997 | 14.56129 | 18.12284 |
| T-test P: | | 0.11471 | 0.054324 | 0.43478 |

**Percent Non-persistent Litter**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 7.5 | 58.75 | 50 | 48.75 |
| 2 | 7.5 | 61.25 | 52.5 | 67.5 |
| 3 | 7.5 | 28.75 | 61.25 | 65 |
| 4 | 2.5 | 27.5 | 75 | 76.25 |
| 5 | 13.75 | 22.5 | 32.5 | 35 |
| Average | 7.75 | 39.75 | 54.25 | 58.5 |
| S: | 3.99218 | 18.65392 | 15.60248 | 16.47441 |
| T-test P: | | 0.022034 | 0.265571 | 0.205197 |

**Percent Total Vegetation (basal + canopy)**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 45 | 57.5 | 52.5 | 46.25 |
| 2 | 45 | 56.25 | 53.75 | 43.75 |
| 3 | 50 | 67.5 | 50 | 81.25 |
| 4 | 70 | 80 | 71.25 | 88.75 |
| 5 | 20 | 45 | 12.5 | 32.5 |
| Average | 46 | 61.25 | 48 | 58.5 |
| S: | 17.81853 | 13.16957 | 21.55299 | 24.88097 |
| T-test P: | | 0.005172 | 0.071642 | 0.258118 |

**Percent Canopy Cover**

| Belt | 2000 | 2005 | 2009 | 2012 |
|---|---|---|---|---|
| 1 | 43.75 | 57.5 | 50 | 45 |
| 2 | 45 | 56.25 | 50 | 43.75 |
| 3 | 48.75 | 67.5 | 50 | 80 |
| 4 | 70 | 80 | 68.75 | 86.25 |
| 5 | 16.25 | 61.25 | 3.75 | 26.25 |
| Average | 44.75 | 64.5 | 44.5 | 56.25 |
| S: | 19.1499 | 9.706634 | 24.18354 | 25.72389 |
| T-test P: | | 0.038249 | 0.105028 | 0.18608 |

**Figure Set 6_ Perennial Herbaceous Canopy Cover**

**Trout Springs Allotment_ Perennial Herbaceous Canopy Cover (Middle Layer)_ Percent Cover** 8/28/2012

**Site 10S05W04**

**Large Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 0 | 1.25 | 0 |
| 2 | 0 | 1.25 | 0 |
| 3 | 2.5 | 5 | 0 |
| 4 | 2.5 | 1.25 | 1.25 |
| 5 | 0 | 2.5 | 2.5 |
| Average: | 1 | 2.25 | 0.75 |
| S: | 1.369306 | 1.629801 | 1.118034 |
| T-test P: | | 0.141927 | 0.177808 |

**Medium Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 0 | 0 | 0 |
| 2 | 0 | 1.25 | 0 |
| 3 | 0 | 1.25 | 0 |
| 4 | 0 | 0 | 0 |
| 5 | 0 | 1.25 | 0 |
| Average: | 0 | 0.75 | 0 |
| S: | 0 | 0.684653 | 0 |
| T-test P: | | 0.070484 | 0.070484 |

**Small Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 8.75 | 18.75 | 16.25 |
| 2 | 15 | 17.5 | 8.75 |
| 3 | 15 | 2.5 | 17.5 |
| 4 | 12.5 | 0 | 18.75 |
| 5 | 1.25 | 11.25 | 23.75 |
| Average: | 10.5 | 10 | 17 |
| S: | 5.76899 | 8.523864 | 5.419871 |
| T-test P: | | 0.926427 | 0.260208 |

**Perennial Forbs_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 5 | 3.75 | 0 |
| 2 | 6.25 | 0 | 5 |
| 3 | 7.5 | 8.75 | 6.25 |
| 4 | 3.75 | 1.25 | 2.5 |
| 5 | 10 | 11.25 | 6.25 |
| Average: | 6.5 | 5 | 4 |
| S: | 2.404423 | 4.841229 | 2.709935 |
| T-test P: | | 0.341851 | 0.613546 |

**Site 10S05W27**

**Large Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 7.5 | 3.75 | 10 |
| 2 | 1.25 | 0 | 3.75 |
| 3 | 0 | 1.25 | 20 |
| 4 | 1.25 | 2.5 | 12.5 |
| 5 | 0 | 2.5 | 11.25 |
| Average: | 2 | 2 | 11.5 |
| S: | 3.137475 | 1.425219 | 5.822907 |
| T-test P: | | 1 | 0.020364 |

**Medium Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 1.25 | 1.25 | 2.5 |
| 2 | 1.25 | 2.5 | 0 |
| 3 | 2.5 | 0 | 5 |
| 4 | 1.25 | 1.25 | 1.25 |
| 5 | 1.25 | 0 | 1.25 |
| Average: | 1.5 | 1 | 2 |
| S: | 0.559017 | 1.045825 | 1.895719 |
| T-test P: | | 0.476621 | 0.45566 |

**Small Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 0 | 0 | 7.5 |
| 2 | 10 | 2.5 | 8.75 |
| 3 | 7.5 | 1.25 | 10 |
| 4 | 15 | 0 | 6.25 |
| 5 | 2.5 | 1.25 | 5 |
| Average: | 7 | 1 | 7.5 |
| S: | 5.968668 | 1.045825 | 1.976424 |
| T-test P: | | 0.087379 | 0.00143 |

**Perennial Forbs_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 3.75 | 5 | 2.5 |
| 2 | 3.75 | 6.25 | 3.75 |
| 3 | 17.5 | 1.25 | 1.25 |
| 4 | 6.25 | 3.75 | 5 |
| 5 | 0 | 1.25 | 6.25 |
| Average: | 6.25 | 3.5 | 3.75 |
| S: | 6.673174 | 2.236068 | 1.976424 |
| T-test P: | | 0.473321 | 0.866194 |

**Site 11S05W11A**

**Large Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 10 | 5 | 16.25 |
| 2 | 12.5 | 7.5 | 18.75 |
| 3 | 8.75 | 2.5 | 20 |
| 4 | 5 | 5 | 17.5 |
| 5 | 15 | 2.5 | 17.5 |
| Average: | 10.25 | 4.5 | 18 |
| S: | 3.791438 | 2.09165 | 1.425219 |
| T-test P: | | 0.04524 | 0.00037 |

**Medium Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 2.5 | 1.25 | 2.5 |
| 2 | 6.25 | 0 | 2.5 |
| 3 | 2.5 | 2.5 | 3.75 |
| 4 | 8.75 | 0 | 3.75 |
| 5 | 6.25 | 0 | 1.25 |
| Average: | 5.25 | 0.75 | 2.75 |
| S: | 2.709935 | 1.118034 | 1.045825 |
| T-test P: | | 0.053338 | 0.01613 |

**Small Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 3.75 | 1.25 | 6.25 |
| 2 | 8.75 | 0 | 7.5 |
| 3 | 6.25 | 1.25 | 7.5 |
| 4 | 12.5 | 0 | 5 |
| 5 | 6.25 | 0 | 0 |
| Average: | 7.5 | 0.5 | 5.25 |
| S: | 3.307189 | 0.684653 | 3.112475 |
| T-test P: | | 0.014779 | 0.020364 |

**Perennial Forbs_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 7.5 | 8.75 | 8.75 |
| 2 | 6.25 | 3.75 | 2.5 |
| 3 | 3.75 | 3.75 | 1.25 |
| 4 | 3.75 | 0 | 5 |
| 5 | 5 | 0 | 3.75 |
| Average: | 5.25 | 3.25 | 4.25 |
| S: | 1.629801 | 3.601215 | 2.877716 |
| T-test P: | | 0.159553 | 0.527521 |

**Site 11S05W25**

**Large Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 0 | 1.25 | 6.25 |
| 2 | 5 | 2.5 | 12.5 |
| 3 | 0 | 2.5 | 10 |
| 4 | 2.5 | 2.5 | 6.25 |
| 5 | 1.25 | 0 | 12.5 |
| Average: | 1.75 | 1.75 | 9.5 |
| S: | 2.09165 | 1.118034 | 3.137475 |
| T-test P: | | 1 | 0.008392 |

**Medium Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 0 | 1.25 | 5 |
| 2 | 2.5 | 2.5 | 2.5 |
| 3 | 5 | 6.25 | 17.5 |
| 4 | 3.75 | 5 | 15 |
| 5 | 0 | 2.5 | 5 |
| Average: | 2.25 | 3.5 | 9 |
| S: | 2.236068 | 2.05396 | 6.754628 |
| T-test P: | | 0.034109 | 0.065684 |

**Small Bunchgrasses_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 0 | 1.25 | 0 |
| 2 | 0 | 0 | 0 |
| 3 | 0 | 1.25 | 0 |
| 4 | 0 | 0 | 0 |
| 5 | 0 | 0 | 1.25 |
| Average: | 0 | 0.5 | 0.25 |
| S: | 0 | 0.684653 | 0.559017 |
| T-test P: | | 0.177808 | 0.621308 |

**Perennial Forbs_ Percent Cover**

| Belt | 2005 | 2009 | 2012 |
|---|---|---|---|
| 1 | 1.25 | 8.75 | 2.5 |
| 2 | 18.75 | 11.25 | 11.25 |
| 3 | 3.75 | 1.25 | 11.25 |
| 4 | 3.75 | 3.75 | 5 |
| 5 | 7.5 | 16.25 | 21.25 |
| Average: | 7 | 8.25 | 10.25 |
| S: | 6.937218 | 5.968668 | 7.256463 |
| T-test P: | | 0.704 | 0.499734 |

Large Bunchgrasses = FEID, AGSP, STIPA

Medium Bunchgrasses = SIHY, MELICA, CAREX

Small Bunchgrasses = POSE, POBU

Perennial Forbs = all species

Significant change at p<0.1

# Appendix H – Ecological Site Descriptions

**Ecological site descriptions of the major ecological sites of the Trout Springs Allotment.**

- Loamy 13-16" precipitation ARTRV/PSSPS-FEID
- Mahogany Savanna 16-22" precipitation
- Shallow claypan 12-16" precipitation ARAR8/FEID
- Very shallow stony loam 10-14" precipitation ARAR8/POSE-PSSPS
- Steep Rocky Canyons is not actually an ecological site, but a characterization of areas within the Trout Springs Allotment that were not mapped to an ecological site. No ecological site description for these areas exists.

These ecological site descriptions (ESDs) are drafts, currently being worked on by an interagency committee (including the BLM) but not yet finally approved by USDA Natural Resources Conservation Service. Although not final, they are the best scientific information currently available for ecological site descriptions for Major Land Resource Area 25, which covers southwest Idaho, southeast Oregon, and northeast Nevada, and includes the Trout Springs Allotment area. The draft ESDs do not contradict the last approved ESDs for this area, which are from the 1980s. However, the draft ESDs are more refined and include more detailed information on state-and-transition models and rangeland health indicators, in particular.

Ecological site descriptions provide a characterization of the potential vegetation community under reference conditions. ESDs are named for the historic climax plant community under a natural disturbance regime. Succession is the process of soil and plant community development on an ecological site. Each ecological site, with particular soil parent materials, climatic conditions, and natural range of disturbances, produces a plant community in dynamic equilibrium. The predominant resulting plant community is referred to as the historic climax plant community or potential natural plant community. However, rather than a single end-point climax plant community, state-and-transition models and related thresholds have been developed to recognize that multiple stable state plant communities can potentially occupy individual ecological sites. The state-and-transition models account for continuous and reversible dynamics (within the natural range of variation), as well as discontinuous and nonreversible vegetation dynamics which have passed some threshold. Newer ESDs include state-and-transition models for each ecological site.

A state-and-transition model is used to describe vegetation dynamics and management actions associated with disturbance within an ecological site. States are relatively stable and resistant to disturbances up to a threshold point. The reference state is defined as the vegetation communities that result through time under natural disturbance regimes. A threshold is the boundary between two states such that succession does not result in restoration through natural events, resulting in plant community structure and/or composition outside the natural range. Transition is the trajectory of system change between states.

The state-and-transition model for the loamy 10-13" ARTRV/PSSPS-FEID ecological site most predominant in the Trout Springs Allotment, for example, identifies the reference plant community with co-dominance of deep-rooted perennial grasses (bluebunch wheatgrass, Idaho fescue) and mountain big sagebrush. Other states within the natural range of variation for that ecological site include a bunchgrass-dominated state after fire, or a state with mountain

sagebrush, perennial grasses, and juniper saplings after an interval of no fire. Potential states outside of the natural range of variation (beyond the threshold for restoration without significant management input) include a state dominated by mature juniper, annuals, and Sandberg bluegrass (a shallow-rooted bunchgrass), or a state dominated by sagebrush and annuals, without the deep-rooted bunchgrasses. Factors that can lead to this shift to states beyond the threshold include altered fire return intervals, improper grazing management, or both. Frequent or combined disturbance can result in transition to new states. State-and-transition models are not precise enough to identify a clear line when some threshold has been crossed, particularly when vegetation changes result in a shift between the dominant species present in the reference state, although once a structural group (such as large bunchgrasses) has been lost and a shift has been made to non-native annuals (for example), the transition threshold is more clearly defined. In addition, state-and-transition models note that dominance by deep-rooted perennial bunchgrasses is enhanced and maintained with proper grazing management.

# United States Department of Agriculture
# Natural Resources Conservation Service

## Ecological Site Description

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Corrected.

**Site Type:** Rangeland

**Site Name:** Loamy 13-16 ARTRV/PSSPS-FEID

**Site ID:** R025XY011ID Combination of 12, 31, 11

Major Land Resource Area: D25

## Physiographic Features

This site occurs on dissected high lava plateaus and semi-arid mountains, primarily on volcanic landforms (intrusive and extrusive) and secondarily on associated relict fluvial landforms. The landscape topography is undulating to steep on all aspects at upper elevations. This site is very extensive. Slopes are 2-30 percent. Elevation ranges from 5000-6600 feet (1524-2012 meters).

**Landform:** benches, foothills, mountains

| | Minimum | Maximum |
|---|---|---|
| **Elevation (feet):** | 5000 | 6600 |
| **Slope (percent):** | 2 | 30 |
| **Water Table Depth (inches):** | >60” | |
| **Flooding:** | None | None |
| **Frequency:** | | |
| **Duration:** | | |
| **Ponding:** | None | None |
| **Depth (inches):** | | |
| **Frequency:** | | |
| **Duration:** | | |
| **Runoff Class:** | Low | Very High |

**Aspect:** All

## Climatic Features

Annual precipitation of this site ranges from 13-16 inches (33-41 cm.) with the majority falling as snow and early spring rain.

Plant growth period begins as early as March 15. Grasses and forbs mature by July 15. Shrubs continue to grow during the summer period but at a much reduced rate. Grasses may green up again when fall rains are sufficient. Frost free period is 50-90 days.

| | Minimum | Maximum |
|---|---|---|
| **Frost-free period (days):** | 50 | 90 |
| **Freeze-free period (days):** | | |
| **Mean Annual Precipitation (inches):** | 13 | 16 |

**Estimated Average Monthly Precipitation (inches) and Temperature (ºF): Interpreted from Mountain City, NV weather data.**

| | Precip. Min. | Precip. Max | Temp. Min. | Temp. Max. |
|---|---|---|---|---|
| January | 1.3 | 2.1 | 9.2 | 37.9 |
| February | 1.0 | 1.7 | 13.5 | 42.0 |
| March | 1.1 | 1.6 | 18.1 | 46.2 |
| April | 0.9 | 1.5 | 23.3 | 55.5 |
| May | 1.5 | 2.4 | 29.9 | 64.5 |
| June | 1.2 | 2.0 | 36.1 | 74.4 |
| July | 0.5 | 1.0 | 39.8 | 84.8 |
| August | 0.6 | 1.2 | 38.0 | 84.1 |
| September | 0.8 | 1.5 | 30.1 | 74.6 |
| October | 0.9 | 1.8 | 22.2 | 63.4 |
| November | 1.5 | 2.2 | 18.5 | 46.9 |
| December | 1.3 | 2.3 | 10.1 | 38.5 |

| Climate Stations | | Period | |
|---|---|---|---|
| **Station ID** | **Location or Name** | **From** | **To** |
| | Mountain City, NV | 1961 | 1990 |
| | Reynolds, ID | 1961 | 1990 |
| | Silver City, ID | | |
| | | | |

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

## Influencing Water Features

This site is not influenced by adjacent wetlands, streams or run-on.

| **Wetland Description:** | System | Subsystem | Class | Sub-class |
|---|---|---|---|---|
| None | | | | |

**Stream Type:**
None

## Representative Soil Features

The soils supporting this range site are moderately deep to very deep, well or somewhat excessively drained with impermeable to moderately rapid permeability above bedrock or a duripan. Runoff is low to very high. The erosion hazard by water is slight to high, and by wind is moderate to high. The available water capacity is very low to moderate. The surface texture is generally loamy with many to no stones. These soils are usually 20-60 inches deep to either bedrock or a duripan. The subsoil is usually moderately well to very well developed with clay ranging from approximately 18-48 percent (a few soils have claypans). These soils are characterized by a xeric soil moisture regime and limited growing season. Soil temperature regime is frigid.

**Soil Series Correlated to this Ecological Site**

| | | |
|---|---|---|
| Amboat | Fulcrum | Neeley |
| Aninto | Hat | Ola |
| Barkley | Howcree | Oshone |
| Bauscher | Hurryback | Paynecreek |
| Blackleg | Ibola | Snell |
| Booford | Isknat | Takeuchi |
| Brunzell | Iwica | Threek |
| Chayson | Kanlee | Vitale |
| Congle | Manila | Zecanyon |
| Eep | Monasterio | |
| Forvic | Mulshoe | |

**Parent Material Kind**: colluvium
**Parent Material Origin:** breccia, rhyolite, welded rhyoltic and vitric tuff
**Surface Texture:** Silt loam, loam, sandy loam
**Surface Texture Modifier:** None, very gravelly, to very stony
**Subsurface Texture Group:**

| | Minimum | Maximum |
|---|---|---|
| **Surface Fragments ≤ 3" (% Cover):** | 5 | 38 |
| **Surface Fragments > 3" (%Cover):** | 0 | 22 |
| **Subsurface Fragments ≤ 3" (% Volume):** | 0 | 40 |
| **Subsurface Fragments > 3" (% Volume):** | 0 | 80 |
| **Drainage Class:** | Well | Somewhat excessively |
| **Permeability Class:** | Impermeable | Moderately rapid |
| **Depth (inches):** | 20 | 60 + |
| **Electrical Conductivity (mmhos/cm)*:** | 0 | 0 |
| **Sodium Absorption Ratio*:** | 0 | 0 |
| **Soil Reaction (1:1 Water)*:** | 5.6 | 7.3 |
| **Soil Reaction (0.1M CaCl2)*:** | 0 | 0 |
| **Available Water Capacity (inches):** | 1.7 | 6.4 |
| **Calcium Carbonate Equivalent (percent)*:** | 0 | 0 |

* These are for the surface layer only.

- Fulcrum, Ola and Takeuchi soils have moderately rapid permeability and weak subsoil development with less than 18 percent clay.
- Neeley soils have weak subsoil development with less than 18 percent clay, a coarse-silty particle size class and mesic soil temperature regime.
- Oshone soils have clay loam surface texture.

## Plant Communities

### Ecological dynamics of the site:

The dominant visual aspect of this site is bluebunch wheatgrass, Idaho fescue and mountain big sagebrush. Composition by weight is approximately 55-65 percent grass, 10-20 percent forbs and 20-30 percent shrubs.

In the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, Rocky Mountain elk and lagomorphs.

Fire has historically occurred on the site at intervals of 20-50 years.

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The traditional HCPC is Phase A. This plant community is dominated by bluebunch wheatgrass, Idaho fescue and mountain big sagebrush. Antelope bitterbrush is a subdominant overstory species. Subdominant species include Sandberg bluegrass, bottlebrush squirreltail, arrowleaf balsamroot and lupine. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".

Total annual production is 1100 pounds per acre (1232 kilograms per hectare) in a normal year. Production in a favorable year is 1400 pounds per acre (1568 kilograms per hectare). Production in an unfavorable year is 800 pounds per acre (896 kilograms per hectare. Structurally, cool season deep rooted perennial bunchgrasses are very dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted bunchgrasses are subdominant.

## Rangeland Health Indicators.

**Rills:** rarely occur on this site. If rills are present they are likely to occur on slopes greater than 20 percent and immediately following wildfire. Rills are most likely to occur on soils with surface textures of silt loam and clay loam.

**Water flow patterns:** rarely occur on this site. When they occur they are short and disrupted by cool season grasses, tall shrubs and surface gravels or stones and are not extensive.

**Pedestals:** are rare on this site. In areas where slopes approach 20 percent and where flow patterns and/or rills are present, few pedestals may be expected. Terracettes are rare.

**Bare ground:** data is not available. On sites in mid-seral status bare ground may range from 25-45 percent.

**Number of gullies and erosion associated with gullies:** None

**Wind scour**: blowouts and depositional areas are usually not present. Immediately following wildfire some soil movement may occur on lighter textured soils.

**Litter movement:** Fine litter in the interspaces may move up to 2 feet following a significant run-off event. Coarse litter generally does not move.

**Soil surface stability:** Values should range from 4 to 6 but needs to be tested.

**Soil surface structure and SOM content :** The surface horizon is typically 4 to 9 inches thick. Structure typically includes weak thin and moderate platy, weak to strong fine and medium granular, and weak fine to medium subangular blocky. Soil organic matter (SOM) ranges from 1 to 5 percent.

**Effect of plant community on infiltration:** Bunchgrasses, especially deep-rooted, slow run-off and increase infiltration. Tall shrubs accumulate snow in the interspaces.

**Compaction layer:** is not present.

**Functional/ structural groups:** Cool season deep rooted perennial bunchgrasses>>tall shrubs>perennial forbs>shallow rooted bunchgrasses.

**Plant mortality/ decadence:** Mountain big sagebrush will become decadent in the absence of fire and ungulate grazing. Grass and forb mortality will occur as tall shrubs increase.

**Litter cover:** Additional litter cover data is needed but is expected to be 20-25 percent to a depth of 0.2 inches. Under mature shrubs litter is >0.5 inches deep and is 90-100 percent ground cover.

**Expected annual production:** is 1100 pounds per acre (1232 kilograms per hectare) in a year with normal temperatures and precipitation. Perennial grasses produce 55-65 percent of the total production, forbs 10-20 percent and shrubs 20-30 percent.

**Invasive and/or noxious species:** include bulbous bluegrass, whitetop, rush skeletonweed, musk and scotch thistle and diffuse and spotted knapweed.

**Perennial plants:** in all functional groups have the potential to reproduce in most years.

## Function:

This site is well suited for big game summer and fall range. It is also well suited for livestock and recreation use in the late spring, summer and fall.

Due to the relatively high rainfall, elevation and gentle topography on this site, it is fairly resistant to disturbances that can potentially degrade the site.

Due to the gentle topography, infiltration is normally high and runoff low. Runoff, when it does occur is non-erosive except during high intensity convection storms. Snow accumulates on the site due to high elevation and presence of tall shrubs.

## Impacts on the Plant Community.

Influence of fire:

In the absence of normal fire frequency, bitterbrush increases to the point of being co-dominant with mountain big sagebrush. Juniper can also increase if a seed source is in the proximity. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, juniper can displace most of the shrubs and other understory species. See “Influence of juniper invasion” below.

When fire frequency is greater than historic levels, mountain big sagebrush and bitterbrush are reduced significantly. With continued short fire frequency, big sagebrush and bitterbrush can be completely eliminated along with many of the desirable understory species such as bluebunch wheatgrass and Idaho fescue. These species may be replaced by cheatgrass, Sandberg bluegrass and bulbous bluegrass along with a variety of annual and perennial forbs including noxious and invasive weeds.

Influence of improper grazing management:

Season-long grazing can be very detrimental to this site. Excessive utilization is also detrimental. This type of management leads to reduced vigor of the bunchgrasses and possibly bitterbrush. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to juniper invasion, an increase in mountain big sagebrush and noxious and invasive weeds,. Continued improper grazing management influences fire frequency by reducing fine fuels that carry fire.

Good grazing management that addresses frequency, duration, and intensity of grazing can also keep fine fuels from developing, thus reducing fire frequency. This can lead to gradual increases in mountain big sagebrush and/or western juniper. A planned grazing system can be developed to intentionally accumulate fine fuels in anticipation of a prescribed fire.

Weather influences:

Above normal precipitation in March, April and May can dramatically increase total annual production of the plant community. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Likewise, below normal precipitation during these spring months can significantly reduce total annual production and be detrimental to good seed production. Overall plant composition is normally not effected when perennials have good vigor.

Below normal temperatures in the spring can have an adverse impact on total production regardless of the precipitation. A hard, early freeze can kill some plants occasionally.

Prolonged drought adversely affects this plant community in several ways. Vigor, recruitment, and production are usually reduced. Mortality can occur. Prolonged drought can lead to changes in fire frequency.

Influence of Insects and disease:

Outbreaks can affect health of vegetation, particularly bitterbrush with western tent caterpillars (Malacosoma fragilis). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. An outbreak of a particular insect is usually influenced by weather but no specific data for this site is available.

Influence of noxious and invasive weeds:

Many of these species add to the fine-fuel component and lead to increased fire frequency.
Many of the perennial weeds with deep root systems compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife:

Big game use this site in the spring, summer and fall. Their numbers are seldom high enough to adversely effect the plant community. Big game numbers within this MLRA are usually limited by the winter range, not the summer range. Herbivory can be detrimental to bitterbrush when livestock grazing and browsing by big game occurs at the same time and season. This will occur when both kinds of animal are using the plant in the late summer or fall. The adverse impact is excessive use of the current years' leader growth.

The deer mouse is beneficial to this site. It is the principal vector for planting bitterbrush seed.

Watershed:

Decreased infiltration and increased runoff occur with the invasion of juniper (see Influence of Juniper below). Juniper invasion can be triggered by lack of fire, poor grazing management and prolonged drought. The increased runoff also causes sheet and rill erosion. Abnormally short fire frequency also gives the same results, but to a lesser degree. The long term effect is a transition to a different state.

Influence of juniper invasion:

The following discussion deals with both western juniper and Utah juniper.

In plant communities that are invaded by juniper, the species has a competitive advantage for the following reasons:

Juniper is very drought tolerant.
It has the ability to extract soil moisture from a wide range of soil depths.
Juniper has high evapo-transpiration rates.
The species intercepts rain and snow before it reaches the soil surface.
It has the ability to grow as long as there is soil moisture and the temperature is above freezing.
Juniper has a relatively rapid growth rate and is long-lived. It can readily over-top shade intolerant species which leads to mortality.
Nutrient cycling is reduced.
As the canopy closes, juniper gains control of energy capture.

As juniper extracts water, other plants are unable to acquire sufficient water and nutrients to sustain growth and reproduction, thus reducing cover and biomass in the interspaces. After the canopy closes, there is sufficient soil moisture available for shallow-rooted, shade tolerant species to persist directly under the tree.

The following hydrological impacts occur on sites invaded by juniper:

Infiltration in the interspaces is reduced.
Run-off increases resulting in increased sheet and rill erosion with elevated sediment loads.
Soil temperatures increase in the interspaces which results in accelerated drying of the soil surface.
Increased bare ground in the interspaces.
Soil moisture storage is reduced.

As bare ground and interconnectiveness of bare ground increases, flow rates are accelerated (reduction of flow sinuosity) and run-off out of the area increases.

Degradation of these systems can result in the formation of a feedback cycle in which greater juniper cover and density results in greater plant and soil disturbance between the canopies.

In summary, a closed juniper community takes control of the following ecological processes: hydrology, energy capture and nutrient cycling. The changes are primarily driven by the hydrological processes. The development of a closed juniper canopy always results in a transition across the threshold to a different state. Generally, when juniper canopy cover nears 20%, the plant community is approaching the threshold.

## Plant Community and Sequence:

Transition pathways between common vegetation states and phases:

State 1. The HCPC.

Phase A to B. Develops in the absence of fire. No juniper seed source present.
Phase A to C. Usually results from improper grazing management and absence of fire. Juniper seed source is present.
Phase A to D. Results from one or more fires.
Phase A to E. Develops in the absence of fire. Juniper seed source present.
Phase A to F. Results from improper grazing management and absence of fire. No juniper seed source is present.

State 1 to 2. Develops through improper grazing management. Fire is a factor in the development of Phase B but not in Phase A.

State 1 to 3. Develops with no fire and improper grazing management.

State 2. Phase A to B. Prescribed burning or wildfire and possibly improper grazing management with fire.

State 2 to 4. Brush management, pest management and/or prescribed fire are used prior to range seeding.

State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by improper grazing management and/or frequent fire cause this state to retrogress to a new site with reduced potential.

State 3 to 4. Mechanical removal of juniper or catastrophic wildfire and/or pest management (disking) are needed prior to range seeding.

State 3 to unknown site. Continued lack of fire and improper grazing management cause this state to retrogress to a new site with reduced potential due to significant soil loss and changes in hydrology.

## Practice Limitations:

No physical limitations exist for range seeding or brush management on this site.

### Plant Community Narrative:

State 1, Plant community A. Historic climax plant community. The HCPC has mountain big sagebrush in the overstory with bluebunch wheatgrass and Idaho fescue co-dominant in the understory. Other significant species in the plant community are Sandberg bluegrass, arrowleaf balsamroot and antelope bitterbrush. Natural fire frequency is 20 to 50 years.

State 1, Plant community B. This plant community is dominated in the overstory by bitterbrush. Mountain big sagebrush is present. Bluebunch wheatgrass and Idaho fescue are co-dominant in the understory. Other perennial grasses and forbs include Sandberg bluegrass, bottlebrush squirreltail, arrowleaf balsamroot and lupine. No juniper seed source is present. This state has developed due to fire frequency being much longer than normal.

State 1, Plant community C. This plant community is dominated by juniper and mountain big sagebrush in the overstory. Sandberg bluegrass is the dominant grass in the understory. Bluebunch wheatgrass and Idaho fescue are present but in reduced amounts and typically in low vigor. Antelope bitterbrush is still present but in reduced vigor and hedged. This state has developed due to improper grazing management and lack of fire. A juniper seed source is in the proximity.

State 1, Plant community D. This plant community is co-dominated by bluebunch wheatgrass and Idaho fescue. Sandberg bluegrass and other perennial grasses and forbs are subdominant. Mountain big sagebrush and antelope bitterbrush have been significantly reduced. Rabbitbrush may have increased. This plant community has developed due to frequent fires.

State 1, Plant community E. This plant community is similar to the HCPC except that juniper seedlings and saplings are invading the site due to a lack of fire. A juniper seed source is in the proximity. This state has developed due to the absence of fire.

State 1, Plant community F. This plant community is dominated by mountain big sagebrush in the overstory. Sandberg bluegrass is the dominant grass in the understory. Bluebunch wheatgrass and Idaho fescue are present but in reduced amounts and typically in low vigor. Antelope bitterbrush is present in reduced amounts and hedged. This state has developed due to improper grazing management and a lack of fire. No juniper seed source is in the proximity.

State 2, Plant community A. This plant community is dominated by mountain big sagebrush with annuals in the interspaces. Some soil loss has occurred. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices. This state has developed due to improper grazing management and the absence of fire.

State 2, Plant community B. This plant community is dominated by Sandberg bluegrass and other annual and perennial grasses and forbs. Root sprouting shrubs such as green rabbitbrush and gray horsebrush are present. Some soil loss has occurred. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices. This state has developed due to frequent fires and improper grazing management.

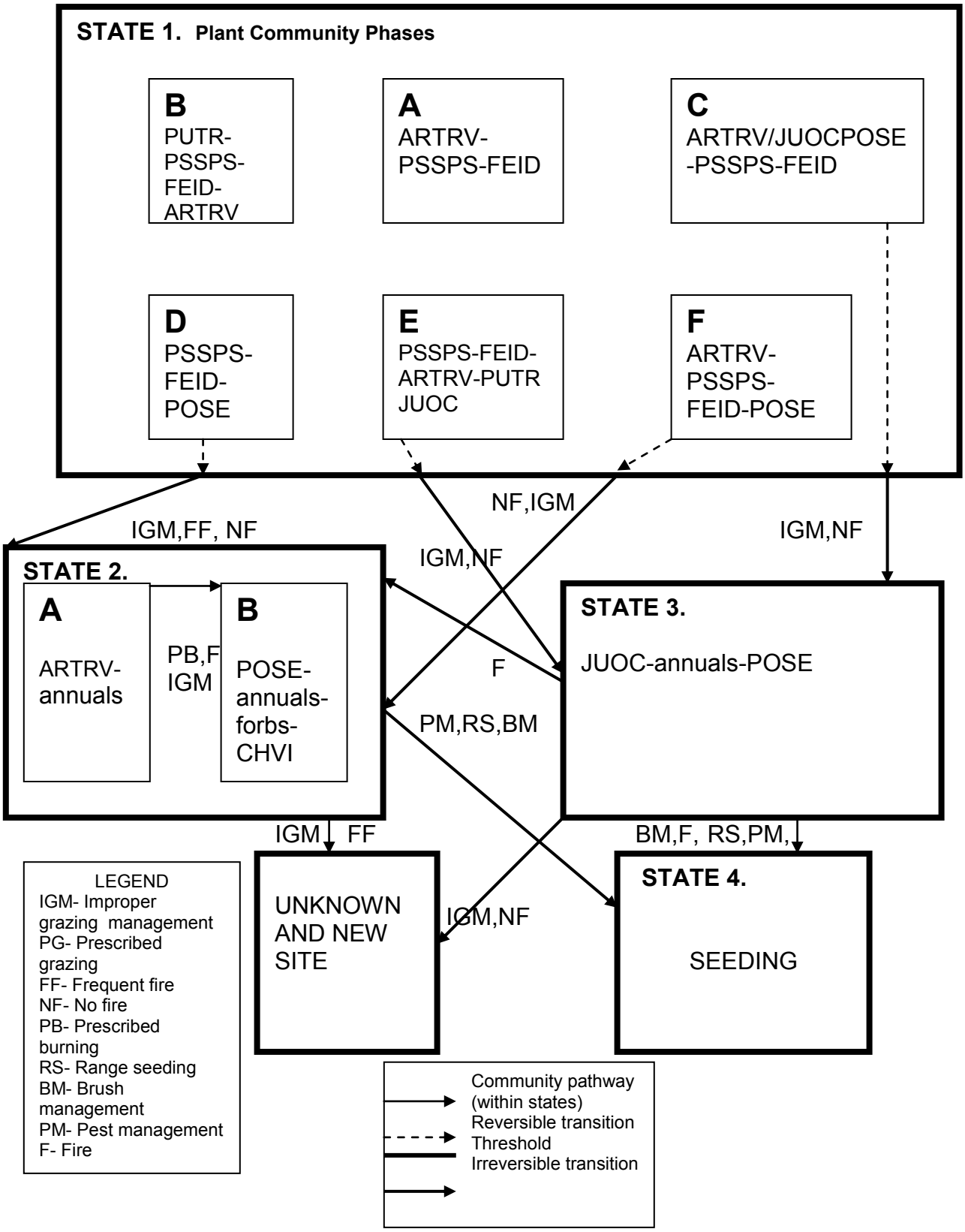
State 3. This plant community is dominated by juniper. Remnants of bluebunch wheatgrass and Idaho fescue can be found in the understory. Shallow-rooted grasses, such as Sandberg bluegrass, and other annuals can be found in the interspaces. Few shrubs are present. Generally, shrub cover is below 12-13%, bare ground is above 27-28%, juniper cover is greater than 20% and infiltration less than 6 cm/hr. The site is near or has crossed the threshold to this state. Some soil loss has occurred. This site has crossed the threshold. It is economically impractical to return this state to State 1 with accelerated practices. This state has developed in the absence of fire.

State 4. Seeding. The seeding may be introduced species or it may be made up of native species that attempt to mimic the historic plant community.

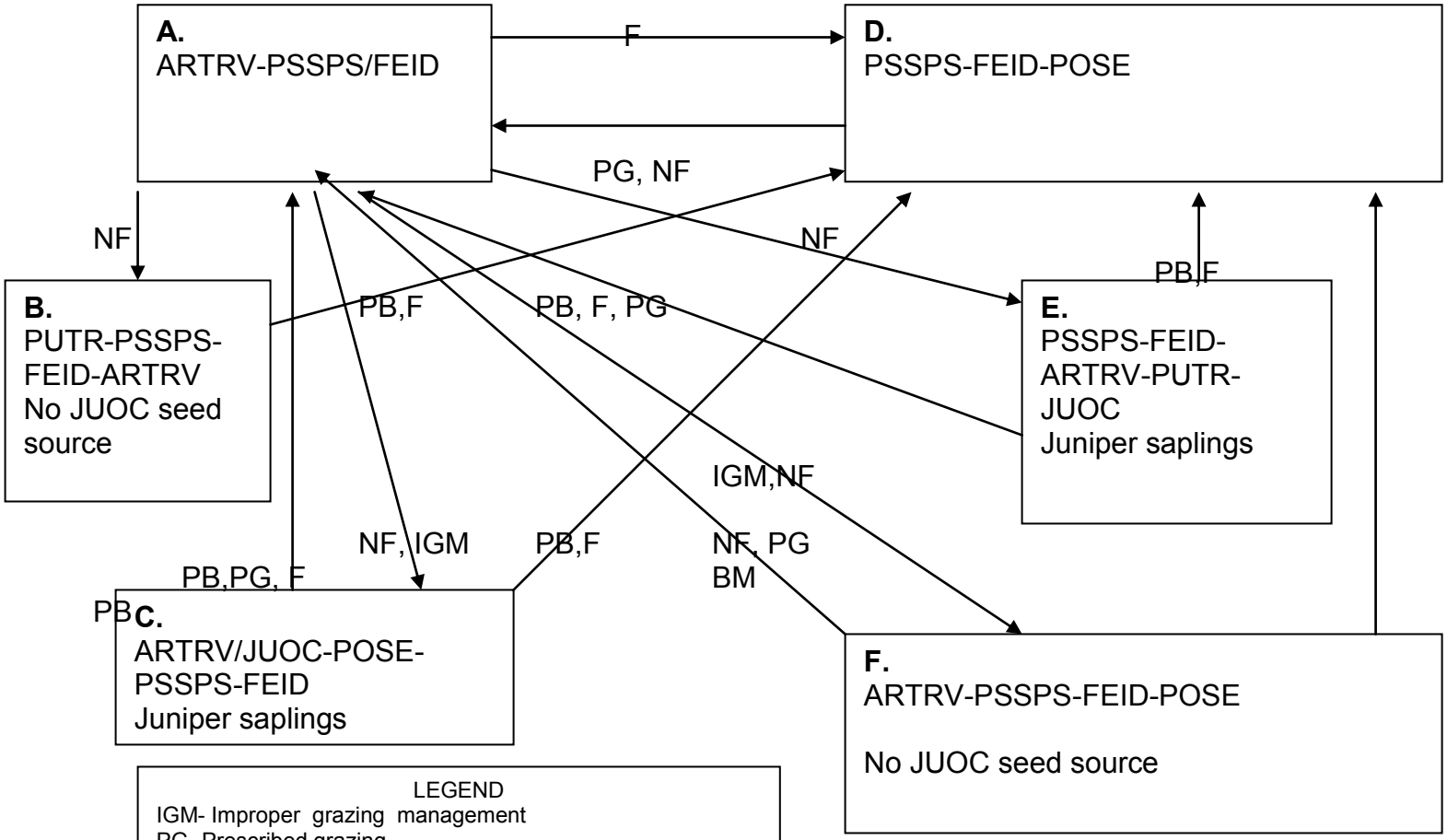
Unknown new site. This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires or the continued absence of fire where a juniper seed source is present. This unknown new site can be reached from State 3 with further dominance of the site by juniper.

## State and transition model diagram:

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. The traditional HCPC is Phase A. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".


STATE 1. Plant Community Phases
B
PUTR-
PSSPS-
FEID-
ARTRV
A
ARTRV-
PSSPS-FEID
C
ARTRV/JUOCPOSE
-PSSPS-FEID
D
PSSPS-
FEID-
POSE
E
PSSPS-FEID-
ARTRV-PUTR
JUOC
F
ARTRV-
PSSPS-
FEID-POSE
NF,IGM
IGM,FF, NF
IGM,NF
IGM,NF
STATE 2.
A
ARTRV-
annuals
PB,F
IGM
B
POSE-
annuals-
forbs-
CHVI
F
PM,RS,BM
STATE 3.
JUOC-annuals-POSE
IGM
FF
BM,F, RS,PM,
UNKNOWN
AND NEW
SITE
IGM,NF
STATE 4.
SEEDING
LEGEND
IGM- Improper grazing management
PG- Prescribed grazing
FF- Frequent fire
NF- No fire
PB- Prescribed burning
RS- Range seeding
BM- Brush management
PM- Pest management
F- Fire
Community pathway (within states)
Reversible transition
Threshold
Irreversible transition

## State 1. HCPC




LEGEND
IGM- Improper grazing management
PG- Prescribed grazing
FF- Frequent fire
NF- No fire
PB- Prescribed burning
RS- Range seeding
BM- Brush management
PM- Pest management
F- Fire

Composition" → Community pathway (within states)

Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. The traditional HCPC is Phase A. The plant species composition of Phase A is listed later under "HCPC Plant Species".

**HCPC Plant Species Composition:**

| Common/Group Name | Plant Symbol | % Comp | lbs./acre |
|---|---|---|---|
| **Grasses and Grass-likes** | | | |
| Bluebunch wheatgrass | PSSPS | 20-30 | 200-350 |
| Idaho fescue | FEID | 20-30 | 200-350 |
| Sandberg bluegrass | POSE | 2-4 | 24-42 |
| Bottlebrush squirreltail | ELEL5 | 1-3 | 16-28 |
| Nevada bluegrass | POSE | 0-4 | 0-28 |
| Basin wildrye | LECI4 | 0-5 | 0-35 |
| Thurber needlegrass | ACTH7 | 0-5 | 0-35 |
| Sedge | CAREX | 0-2 | 0-14 |
| Thickspike wheatgrass | ELMA7 | 0-2 | 0-14 |
| Prairie junegrass | KOMA | 0-1 | 0-7 |
| **Forbs** | **Plant Symbol** | **% Comp** | **lbs./acre** |
| Arrowleaf balsamroot | BASA2 | 4-8 | 48-84 |
| Tapertip hawksbeard | CRAC2 | 1-3 | 16-28 |
| Lupine | LUPIN | 2-5 | 28-49 |
| Longleaf phlox | PHLO2 | 0-1 | 0-7 |
| Western yarrow | ACMI2 | T-2 | 1-21 |
| Buckwheat | ERIOG | 0-3 | 0-21 |
| Fleabane | ERIGE2 | 0-1 | 0-7 |
| Penstemon | PENST | 0-1 | 0-7 |
| Larkspur | DELPH | 0-1 | 0-7 |
| Aster | ASTER | 0-1 | 0-7 |
| Onion | ALLIU | 0-1 | 0-7 |
| White stoneseed | LIRU4 | 0-2 | 0-14 |
| Mountain agoseris | AGGL | 0-1 | 0-7 |
| Sticky geranium | GEVI2 | 0-1 | 0-7 |
| Milkvetch | ASTRA | 0-2 | 0-14 |
| Hooker balsamroot | BAHO | 0-1 | 0-7 |
| Sagewort | ARLU | 0-1 | 0-7 |
| Indian paintbrush | CASTI2 | 0-1 | 0-7 |
| Hoods phlox | PHHO | 0-1 | 0-7 |
| **Shrubs** | **Plant Symbol** | **% Comp** | **lbs./acre** |
| Mountain big sagebrush | ARTRV | 10-20 | 120-210 |
| Antelope bitterbrush | PUTR4 | 5-15 | 80-140 |
| Yellow rabbitbrush | CHVIP4 | 0-1 | 0-7 |
| Mountain snowberry | SYOR2 | 0-1 | 0-7 |
| Tall green rabbitbrush | CHVI8 | 0-2 | 0-14 |
| Woods rose | ROWO | 0-1 | 0-7 |
| Serviceberry | AMAL2 | 0-1 | 0-7 |
| Buckwheat | ERIOG | 0-1 | 0-7 |
| Dwarf green rabbitbrush | CHVIV4 | 0-1 | 0-7 |
| Pricklypear | OPPO | 0-1 | 0-7 |

| **Annual Production lbs./Acre** | Low | High |
|---|---|---|
| **Grasses & Grass-Likes** | 480 | 840 |
| **Forbs** | 120 | 210 |
| **Shrubs** | 200 | 350 |

| | | | |
|---|---|---|---|
| | **Total** | 800 | 1400 |

## Growth curves

Growth curve number: ID0901
Growth curve name: D25 ARTRV HCPC
Growth curve description: State 1, HCPC

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 20 | 35 | 25 | 10 | 0 | 0 | 5 | 0 | 0 |

Growth curve number: ID0902
Growth curve name: D25 ARTRV Early Seral
Growth curve description: State 2

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 10 | 30 | 40 | 15 | 0 | 0 | 0 | 5 | 0 | 0 |

Growth curve number: ID0903
Growth curve name: D25 Early Seral, JUOC
Growth curve description: State 3

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 15 | 30 | 20 | 10 | 5 | 5 | 5 | 5 | 0 |

### Ground Cover and Structure:

Vegetation cover averages 30-50 percent**.**

**Soil Surface Cover:**

Plant Basal Cover- no data
Microbiotic crusts- Low
Litter – 20
Surface fragments- 0-30
Bare Ground- 25-50
Other- no data

**Ground Cover (Vertical view)-**

Plant Canopy Cover (Species or groups)- 40-60
Microbiotic crusts- no data
Litter- no data
Surface fragments- no data
Bare ground- no data

**Structure of Canopy Cover-**

Herbaceous- no data Height: 1-2 ft.
Shrub- no data Height: 3-4 ft.

# Ecological Site Interpretations:

## Animal Community

### Wildlife Interpretations

This plant community is important to a wide variety of wildlife. Big game species that use the site in the spring, summer and fall include Pronghorn antelope, Mule deer and Rocky Mountain elk. Due to snow accumulation and temperatures in the winter, this site is not extensively used by big game.

This site is not highly preferred by Pronghorn antelope since the plant community is generally taller than optimum for the species. They prefer vegetation less than 18 inches high. Due to the cover, however, Pronghorn antelope will use it for kidding.

Mule deer use the site in the spring, summer and fall. It is used as a foraging area and for fawning. The bitterbrush component is important for mule deer in the fall due to high protein content prior to moving to the winter range.

Rocky Mountain elk use the site spring, summer, fall and early winter. The understory perennial grasses on the site are of primary importance for elk.

Sage grouse use the site when annual and perennial forbs are succulent, during the spring and early summer. The site is also used as nesting habitat.

Meadows are frequently found in the proximity to this site. When this occurs, this site and the adjacent meadows are important as calving areas for elk and foraging areas for sage grouse broods.

This site is very ecologically diverse. For this reason it is important to a variety of small herbivores, birds and predators.

### Grazing Interpretations

This site is best suited for late spring, summer and fall grazing.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings

## Plant Preference by Animal Kind:

Plant list for Beef Cattle and Rocky Mountain Elk.

| |
|---|
| PSSPS |
| FEID |
| POSE |
| ELEL5 |
| BASA2 |
| CRAC2 |
| LUPIN |
| ARTRV |
| PUTR4 |

Plant list for Sheep, Mule Deer, and Pronghorn Antelope.

| |
|---|
| PSSPS |
| FEID |
| POSE |
| ELEL5 |
| BASA2 |
| CRAC2 |
| LUPIN |
| ARTRV |
| PUTR4 |

## Hydrology Functions

The hydrology of this site is characterized by occasional high intensity thunderstorms during the summer months but primarily by low intensity frontal storms during the winter and spring. 60 to 70 percent of the precipitation falls during the period of October through May. Winter precipitation is in the form of snow. Snowmelt and run-off are critical events on this site. The site needs to be protected by vegetation when snowmelt and run-off occur. Ponding and flooding do not occur on this site. Run-on from adjacent sites normally does not occur. This site is in a snow-accumulation zone due to its high elevation and precipitation zone.

In the HCPC, the flatter slopes on which this site occurs allow for the majority of the moisture to infiltrate into the soil profile.

State 1. Historic climax plant community. Infiltration is good and runoff is low. The HCPC optimizes this relationship. The erosion potential is low. Cryptogamic crusts occur frequently on the site. Within this state, shrub cover varies from phase to phase. Where shrubs are abundant, snow accumulates in the interspaces. Phase D, where shrub cover is reduced or absent (due to recent fire), snow accumulation is reduced due to drifting snow and is unevenly redistributed. Snowmelt rates will be faster and result in increased runoff and less infiltration in the unprotected areas of the site. Total annual production of the site may be reduced. Deep percolation may be increased where more snow accumulates after redistribution by wind.

State 2. Phase B is dominated by Sandberg bluegrass and other annual and perennial grasses and forbs in the understory. Root sprouting shrubs such as green rabbitbrush and gray horsebrush are present. Less snow accumulation may result from the lack of shrubs in phase B. This state has more bare ground than the HCPC which results in a more rapid runoff. Phase A is dominated by mountain big sagebrush with annuals in the interspaces. This state has developed due to improper grazing management and the absence of fire. Snow accumulation in the interspaces will be greater in this phase than in phase B

State 3. This plant community is dominated by juniper. Remnants of bluebunch wheatgrass and Idaho fescue can be found in the understory. Shallow-rooted grasses, such as Sandberg bluegrass, and other annuals can be found in the interspaces. Few shrubs are present. This state has developed in the absence of fire. The heavy overstory of juniper intercepts snow in the branches and much of it is lost to sublimation. Infiltration is reduced in the interspaces and runoff is more rapid. Soil erosion is occurring, primarily in the interspaces.

State 4. Seeding. The seeding may consist of introduced species or may be made up of native species that attempt to mimic the historic plant community. Hydrologically, a native seeding that

mimics the HCPC, will be similar to state 1, the HCPC. Where shrubs successfully establish or increase naturally into the seeding, snow accumulation will occur resulting in improved deep percolation and slower runoff.

## Recreational Uses

Recreation use of this site includes hunting, hiking, horseback riding, plant and animal observation and motorized vehicle use.

Due to the relative abundance of wildlife that use this site, hunting is one of the primary uses. ATV's use this site due the gentle topography and relatively non-stony surface horizon.

## Wood Products

Mature juniper that has invaded and increased on the site can be cut for posts, poles, firewood and lumber.

## Other Products

None .

# Supporting Information

## Associated Sites

| | |
|---|---|
| Aspen | POTR |
| Riparian 7-20"+ | POPUL/SALIX-POA |
| Semi-wet Meadow | CAREX-POA |
| Shallow breaks 14-18" | JUOC-FEID |
| Shallow claypan 12-16" | ARAR8-FEID |
| Very shallow stony loam 10-14" | ARAR8-POSE-PSSPS |
| Wet Meadow | DECA5-CANE2 |

## Similar Sites

| | |
|---|---|
| Loamy 12-16" | ARTRV-FEID-PSSPS |
| Loamy 16"+ | ARTRV-FEID-PSSPS |
| Loamy 10-13" | ARTRW-PSSPS |

## Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, State Rangeland Management Specialist, NRCS, Idaho

| Data Source | Number of Records | Sample Period | State | County |
|---|---|---|---|---|

## State Correlation

## Type Locality

**State**: Idaho **County**: Owyhee, Twin Falls **Latitude:** **Longitude**:

| **Township**: | **Range**: | **Section**: |
|---|---|---|
| 3 S | 3W | SE ¼, NE ¼, SEC. 36 |
| 4 S | 3W | NE ¼, SW ¼, SEC. 10 |
| 13 S | 18E | SW ¼, NE ¼, SEC. 34 |

**Is the type locality sensitive? (Y/N)**: UNKNOWN **General Legal Description**:

## Field Offices

Marsing, ID
Twin Falls, ID
Mountain Home, ID
Ontario, OR

## Relationship to Other Established Classifications.

Artemisia vaseyana/ Festuca idahoensis ht. Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush- Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35.

## Other References.

Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush- Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35.

Petersen, S.L., 2004. A Landscape-Scale Assessment of Plant Communities, Hydrologic Processes, and State-and-Transition Theory in a Western Juniper Dominated Ecosystem. PhD Dissertation. Oregon State University, Corvallis, Oregon.

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov.). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database/feis

## Site Description Approval

| | |
|---|---|
| State Range Management Specialist | Date |
| State Range Management Specialist | Date |
| State Range Management Specialist | Date |

# United States Department of Agriculture
# Natural Resources Conservation Service

## Ecological Site Description

Reviewed 1/20/05
Needs production data verified within Idaho.

**Site Type:** Rangeland

**Site Name:** Mahogany Savanna 16-22" CELE3- SYOR2/FEID-STIPA

**Site ID:** R025XY018ID

**Major Land Resource Area:** D25

## Physiographic Features

This site occurs on slopes that are rolling to very steep ranging from 5-50 percent on all aspects. Elevations range from 5400-8300 feet (1646-2530 meters). This site is associated with mountains.

**Landform:** mountains

| | Minimum | Maximum |
|---|---|---|
| **Elevation (feet):** | 5400 | 8300 |
| **Slope (percent):** | 5 | 50 |
| **Water Table Depth (inches):** | | |
| **Flooding:** | None | None |
| **Frequency:** | | |
| **Duration:** | | |
| **Ponding:** | None | None |
| **Depth (inches):** | | |
| **Frequency:** | | |
| **Duration:** | | |
| **Runoff Class:** | Low | Very High |

**Aspect:** No influence to this site.

## Climatic Features

Annual precipitation of this site ranges from 16-22" (40-55 cm) with the majority falling as snow or rain in the winter, early spring and late fall. The plant growth period begins April 15 to May 15 with grasses and forbs maturing by August 15. The average frost-free period is 30-90 days. The optimum plant growth period is during June and July.

| | Minimum | Maximum |
|---|---|---|
| **Frost-free period (days):** | | |
| **Freeze-free period (days):** | | |
| **Mean Annual Precipitation (inches):** | | |

**Average Monthly Precipitation (inches) and Temperature (ºF):**

| | Precip. Max. | Precip. Min. | Temp. Max. | Temp. Min. |
|---|---|---|---|---|
| January | | | | |
| February | | | | |
| March | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |

| Climate Stations | | Period | |
|---|---|---|---|
| **Station ID** | **Location or Name** | **From** | **To** |
| | | | |
| | | | |
| | | | |
| | | | |

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

## Influencing Water Features

This site is not influenced by adjacent wetlands, streams or run on.

**Wetland Description:** **System** **Subsystem** **Class** **Sub-class**
none

**Stream Type:** none

## Representative Soil Features

The soils on this site vary from 10 to 60 inches in depth. The soils supporting this site are shallow to deep, well to somewhat excessively drained, with moderately slow to moderately rapid permeability above bedrock. Runoff is low to very high. The erosion hazard is slight to severe by water, and slight to moderate by wind. The available water capacity is very low to low. These soils are usually 20-40 inches deep to bedrock. The soils usually have a bouldery to very gravelly loam surface with a loamy or loamy-skeletal subsoil. The subsoil is usually moderately well to well developed with clay ranging from approximately 11 to 30 percent. Roots are not significantly restricted by the underlying parent material which is either fractured or soft. . The soils are modified by high volumes of rock fragments throughout the profile. These soils are characterized by limited AWC, a soil moisture regime of xeric, and cold temperatures. Soil temperature regime is either cryic or frigid.

### Soil Series Correlated to this Ecological Site

| | | |
|---|---|---|
| Foxmount | Hogmalat | Saturday |
| Gaib | Quicksilver | Takekuchi |

Site Type: Rangeland
MLRA: **R025XY018ID**
**Parent Material Kind**: colluvium
**Parent Material Origin:** rhyolite, granite
**Surface Texture:** loam, coarse sandy loam
**Surface Texture Modifier:** Stony, bouldery, gravelly
**Subsurface Texture Group:**

| | Minimum | Maximum |
|---|---|---|
| **Surface Fragments ≤ 3" (% Cover):** | 9 | 35 |
| **Surface Fragments > 3" (%Cover):** | 3 | 11 |
| **Subsurface Fragments ≤ 3" (% Volume):** | 0 | 23 |
| **Subsurface Fragments > 3" (% Volume):** | 0 | 58 |
| **Drainage Class:** | Well | Somewhat Excessively |
| **Permeability Class:** | Moderately Slow | Moderately Rapid |
| **Depth (inches):** | 10 | 60 |
| **Electrical Conductivity (mmhos/cm)*:** | 0 | 0 |
| **Sodium Absorption Ratio*:** | 0 | 0 |
| **Soil Reaction (1:1 Water)*:** | 5.1 | 7.3 |
| **Soil Reaction (0.1M CaCl2)*:** | 0 | 0 |
| **Available Water Capacity (inches):** | 1.1 | 4.6 |
| **Calcium Carbonate Equivalent (percent)*:** | 0 | 0 |

* These are for the surface layer only.

## Plant Communities

**Ecological Dynamics of the Site:**
The dominant visual aspect of this site is of curlleaf mountain mahogany. Mountain snowberry is the principal understory shrub. Idaho fescue, bulbous oniongrass, mountain brome, Columbia needlegrass and western needlegrass are the most prevalent understory grasses. Composition by weight is approximately 40 percent grass, 10 percent forbs and 50 percent shrubs and tree-like shrubs. These percentages are for current annual growth for all plants, irrespective of height.

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The traditional HCPC is Phase A. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".

In the last few thousand years, this site has evolved in an arid climate characterized by dry summers and cold, wet winters. Herbivory has historically occurred on this site at low levels of utilization. Herbivores include mule deer, Rocky Mountain elk, lagomorphs and small rodents.
Fire has historically occurred on the site at intervals of 250-500 years. Due to the variability of soil depth, from shallow to deep, curlleaf mountain mahogany has a patchy or clumpy appearance on the landscape. For this reason when the site burns, fire moves across the site leaving a mosaic of burned and unburned areas. The Historic Climax Plant Community (HCPC) of this site is dominated by curlleaf mountain mahogany in the overstory and Idaho fescue, purple oniongrass, mountain brome, Columbia and western needlegrass and mountain snowberry in the understory. Total annual production is 1800 pounds per acre (2000 kilograms per hectare) in a normal year. **THIS PRODUCTION NEEDS TO BE VERIFIED WITHIN IDAHO.**
Structurally, curlleaf mountain mahogany dominates the overstory. In the understory cool season deep rooted perennial bunchgrasses are dominant, followed by tall shrubs being more dominant than perennial forbs while shallow rooted bunchgrasses are subdominant.

Western juniper sites frequently occur in association with this site. Juniper can invade this site when a seed source is present. Conifers such as juniper have greater growth rates, their shape is more tapered and they reach greater heights. Consequently, conifer species invading curlleaf mountain mahogany sites eventually over top them. Because mature curlleaf mountain mahogany is shade intolerant its competitive ability is lost, and it becomes senescent. Mortality usually follows.

**Rangeland Health Indicators**.

**Rills**: are rare on this site due to the coarse surface fragments. If they are present they are likely to occur on slopes greater than 20% or immediately following a wildfire.

**Water flow patterns**: are rare on this site due to short slope lengths. When they occur they are short and disrupted by cool season grasses, tall shrubs and surface stones. They are not extensive.

**Pedestals**: are rare on this site. In areas where slopes approach 20 percent and where flow patterns and/or rills are present, few pedestals may be expected. Terracettes are also rare.

**Bare ground**: ranges from 15-30% but more data is needed.

**Wind scour**: does not occur on this site.

**Litter movement**: Fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move.

**Soil surface stability**: Values should range from 4-6 but needs to be tested. The surface horizon is typically 3 to 12 inches thick. Structure typically includes weak thin and platy, and weak or moderate fine or moderate medium granular, and moderate fine to medium subangular blocky. Soil organic matter (SOM) ranges from 1 to 10 percent.

**Effect of plant community on infiltration**: The tree-like canopy of curlleaf mountain mahogany intercepts raindrops and therefore reduces that impact on the soil surface. Bunchgrasses, especially deep-rooted and surface stones slow run-off and increase infiltration. Tall shrubs accumulate snow in the interspaces.

**Compaction layer**: is not present.

**Functional/structural groups**: Tree-like shrubs >>>cool season deep- rooted bunchgrasses>>tall shrubs>perennial forbs >shallow rooted bunchgrasses.

**Plant mortality/ decadence**: Mortality of curlleaf mountain mahogany is usually the result of insect infestations or fire. Outbreaks of a curlleaf mountain mahogany defoliating moth Stamnodes animata, occur at infrequent intervals. Two consecutive years of severe defoliation can cause curlleaf mountain mahogany mortality.

**Litter cover**: ranges from 10-20% but additional data is needed.

**Expected annual production**: is 1800 pounds per acre (2000kg/ha) in a year with normal precipitation and temperatures.

**Invasive and/or noxious species**: include shade intolerant species such as cheatgrass, bulbous bluegrass, rush skeletonweed, whitetop, musk and scotch thistle and diffuse and spotted knapweed when the canopy has been altered or removed. In addition, western juniper can invade the site.

**Perennial plants**: in all functional groups have the potential to reproduce most years.

**Function.**
This site is suited for livestock grazing in the summer and fall. Livestock use the site for feeding and loafing. Big game use the site in the spring, summer and fall. It is important for both hiding and thermal cover. Birds use the mahogany for nesting. This site is very important as summer habitat for mountain bluebirds. The site has high value for hunting, camping, photography and picnicking. The mountain mahogany provides visual diversity to the landscape.
The understory of this site is easily degraded by livestock and big game due to its attractiveness as shade and cover.

**Impacts on the Plant Community.**

Influence of fire.

Where there is a juniper seed source in the vicinity and in the absence of normal fire frequency, juniper increases to the point of severely reducing nearly all of the understory and overstory species. Juniper has a greater growth rate, its shape is more tapered and it reaches greater heights. Consequently, juniper invading curlleaf mountain mahogany sites eventually over tops them. Because mature curlleaf mountain mahogany is shade intolerant its competitive ability is lost, and it becomes senescent.

Because of its topographic position on the landscape, ridgetops and sideslopes, fires started by lightning strikes are fairly common. Because of the variability of soil depth, from shallow to deep, curlleaf mountain mahogany has a patchy or clumpy appearance on the landscape. For this reason when the site burns, fire moves across the site leaving a mosaic of burned and unburned areas. Fires of this nature rarely involve large acreages due to surrounding rimrocks and other features that limit the spread of fire. The site rarely, if ever burns in its entirety.

On the area that burns, shrubs such as young curlleaf mountain mahogany, mountain big sagebrush and antelope bitterbrush will be killed. Idaho fescue may also suffer mortality. Snowbrush ceanothus may become dominant after fire since it requires heat for seed germination. Recovery after fire is generally rapid due to the proximity of a desirable seed source and favorable moisture regime.

A frequent fire regime, one every 5-10 years, generally does not develop on this site. Soils are too shallow and fuels are not continuous enough for a frequent fire cycle to occur.

Influence of improper grazing management.
Improper grazing management can damage this site moderately. Due to the rough and rocky nature of the site, livestock do not generally prefer to use it. Livestock use the site primarily for loafing and bedding. Forage production is low. When this site is being impacted by improper grazing management, adjacent sites that are more productive and less rocky are usually being much more severely degraded.

Season-long grazing and excessive utilization can be detrimental to this site. This type of management leads to reduced vigor of the bunchgrasses and palatable shrubs. With reduced vigor, recruitment of these species declines. Generally juniper seedlings will replace the desirable grasses and shrubs if improper grazing management continues.

Weather influences.

Above normal precipitation in the spring increases forage production slightly. Only in the areas with deeper soils do plants capitalize on extra spring-time moisture. Below normal precipitation in the spring can reduce production and ultimately cause plant mortality if drought continues.

Juniper is very resistant to drought influences. It has a root system that is capable of removing deep moisture in the fractures of the bedrock that is not available to other plants on the site. In addition, juniper is capable of photosynthesizing (growing) anytime the air temperatures are above freezing. It therefore is removing moisture from the soil for 10-11 months of the year. This gives juniper a competitive advantage for moisture over all of the other species on the site.

Insects and disease- outbreaks can affect health of vegetation, particularly bitterbrush from western tent caterpillars (Malacosoma fragilis). Two consecutive years of defoliation by the tent caterpillar can cause mortality in bitterbrush. Outbreaks of a curlleaf mountain mahogany defoliating moth Stamnodes animata, occur at infrequent intervals. Two consecutive years of severe defoliation can also cause mortality.

Influence of noxious and invasive weeds.
Many of these species add to the fine-fuel component and lead to increased fire frequency.
Many of the annual and perennial weeds with deep root systems compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory.

Influence of wildlife.
Big game use this site in the spring, summer and fall. Their numbers are seldom high enough to adversely affect the plant community. Herbivory can be detrimental to young curlleaf mountain mahogany and bitterbrush when livestock grazing and browsing by big game occurs at the same time and season. This will occur when both kinds of animal are using the plant in the late summer or fall. The adverse impact is excessive use of the current years' leader growth.

Watershed.
Decreased infiltration and increased runoff occur with the invasion of juniper. Juniper invasion can be triggered by lack of fire, improper grazing management and prolonged drought. The increased runoff also causes sheet and rill erosion. The long term effect is a transition to a different state.

**Plant Community and Sequence**:
Transition pathways between common vegetation states and phases:
State 1.
Phase A to B. Develops with improper grazing management and no fire.
Phase B to A. Develops through prescribed grazing.
Phase A to C. Develops after wildfire. Improper grazing management may accelerate the transition from Phase A to Phase C.
Phase C to A. Moves towards the HCPC with no fire and prescribed grazing.
Phase A to D. Develops with no fire.
Phase D to A. Removal of juniper with brush management (mechanical or prescribed fire) affects this move.

## Practice limitations:
There are few limitations for vegetation management practices on this site. This site is commonly a loafing area for livestock and they tend to overuse it. Moderate limitations exist for facilitating

practices due to shallow, stony soils. Any brush control practices should be carefully evaluated because maintaining curlleaf mountain mahogany on the site has high value to the entire ecosystem.

**Plant Community Narrative**:

State 1, Plant community A. The historic climax plant community. The HCPC has a curlleaf mountain mahogany overstory with a wide variety of grasses in the understory. Mountain snowberry, mountain big sagebrush and seedlings and saplings of curlleaf mountain mahogany are the shrubs in the understory. Soils vary from shallow to deep, therefore the site has a patchy, clumpy appearance on the landscape. The historic natural fire frequency is approximately every 250-500 years. When the site burns, it burns in a mosaic pattern across the site. The site never burns in its entirety.

State 1, Plant community B. This phase has developed through improper grazing management and no fire. Juniper encroachment is not a problem since there is no seed source in the vicinity. Palatable shrubs such as young curlleaf mountain mahogany and bitterbrush are typically hedged. Idaho fescue and Thurber needlegrass are in low vigor. Less desirable grasses such as Sandberg bluegrass and bottlebrush squirreltail have increased.

State 1, Plant community C. This phase has developed from wildfire. Improper grazing management accelerates the movement of this plant community toward Phase C. Mountain snowberry has sprouted from the roots after burning. Snowbrush ceanothus has become established since its seed requires heat for germination. Sandberg bluegrass and cheatgrass have increased after fire and with improper grazing management. Remnants of Idaho fescue, Thurber needlegrass and curlleaf mountain mahogany are present on the site.

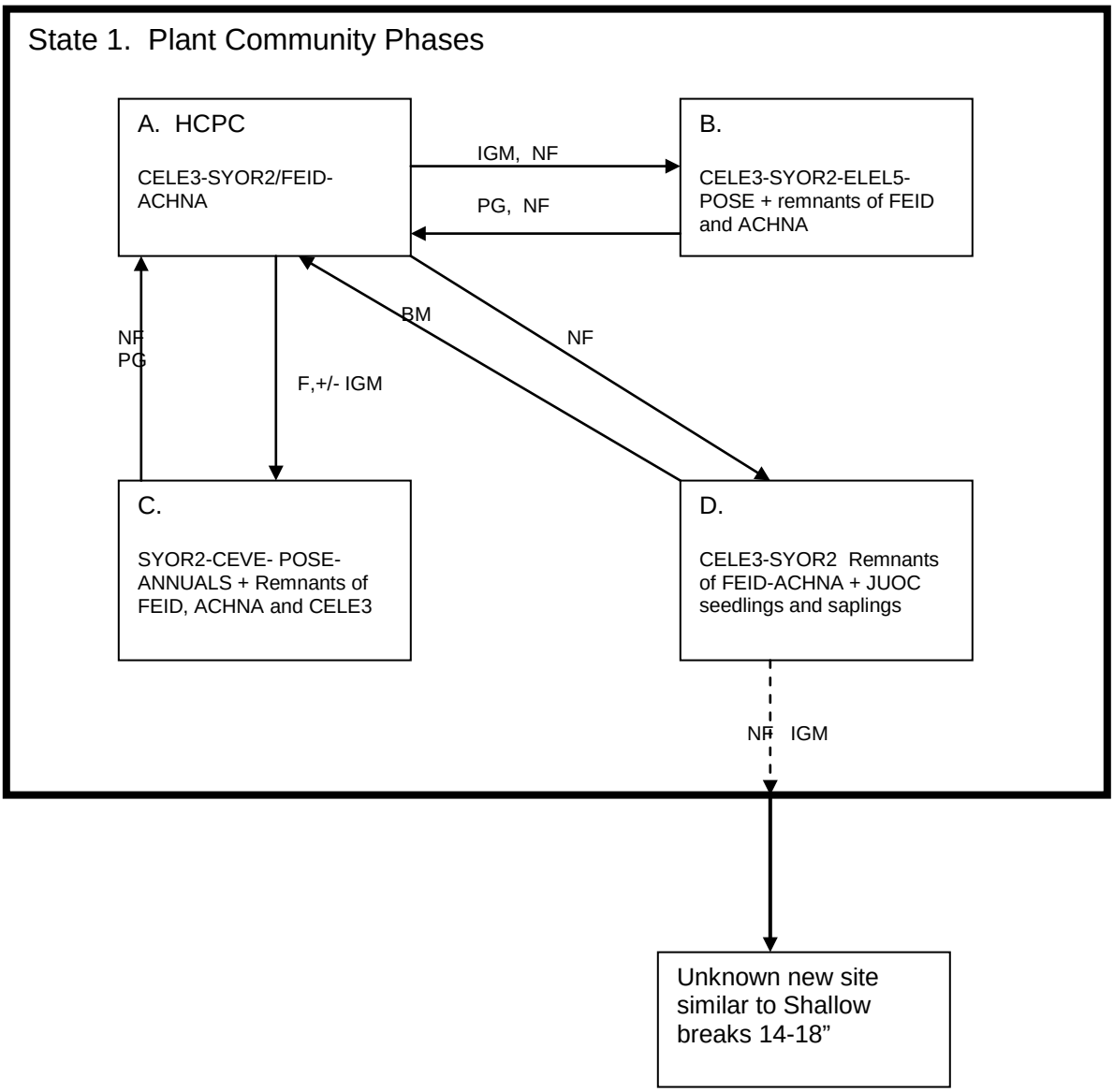
State 1, Plant community D. This phase has developed with no fire and where a juniper seed source is present. Juniper seedlings and saplings are beginning to impact understory production. Competition for moisture and shading are causing the desirable grasses and shrubs to decline. Because mature curlleaf mountain mahogany is shade intolerant its competitive ability is lost, and it becomes senescent. Mortality usually follows.

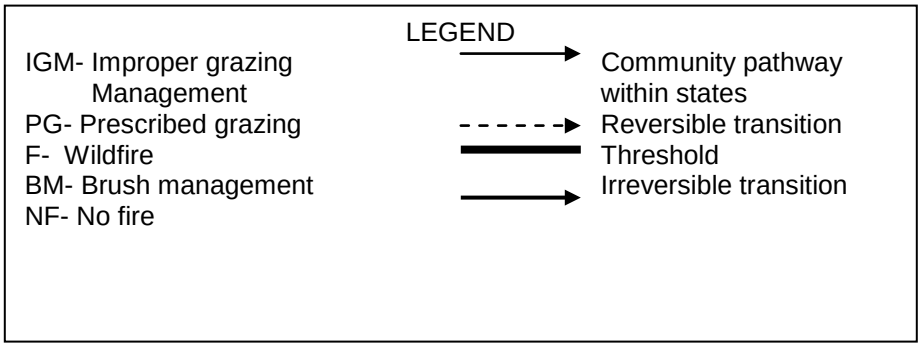
Unknown new site. Juniper in Phase D has become so dominant that the plant community has moved across the threshold to a new site. Soil erosion has increased dramatically and production potential has been lost. It is not economically feasible to move this plant community back across the threshold to the HCPC. This site may resemble Shallow breaks 14-18” JUOC/ FEID.

## State and transition model diagram:

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. The traditional HCPC

is Phase A. The plant species composition of Phase A is listed later under “HCPC Plant Species Composition”.



**HCPC Plant Species Composition**

| Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|
| Grasses & Grass-like | | | | |
| Idaho fescue | FEID | 5-15 | 130 | 440 |
| Bulbous oniongrass | MEBU | 5-10 | 98 | 165 |
| Mountain brome | BRCA5 | 5-10 | 98 | 165 |
| Columbia needlegrass | ACNEN2 | 5-10 | 98 | 165 |
| Western needlegrass | ACOC3 | 5-10 | 98 | 165 |
| Slender wheatgrass | ELTR7 | 1-5 | 39 | 66 |
| Prairie junegrass | KOMA | 1-5 | 39 | 66 |
| Bottlebrush squirreltail | ELEL5 | 1-5 | 39 | 66 |
| Sedge | CAREX | 1-5 | 39 | 66 |
| Bluebunch wheatgrass | PSSPS | 1-5 | 39 | 66 |
| Sandberg bluegrass | POSE | 1-5 | 39 | 66 |
| Nevada bluegrass | POSE | 1-3 | 26 | 44 |
| Letterman needlegrass | ACLE9 | T-3 | 1 | 44 |

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 2 | Forbs | | | | |
| | | BASA3 | 1-10 | 72 | 121 |
| | | CRAC2 | 2-5 | 46 | 77 |
| | | LUPIN | 2-5 | 46 | 77 |
| | | ASTER | 1-3 | 26 | 44 |
| | | PHLOX | 1-3 | 26 | 44 |
| | | ACMI2 | 1-3 | 26 | 44 |
| | | LOMAT | 1-3 | 26 | 44 |
| | | PENST | 1-3 | 26 | 44 |
| | | CASTI2 | T-2 | 1 | 33 |

| | | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 3 | Shrub/Vine | | | | |
| | | CELE3 | 30-40 | 455 | 770 |
| | | SYOR2 | 2-10 | 78 | 132 |
| | | ARTRV | 2-5 | 46 | 77 |
| | | PUTR2 | T-5 | 1 | 66 |
| | | AMELA | T-5 | 1 | 66 |
| | | PRVI | T-5 | 1 | 66 |
| | | PREM | T-5 | 1 | 66 |
| | | CEVE | T-5 | 1 | 66 |

ANNUAL PRODUCTION BY PLANT TYPE

| Annual Production lbs/ac | Low | RV | High |
|---|---|---|---|
| Grass and Grass-likes | 520 | 700 | 880 |
| Forbs | 130 | 175 | 220 |
| Shrubs | 650 | 875 | 1100 |
| Total | 1300 | 1750 | 2200 |

**Growth Curve:**

Growth curve number: ID0912
Growth curve name: CELE3 FEID
Growth curve description: HCPC

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 15 | 30 | 30 | 10 | 0 | 5 | 5 | 0 | 0 |

Growth curve number: ID0903
Growth curve name: EARLY SERAL
Growth curve description: State 2

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 15 | 30 | 20 | 10 | 5 | 5 | 5 | 5 | 0 |

**Ground Cover and Structure:**

**Soil Surface Cover-**

Plant Basal Cover: **20-35%**
Microbiotic crusts: no data
Litter: **5-10%**
Surface Fragments: **0-20%**
Bare Ground: 15-30%
Other: no data
Tree Canopy: 10-35%

**Ground Cover (Vertical view)-**

Plant Canopy Cover (species or groups): 50-75%
Microbiotic Crusts: no data
Litter: no data
Surface Fragments: no data
Bare Ground: no data

**Structure of Canopy Cover-**

Herbaceous: no data Height: 1-1.5’
Shrub: no data Height:1-3’
Tree: no data Height: 10-15’

# Ecological Site Interpretations:

## Animal Community.

### Wildlife Interpretations:

Mule deer and Rocky Mountain elk use this site for foraging, thermal and hiding cover. Birds use the site for nesting and feeding. This site is very important as summer habitat for mountain bluebirds.

### Grazing Interpretations:

This site is suited for summer and fall grazing. Livestock use the site for shade as well as foraging.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings

### Plant Preference by Animal Kind:

Plant list for Beef Cattle and Rocky Mountain Elk.

| |
|---|
| FEID |
| MEBU |
| BRCA5 |
| ACNEN2 |
| ACOC3 |
| BASA3 |
| CRAC2 |
| LUPIN |
| CELE3 |
| SYOR2 |
| ARTRV |
| PUTR2 |

Plant list for sheep, mule deer, and pronghorn antelope.

| | |
|---|---|
| FEID | |
| MEBU | |
| BRCA5 | |
| ACNEN2 | |
| ACOC3 | |
| BASA3 | |
| CRAC2 | |
| LUPIN | |
| CELE3 | |
| SYOR2 | |
| ARTRV | |

## Hydrology Functions.

The soils on this site are in hydrologic group C. They have moderately high runoff potential.

## Recreational Uses.

This site has high value for hunting, camping, photography and picnicking. The mahogany shrubs provide visual diversity to the landscape.

## Wood Products

This site provides a source of fuel wood for camping, picnics and barbecues. The wood is also used to make small specialty products.

## Other Products

None

# Supporting Information

## Associated Sites

| | |
|---|---|
| Loamy 16”+ | ARTRV/ FEID |
| Mountain brush 18-22” | ARTRV/- SYOR2/ BRCA5 |
| Shallow breaks 14-18” | JUOC/ FEID |
| Mountain ridge 14-18” | ARAR8/ FEID |

## Similar Sites

None

## Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, State Rangeland Management Specialist, NRCS, Idaho

| Data Source | Number of Records | Sample Period | State | County |
|---|---|---|---|---|

## State Correlation
None

## Type Locality

**State**:Idaho **County**:Owyhee **Latitude**: **Longitude**

| **Township**: | **Range**: | **Section**: |
|---|---|---|
| 5S | 3W | SW4, NW4 SEC. 15 |
| 5S | 3W | SW4, NW4, SEC. 8 |

**Is the type locality sensitive? (Y/N)**: No data **General Legal Description**:

## Field Offices
Marsing, ID
Twin Falls, ID
Mountain Home, ID
Ontario, OR

## Relationship to Other Established Classifications

## Other References
B.W. Schultz, P.T. Tueller and R.J. Tausch. 1990. Ecology of curlleaf mountain mahogany in western and central Nevada: community and population structure. J. Range Manage. 43: 13-20.

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov.). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

USDA, NRCS. 1992. Major Land Resource Area 25, Owyhee High Plateau, Nevada Site Descriptions, Reno, Nevada.

Furniss, Malcolm M., Douglas C. Ferguson, Kenneth W. Voget, J. Wayne Burkhardt, Arthur R. Tiedemann, and John L. Oldemeyer. 1988. **Taxonomy, life history, and ecology of a mountain-mahogany defoliator, Stamnodes animata (Pearsall) in Nevada.** U.S. Fish Wildl. Serv., Fish Wildl Res. 3. 26pp.

## Site Description Approval

_____ _____
State Range Management Specialist Date

_____ _____
State Range Management Specialist Date

_____ _____
State Range Management Specialist Date

# United States Department of Agriculture
# Natural Resources Conservation Service

## Ecological Site Description

dlf. 2/11/06

SUGGEST NAME CHANGE TO CLAYPAN 12-16" ARAR8/ PSSPS-FEID

**Site Type:** Rangeland

**Site Name:** Shallow claypan 12-16" ARAR8/ FEID

**Site ID:** R025XY010ID

**Major Land Resource Area:** D25

## Physiographic Features

This site occurs on summits, rolling foothills, side slopes and terraces. Slopes range from 2-30 percent, mostly less than 20 percent. It occurs on all aspects. Elevation ranges from 5000-7000 feet (1500-2050m).

**Landform:**

**Aspect:** All

| | Minimum | Maximum |
|---|---|---|
| **Elevation (feet):** | 5000 | 7000 |
| **Slope (percent):** | 2 | 30 |
| **Water Table Depth (inches):** | | |
| **Flooding:** | | |
| **Frequency:** | | |
| **Duration:** | | |
| **Ponding:** | | |
| **Depth (inches):** | | |
| **Frequency:** | | |
| **Duration:** | | |
| **Runoff Class:** | | |

Average annual precipitation of this site ranges from 12-16 inches (30-40cm). Approximately 40 percent comes during the plant growth period (April- September). Summer rains often occur as high intensity storms of short duration. The average annual air temperature is 42-47 degrees F.

Plant growth usually begins in April. Plants are mature by early July, with some fall green-up usually occurring in early September.

The average frost-free season is 50-100 days.

| | Minimum | Maximum |
|---|---|---|
| **Frost-free period (days):** | | |
| **Freeze-free period (days):** | | |
| **Mean Annual Precipitation (inches):** | | |

**Average Monthly Precipitation (inches) and Temperature (ºF):**

| | Precip. Max. | Precip. Min. | Temp. Max. | Temp. Min. |
|---|---|---|---|---|
| January | | | | |
| February | | | | |
| March | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |

| Climate Stations | | Period | |
|---|---|---|---|
| **Station ID** | **Location or Name** | **From** | **To** |
| | | | |
| | | | |
| | | | |
| | | | |

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

## Influencing Water Features

This site is not influenced by adjacent wetlands, streams or run on.

| **Wetland Description:** | System | Subsystem | Class | Sub-class |
|---|---|---|---|---|
| none | | | | |

**Stream Type:** none

## Representative Soil Features

The soils on this site are loams, gravelly loams and clay loams. The surface may be stony in some places. There is a claypan, duripan or bedrock at 14-20 inches which restricts water and root penetration.

### Soil Series Correlated to this Ecological Site

| | | | | |
|---|---|---|---|---|
| Aninto | Brog | Brose | Cavanough | Moonshine |
| Nichol Flat | Poisoncreek | Avery | Bedstead | Borda |
| Dougal | Freshwater | Gabica | Share Snout | Squawcreek |
| Starhope | Wickahoney | Yutahoney | Petan | Peeywell |

**Parent Material Kind**:
**Parent Material Origin:**
**Surface Texture:**
**Surface Texture Modifier:**
**Subsurface Texture Group: Surface Fragments ≤ 3" (% Cover):**
**Surface Fragments > 3" (%Cover):**
**Subsurface Fragments ≤ 3" (% Volume):**
**Subsurface Fragments > 3" (% Volume):**

| | Minimum | Maximum |
|---|---|---|
| **Drainage Class:** | | |
| **Permeability Class:** | | |
| **Depth (inches):** | | |
| **Electrical Conductivity (mmhos/cm)*:** | | |
| **Sodium Absorption Ratio*:** | | |
| **Soil Reaction (1:1 Water)*:** | | |
| **Soil Reaction (0.1M CaCl2)*:** | | |
| **Available Water Capacity (inches)*:** | | |
| **Calcium Carbonate Equivalent (percent)*:** | | |

- - These attributes represent from 0-40 inches or to the first restrictive layer.

## Plant Communities

### Ecological Dynamics of the Site:

The dominant visual aspect of this site is low sagebrush, Idaho fescue and bluebunch wheatgrass. Composition by weight is approximately 40-60 percent grasses, 15-25 percent forbs and 25-35 percent shrubs.

In the last few thousand years, this site has evolved in an arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, sage grouse, lagomorphs and small rodents. Fire has historically occurred on this site every 80-100 years.

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The HCPC is Phase A. This plant community is dominated by low sagebrush, Idaho fescue and bluebunch wheatgrass. Subdominant species include Sandberg bluegrass, bottlebrush squirreltail, Nevada bluegrass, thickspike wheatgrass, Thurber needlegrass, arrowleaf balsamroot, Hooker balsamroot and longleaf phlox. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".

Total annual production is 650 pounds per acre (728 Kg/ha) in a normal year. Production in a favorable year is 950 pounds per acre (1064 Kg/ha). Production in an unfavorable year is 350 pounds per acre (392 Kg/ha). Structurally, cool season deep-rooted bunchgrasses are very dominant, followed by medium height shrubs with perennial forbs and shallow rooted bunchgrasses being sub-dominant.

**Rangeland Health Indicators of the HCPC**.

**Rills:** can occur on this site. If rills are present they are likely to occur on slopes greater than 10 percent and immediately following a wildfire or high intensity storm. Rills are most likely to occur on soils with silt loam or clay loam surface texture.

**Water flow patterns:** can occur on this site. They are not extensive except on slopes greater than 15 percent. When they do occur they are short and disrupted by cool season grasses, shrubs and surface stones.

**Pedestals:** are common on the site especially where flow patterns are present and the surface soils have a high clay content.

**Bare ground:** ranges from 40-50 percent but additional data is needed.

**Number of gullies and erosion associated with gullies:** None

**Wind scour**: blowouts and depositional areas are usually not present in the HCPC.

**Litter movement.** Fine litter in the interspaces may move up to 3 feet following a significant run-off event. Coarse litter generally does not move.

**Soil surface stability:** values should range from 3 to 5 but needs to be tested.

**Soil surface structure and SOM content:** The A or A1 horizon is typically _____ inches thick. Structure ranges from _____ to _____. Soil organic matte (SOM) needs to be determined.

**Effect of plant community on infiltration:** Bunchgrasses, especially deep rooted, slow runoff and increase infiltration. Medium height shrubs accumulate some snow in the interspaces.

**Compaction layer:** is not present. Do not mistake an increase in clay for a compaction layer. The site can develop a compaction layer due to the clay in the subsoil due to severe livestock use when the soils are wet.

**Functional/ structural groups:** Cool season deep-rooted perennial bunchgrasses>> medium shrubs>perennial forbs>shallow rooted bunchgrasses.

**Plant mortality/ decadence:** Very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought.

**Litter cover:** Additional data is needed but is expected to be low and at a shallow depth.

**Expected annual production:** is 650 pounds per acre (728 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 40-60 percent of the total production, forbs 15-25 percent and shrubs 25-35 percent.

**Invasive or noxious species:** include cheatgrass, medusahead, Vulpia species, bulbous bluegrass, annual mustards**,** and rush skeletonweed.

**Perennial plants:** in all functional groups have the potential to reproduce in most years.

**Function.**

This site is suited for grazing by livestock in spring, early summer, and fall. It also provides habitat for mule deer, pronghorn antelope, small game, sage grouse, small birds and rodents. The site provides colorful spring and early summer blooming forbs for photography and nature study.

This site can be degraded easily by improper grazing management since slopes are moderate which allows easy access. Inherent low production on the site makes it susceptible to accelerated degradation.

Infiltration and production can be maintained with a mixed stand of deep-rooted bunchgrasses and shrubs. Runoff potential is high.

**Impacts on the Plant Community.**

Influence of fire:

This site historically had a very low fire frequency, approximately every 80-100 years. Most of the shrubs evolved in the absence of fire, therefore they can be severely damaged or killed when burned. Juniper can increase on the site if a seed source is in the proximity. Grasses and forbs decrease as shrubs increase. With the continued absence of fire, juniper can displace most of the shrubs and other understory species. See “Influence of juniper invasion” below.
Fine-leaved grasses such as Nevada bluegrass, Idaho fescue and Thurber needlegrass in the community can be lost or vigor significantly reduced with fire. Rabbitbrush species can increase with fire. Cheatgrass and medusahead can be a troublesome invader on this site after fire, preventing perennial grass and shrub re-establishment and increasing the fire frequency. Sandberg bluegrass is usually maintained in the community.

Influence of improper grazing management:

Season-long grazing can be detrimental to this site. Excessive utilization is also detrimental. This type of management leads to reduced vigor of bluebunch wheatgrass and other deep- rooted perennial bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in low sagebrush and invasive weeds. Continued improper grazing management influences fire frequency with an increase in cheatgrass and medusahead wildrye.

Weather influence:

Above normal precipitation in March, April and May can dramatically increase total annual production. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Extended periods of drought significantly impact this site due to the low water holding capacity and shallow soil. Extended drought reduces vigor of the perennial grasses and shrubs. Extreme drought may cause plant mortality.

Influence of insects and disease:

Outbreaks can affect health of the vegetation. Outbreaks of Mormon crickets and grasshoppers can occur. Their long-term impact is usually minor since defoliation usually occurs once in a season. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site.

Influence of noxious and invasive weeds:

Annual and perennial weeds compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. Cheatgrass and medusahead can be a very invasive weed on this site, especially after fire. Once they become established the fire frequency increases. As a result, the shrub component can be lost.

Influence of wildlife:

Relatively low numbers of wildlife use this site and impact it little. Pronghorn antelope is the dominant large herbivore using the site. They use the site yearlong but prefer it in the spring, fall and early winter. Sage grouse use the site for strutting grounds. Sage grouse may use the site during the winter. Winter and spring use by mule deer occasionally occurs.

Watershed:

Decreased infiltration and increased runoff on slopes greater than 10 percent occur when low sagebrush is removed with frequent fires, particularly following the fire event. The increased runoff also increases sheet and rill erosion. The long-term effect is a transition to a different state.

When hydrologic condition of the vegetative cover is good, natural erosion hazard is slight.

Influence of western juniper invasion:

In plant communities that are invaded by juniper, the species has a competitive advantage for the following reasons:

Juniper is very drought tolerant.
It has the ability to extract soil moisture from a wide range of soil depths.
Juniper has high evapo-transpiration rates.
The species intercepts rain and snow before it reaches the soil surface.
It has the ability to grow as long as there is soil moisture and the temperature is above freezing.
Juniper has a relatively rapid growth rate and is long-lived. It can readily over-top shade intolerant species
which leads to mortality.
Nutrient cycling is reduced.
As the canopy closes, juniper gains control of energy capture.

As juniper extracts water, other plants are unable to acquire sufficient water and nutrients to sustain growth and reproduction, thus reducing cover and biomass in the interspaces. After the canopy closes, there is sufficient soil moisture available for shallow-rooted, shade tolerant species to persist directly under the tree.

The following hydrological impacts occur on sites invaded by juniper:

Infiltration in the interspaces is reduced.
Run-off increases resulting in increased sheet and rill erosion with elevated sediment loads.

Soil temperatures increase in the interspaces which results in accelerated drying of the soil surface.
Increased bare ground in the interspaces.
Soil moisture storage is reduced.

As bare ground and interconnectiveness of bare ground increases, flow rates are accelerated (reduction of flow sinuosity) and run-off out of the area increases.

Degradation of these systems can result in the formation of a feedback cycle in which greater juniper cover and density results in greater plant and soil disturbance between the canopies.

In summary, a closed juniper community takes control of the following ecological processes: hydrology, energy capture and nutrient cycling. The changes are primarily driven by the hydrological processes. The development of a closed juniper canopy always results in a transition across the threshold to a different state. Generally, when juniper canopy cover nears 20%, the plant community is approaching the threshold.

**Plant Community and Sequence**:
Transition pathways between common vegetation states and phases:
State 1.

Phase A to B. Develops in the absence of fire. No juniper seed source in the proximity.
Phase A to C. Usually results from improper grazing management and absence of fire. A Utah juniper seed source is present.
Phase A to D. Results from one or more fires.
Phase A to E. Develops in the absence of fire and improper grazing management. No Utah juniper seed source is present.
Phase B to A. Results from prescribed grazing management.
Phase C to A. Develops with prescribed grazing management and prescribed burning or fire.
Phase D to A. Usually results from prescribed grazing management and no fire.
Phase E to A. Develops from prescribed grazing management and prescribed burning or brush management.
Phase B to D. This develops from prescribed burning or fire.
Phase C to D. This develops from prescribed burning or fire.

State 1 Phase D to State 2, Phase B. Develops through improper grazing management and lack of fire.
State 1 Phase C to State 3. Results from improper grazing management and lack of fire.

State 2 Phase A to State 2 Phase B. Results from improper grazing management and fire.

State 2 Phase B to State 2 Phase A. Results from no fire.

State 2 to unknown site. Excessive soil loss and changes in the hydrologic cycle caused by improper grazing management and/or frequent fire cause this state to retrogress to a new site with reduced potential.

State 3 to unknown site. Continued lack of fire and improper grazing management cause this state to retrogress to a new site with reduced potential due to significant soil loss and changes in hydrology.

**Practice Limitations.**
Due to the shallow soils and low available water capacity of the soils, severe limitations exist for range seeding and brush control on this site. Low potential production and value to wildlife must be considered if planning brush management.

**Plant Community Narrative**:

State 1, Plant community A. Historic climax plant community. The HCPC of this site is dominated by low sagebrush, bluebunch wheatgrass and Idaho fescue. Subdominant species include Sandberg bluegrass, bottlebrush squirreltail, Nevada bluegrass, thickspike wheatgrass, Thurber needlegrass, arrowleaf balsamroot, Hooker balsamroot and longleaf phlox.
Natural fire frequency is 80-100 years.

State 1, Plant community B. This plant community is dominated in the overstory by low sagebrush. Bluebunch wheatgrass and Idaho fescue are the dominant species in the understory. Other perennial grasses and forbs include include Sandberg bluegrass, bottlebrush squirreltail, Nevada bluegrass, thickspike wheatgrass, Thurber needlegrass, arrowleaf balsamroot, Hooker balsamroot and longleaf phlox. No juniper seed source is present. Antelope bitterbrush is increasing. This state has developed due to fire frequency being much longer than normal.

State 1, Plant commuity C. This plant community is dominated by in the overstory with small Utah juniper trees or saplings. Low sagebrush and Sandberg bluegrass are the dominant species in the understory. Bluebunch wheatgrass , Idaho fescue, Nevada bluegrass, thickspike wheatgrass and Thurber needlegrass are present but in reduced amounts and typically in low vigor. Antelope bitterbrush, when present, is decadent and hedged. Cheatgrass and medusahead may have invaded the site. This state has developed due to improper grazing management and lack of fire. A western juniper seed source is in the proximity.

State 1, Plant community D. This plant community is dominated by bluebunch wheatgrass. Sandberg bluegrass and other perennial grasses and forbs are subdominant. Remnants of Idaho fescue, Nevada bluegrass and other fine-leaved grasses may be present. Cheatgrass and medusahead may have invaded the site. Root-sprouting shrubs such as rabbitbrush have increased. This plant community is a result of fire.

State 1, Plant community E. This plant community is dominated by low sagebrush in the overstory. Sandberg bluegrass is the dominant grass in the understory. Bluebunch wheatgrass, Idaho fescue and Nevada bluegrass are present but in reduced amounts and typically in low vigor. Antelope bitterbrush, when present, is hedged. This state has developed due to improper grazing management and a lack of fire. No juniper seed source is in the proximity.

State 2, Plant community A. This plant community is dominated by low sagebrush with Sandberg bluegrass and annuals in the interspaces. Cheatgrass and/or medusahead has invaded the plant community. This state has developed due to improper grazing management and the absence of fire. Significant soil loss has occurred. This site has crossed the threshold. It is usually uneconomical to return this community to State1 through accelerated practices.

State 2, Plant community B. This plant community is dominated by Sandberg bluegrass and other annuals and forbs. Root sprouting shrubs such as rabbitbrush are present. This state has developed

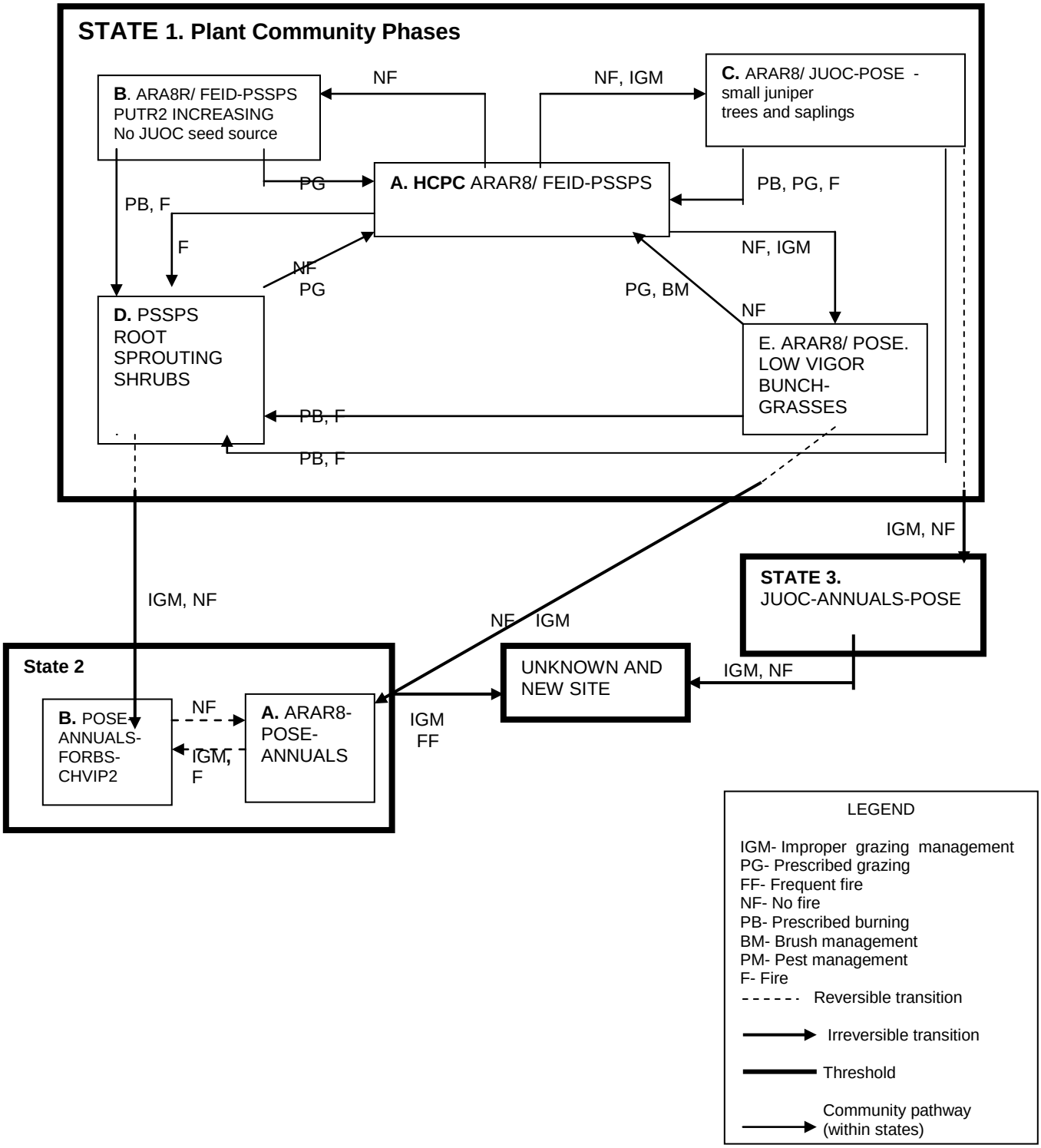
due to frequent fires and improper grazing management. Soil loss has occurred. This site has crossed the threshold. It is usually uneconomical to return this community to State 1 through accelerated practices.

State 3. This plant community is dominated by western juniper. Remnants of bluebunch wheatgrass, Idaho fescue, Thurber needlegrass and Nevada bluegrass can be found in the understory, often under trees. Shallow-rooted grasses, such as Sandberg bluegrass, and other annuals can be found in the interspaces. Few shrubs are present. Soil loss has occurred. This state has developed in the absence of fire. Generally, shrub cover is below 10-15%, bare ground is above 25-30% and Utah juniper cover is greater than 20%, the site is near or has crossed the threshold to this state. It is usually uneconomical to return this community to State 1 through accelerated practices.

Unknown new site. This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This state has developed due to continued improper grazing management and/or frequent fires or the continued absence of fire where a western juniper seed source is present. This unknown new site can be reached from State 3 with further dominance of the site by western juniper.
This site will not return to State 1 or 2 because of significant soil loss.

## State and transition model diagram:

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. The HCPC is Phase A. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".



## HCPC Plant Species Composition:

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 1 | Grasses & Grass-like | | | | |
| | | PSSPS | 20-30 | 88 | 238 |
| | | FEID | 20-30 | 88 | 238 |
| | SANDBERG BLUEGRASS | POSE | 2-5 | 12 | 33 |
| | | ELEL5 | 1-3 | 7 | 19 |
| | NEVADA BLUEGRASS | POSE | 2-5 | 12 | 33 |
| | | ELMA7 | 1-3 | 7 | 19 |
| | | ACTH7 | 1-3 | 7 | 19 |
| | | CAREX | T-1 | 1 | 10 |
| | | LECI4 | 0-2 | 0 | 10 |

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 2 | Forbs | | | | |
| | | BASA3 | 1-3 | 7 | 19 |
| | | BAHO | 1-3 | 7 | 19 |
| | | PHHO | T-2 | 1 | 14 |
| | | PHLO2 | 1-3 | 7 | 19 |
| | | ASTER | T-2 | 1 | 14 |
| | | LUPIN | T-2 | 1 | 14 |
| | | ERIOG | T-2 | 1 | 14 |
| | | HAPLO11 | T-2 | 1 | 14 |
| | | ASTRA | T-2 | 1 | 14 |
| | | ANTEN | T-2 | 1 | 14 |
| | | CRAC2 | 1-3 | 7 | 19 |
| | | ERIGE2 | T-2 | 1 | 14 |
| | | MERTE | T-2 | 1 | 14 |
| | | ANEMO | T-2 | 1 | 14 |
| | | LIRU4 | T-1 | 1 | 10 |
| | | CALCO | T-1 | 1 | 10 |

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 3 | Shrub/Vine | | | | |
| | | ARAR8 | 15-30 | 79 | 214 |
| | | ARARL | 0-5 | 0 | 24 |
| | | PUTR2 | T-1 | 1 | 10 |
| | | CHVIP2 | 1-3 | 7 | 19 |
| | | ERMI4 | T-2 | 1 | 14 |
| | | CHVIP | 0-1 | 0 | 5 |
| | | ERNA10 | 0-2 | 0 | 10 |
| | | CHVI8 | 0-1 | 0 | 5 |

ANNUAL PRODUCTION BY PLANT TYPE

| Annual Production lbs/ac | Low | RV | High |
|---|---|---|---|
| Grass and Grass-likes | 175 | 325 | 475 |
| Forbs | 70 | 130 | 190 |
| Shrubs | 105 | 195 | 285 |
| Total | 350 | 650 | 950 |

## Growth Curve:

Growth curve number: ID0910
Growth curve name: ARAR8/ PSSPS-FEID
Growth curve description: State 1

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 25 | 35 | 20 | 5 | 0 | 5 | 5 | 0 | 0 |

Growth curve number: ID0911
Growth curve name: POSE/BRTE-ANNUALS
Growth curve description: State 2 and State 3

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 5 | 25 | 40 | 15 | 0 | 0 | 5 | 5 | 5 | 0 |

## Ground Cover and Structure:

Ground cover by litter, rock and vegetation is 30-60 percent.

**Soil Surface Cover-**

Plant Basal Cover: no data
Microbiotic crusts: no data
Litter: no data
Surface Fragments: no data
Bare Ground: no data
Other: no data

**Ground Cover (Vertical view)-**

Plant Canopy Cover
(species or groups): no data
Microbiotic Crusts: no data
Litter: no data
Surface Fragments: no data
Bare Ground: no data

**Structure of Canopy Cover-**

Herbaceous: no data Height:1-1.5 ft.
Shrub: no data Height:1-2 ft.
Tree: None

# Ecological Site Interpretations:

## Animal Community.

### Wildlife Interpretations:

This site provides habitat for mule deer, pronghorn antelope, small game, sage grouse, small birds and rodents.

### Grazing Interpretations:

This site is suited for grazing by livestock in spring, early summer, and fall.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings

## Plant Preference by Animal Kind:

Plant list for Beef Cattle.

| |
|---|
| PSSPS |
| FEID |
| POSE |
| ELEL5 |
| POSE |
| ELMA7 |
| ACTH7 |
| BASA3 |
| BAHO |
| ARAR8 |
| PUTR2 |

Plant list for sheep, mule deer, and pronghorn antelope.

| |
|---|
| PSSPS |
| FEID |
| POSE |
| ELEL5 |
| POSE |
| ELMA7 |
| ACTH7 |
| BASA3 |
| BAHO |
| ARAR8 |
| PUTR2 |

## Hydrology Functions.

Soils on this site are in hydrologic group D.
Runoff potential is high.

## Recreational Uses.

The site provides colorful spring and early summer blooming forbs for photography and nature study.

## Wood Products

None

## Other Products

None

# Supporting Information

## Associated Sites

| | |
|---|---|
| Loamy 13-16” | ARTRV/ PSSPS- FEID |
| Shallow breaks14-18” | JUOC/ ARTRV/ FEID |
| Loamy bottom 12-16” | ARTRT/ LECI4 |
| Shallow claypan 11-13” | ARAR8/ PSSPS |
| South slope loamy 12-16” | ARTRV/ PSSPS |

## Similar Sites

| | |
|---|---|
| Shallow claypan 11-13” | ARAR8/ PSSPS |
| Clayey 12-15” | ARARL/FEID |
| Stony Clayey 12-16” | ARARL/ FEID |

## Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, State Rangeland Management Specialist, NRCS, Idaho

| Data Source | Number of Records | Sample Period | State | County |
|---|---|---|---|---|

## State Correlation
Correlated with NV-D25-17

## Type Locality

| | | |
|---|---|---|
| **State**:Idaho | **County**:Twin Falls | |
| **Township**:15S | **Range**:16E | **Section**: NENW, SEC. 20 |
| **State**:Idaho | **County**:Owyhee | |
| **Township**:10S | **Range**:2W | **Section**: NENE, SEC. 5 |
| **State**:Idaho | **County**:Owyhee | |
| **Township**:6S | **Range**:5W | **Section**: SESE, SEC. 23 |
| **State**:Nevada | **County**:Elko | |
| **Township**:39N | **Range**:53E | Taylor Canyon area |

**Is the type locality sensitive? (Y/N)**: No data **General Legal Description**:

## Field Offices
Marsing, ID
Twin Falls, ID
Mountain Home, ID
Ontario, OR

## Relationship to Other Established Classifications
Artemisia arbuscula/ Festuca idahoensis ht. in " Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush- Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35".

## Other References
Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush- Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov.). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

# Site Description Approval

| | |
|---|---|
| State Range Management Specialist | Date |
| State Range Management Specialist | Date |
| State Range Management Specialist | Date |

# United States Department of Agriculture
# Natural Resources Conservation Service

## Ecological Site Description

**Site Type:** Rangeland

**Site Name:** Very Shallow Stony Loam 10-14" ARAR8/POA-PSSPS

**Site ID:** R025XY044ID

**Major Land Resource Area:** D25

## Physiographic Features

This site occurs on undulating to hilly slopes that range from 3 to 25 percent. Aspect is variable. The elevation ranges from 4500-6000 feet (1372-1829 meters). These sites are associated with basalt and rhyolite tablelands and benches.

**Landform:** Mountain slopes, plateaus, benches

| | Minimum | Maximum |
|---|---|---|
| **Elevation (feet):** | 4500 | 6000 |
| **Slope (percent):** | 3 | 25 |
| **Water Table Depth (inches):** | | |
| **Flooding:** | None | None |
| **Frequency:** | | |
| **Duration:** | | |
| **Ponding:** | None | None |
| **Depth (inches):** | | |
| **Frequency:** | | |
| **Duration:** | | |
| **Runoff Class:** | Low | Very High |

**Aspect:** No influence to this site.

## Climatic Features

Annual precipitation averages about 10-14" (25-35 cm). Most of the effective precipitation is in the form of rain during the growing season. Summer rainfall usually comes as high intensity thunderstorms, but has little effect on annual production of forage. Plant growth usually begins as soon as snow pack melts (about April 15 to May 15) with grasses and forbs maturing by mid-July. The average frost-free period is 60-115 days.

| | Minimum | Maximum |
|---|---|---|
| **Frost-free period (days):** | | |
| **Freeze-free period (days):** | | |
| **Mean Annual Precipitation (inches):** | | |

**Average Monthly Precipitation (inches) and Temperature (ºF):**

| | Precip. Max. | Precip. Min. | Temp. Max. | Temp. Min. |
|---|---|---|---|---|
| January | | | | |
| February | | | | |
| March | | | | |
| April | | | | |
| May | | | | |
| June | | | | |
| July | | | | |
| August | | | | |
| September | | | | |
| October | | | | |
| November | | | | |
| December | | | | |

| Climate Stations | | Period | |
|---|---|---|---|
| **Station ID** | **Location or Name** | **From** | **To** |
| | | | |
| | | | |
| | | | |
| | | | |

For local climate stations that may be more representative, refer to http://www.wcc.nrcs.usda.gov.

## Influencing Water Features

This site is not influenced by adjacent wetlands, streams or run on.

**Wetland Description:** **System** **Subsystem** **Class** **Sub-class**
none

**Stream Type:** none

## Representative Soil Features

The soils supporting this site are very shallow to shallow, well or somewhat excessively drained, with moderate to slow permeability above bedrock. Runoff is low to very high. The erosion hazard is slight to moderate by water, and slight to by wind. The available water capacity is very low. These soils are usually less than 20 inches deep to bedrock. The surface texture is generally loam or coarse sandy loam with significant surface stones. The subsoil is usually moderately well developed (Nipintuck has no subsoil) with clay ranging from approximately 15 to 48 percent. These soils are characterized by limited AWC, aridic bordering on xeric soil moisture regime, and shallow restrictive layers. Soil temperature regime is either mesic or frigid.

### Soil Series Correlated to this Ecological Site

Bregar
Dougal
Loomis
Nipintuck

Site Type: Rangeland
MLRA: **R025XY044ID**
**Parent Material Kind**: Residuum
**Parent Material Origin:** Basalt, rhyolitic tuff
**Surface Texture:** Loam, coarse sandy loam
**Surface Texture Modifier:** Stony, very stony
**Subsurface Texture Group:**

| | Minimum | Maximum |
|---|---|---|
| **Surface Fragments ≤ 3" (% Cover):** | 0 | 16 |
| **Surface Fragments > 3" (%Cover):** | 0 | 30 |
| **Subsurface Fragments ≤ 3" (% Volume):** | 0 | 30 |
| **Subsurface Fragments > 3" (% Volume):** | 0 | 48 |
| **Drainage Class:** | Well | Somewhat excessive |
| **Permeability Class ( 0-10"):** | Slow | Moderate |
| **Depth (inches):** | 4 | 16 |
| **Electrical Conductivity (mmhos/cm)*:** | 0 | 0 |
| **Sodium Absorption Ratio*:** | 0 | 0 |
| **Soil Reaction (1:1 Water)*:** | 6.1 | 7.8 |
| **Soil Reaction (0.1M CaCl2)*:** | 0 | 0 |
| **Available Water Capacity (inches):** | 0.4 | 1.1 |
| **Calcium Carbonate Equivalent (percent)*:** | 0 | 0 |

* These are for the surface layer only.

## Plant Communities

**Ecological Dynamics of the Site:**
The dominant visual aspect of this site is mixed grass and low sagebrush. Composition by weight is approximately 65-75% grasses, 10-15% forbs and 15-20% shrubs.
In the last few thousand years, this site has evolved in an arid climate characterized by warm, dry summers and cold, wet winters. Herbivory has historically occurred on the site at low levels of utilization. Herbivores include pronghorn antelope, mule deer, sage grouse, lagomorphs and small rodents. Fire has historically occurred on this site every 100-125 years. Fire occurs only in years with above normal precipitation.

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. State 1, described later, indicates some of these phases. The traditional HCPC is Phase A. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".

The HCPC of this site is dominated by Sandberg bluegrass and low sagebrush. Subdominant species include bluebunch wheatgrass, Nevada bluegrass, bottlebrush squirreltail and Hooker balsamroot. Total annual production is 200 pounds per acre (224 Kg/ha) in a normal year. Production in a favorable year is 300 pounds per acre (336 Kg/ha). Production in an unfavorable year is 125 pounds per acre (140 Kg/ha). Structurally, cool season shallow rooted bunchgrasses are very dominant, followed by medium height shrubs and perennial forbs and deep rooted bunchgrasses are co-dominant.

Where bluebunch wheatgrass and Idaho fescue occur on this site, they are typically growing in an area with slightly deeper soils or in areas of more favorable moisture conditions.

**Rangeland Health Indicators**.

**Rills**: rarely occur on this site due to the gravelly and stony surface. If they do occur it will normally be on slopes greater than 10%.

**Water flow patterns**: are normally not present on this site. When they do occur they are short and disrupted by cool season grasses, shrubs and surface stones. They are not extensive.

**Pedestals**: can occur on the site. They are most likely to occur where water flow patterns are present and surface stones are absent.

**Bare ground**: ranges from 20-30 percent but more data is needed.

**Wind scour**: does not occur.

**Litter movement**: Fine litter moves by wind or water. Fine litter can move up to 2 feet after a strong summertime convection storm. Due to the flat slopes, large litter does not move.

**Soil surface stability**: Values should range from 4-6 but needs to be tested. The surface horizon is typically 2 to 4 inches thick. Structure typically includes moderate medium and thick platy, weak fine granular, and weak fine and medium subangular blocky. Soil organic matter (SOM) ranges from 1 to 2 percent.

**Effect of plant community on infiltration**: Bunchgrasses, especially deep rooted, slow runoff and increase infiltration. Shrubs accumulate some snow in the interspaces.

**Compaction layer**: is not present except under roads, livestock and ATV trails.

**Functional/structural groups**: Cool season shallow-rooted perennial bunchgrasses>> medium shrubs>perennial forbs=deep-rooted bunchgrasses.

**Plant mortality/ decadence**: Very little mortality or decadence is expected on this site. Mortality of shallow rooted grasses may occur due to extended periods of drought.

**Litter cover**: Additional data is needed but is expected to be low and at a shallow depth.

**Expected annual production**: is 200 pounds per acre (336 Kg/ha) in a year with normal precipitation and temperatures. Perennial grasses produce 65-75 percent of the total production, forbs 10-15 percent and shrubs 15-20 percent.

**Invasive and/or noxious species**: include cheatgrass, medusahead, Vulpia species, bulbous bluegrass and annual mustards**.**

**Perennial plants**: in all functional groups have the potential to reproduce in favorable years.

**Function.**

This site is best suited for livestock grazing in late spring and early fall. Natural water supplies are limited. This site provides fair to good habitat for various upland wildlife species. Mule deer, pronghorn, feral horses and sage grouse make use of the site throughout the year.
This site can be degraded easily by improper grazing management since slopes are moderate, allowing easy access. Inherent low production on the site makes it susceptible to accelerated degradation.
Early spring grazing by uncontrolled feral horses or cattle can cause severe damage to the understory if these animals are present when the soils are wet and trampling damage occurs.
Infiltration and production can be maintained with a mixed stand of , bunchgrasses and shrubs. Runoff potential is rapid to very rapid and the erosion hazard is moderate to high.

**Impacts on the Plant Community.**

Influence of fire:

This site historically had a very low fire frequency, approximately every 100-125 years. Most of the shrubs evolved in the absence of fire, therefore they can be severely damaged when burned. The small amount of Idaho fescue in the community can be lost with a fire. Rabbitbrush species can increase with fire. Cheatgrass and medusahead can be a troublesome invader on this site after fire, preventing perennial grass and shrub re-establishment and increasing the fire frequency. Sandberg bluegrass is usually maintained in the community.

Influence of improper grazing management:

Season-long grazing can be detrimental to this site. Excessive utilization is also detrimental. This type of management leads to reduced vigor of bluebunch wheatgrass and other deep- rooted perennial bunchgrasses. With reduced vigor, recruitment of these species declines. As these species decline, the plant community becomes susceptible to an increase in low sagebrush, Sandberg bluegrass and invasive weeds. Once Sandberg bluegrass becomes strongly dominant, reestablishment of more productive grasses such as bluebunch wheatgrass may take a long period of time and may even require thinning of low sagebrush. Continued improper grazing management influences fire frequency with an increase in cheatgrass and medusahead. Early spring grazing by uncontrolled feral horses or cattle can cause severe damage to the understory if these animals are present when the soils are wet and trampling damage occurs.

Weather influence:

Above normal precipitation in March, April and May can dramatically increase total annual production. These weather patterns can also increase viable seed production of desirable species to provide for recruitment. Extended periods of drought significantly impact this site due to the low water holding capacity and shallow soil. Extended drought reduces vigor of the perennial grasses and shrubs. Extreme drought may cause plant mortality.

Insects and disease:

Outbreaks can affect health of the vegetation. An outbreak of a particular insect is usually influenced by weather but no specific data is available for this site.

Influence of noxious and invasive weeds:

Annual and perennial weeds compete with desirable plants for moisture and nutrients. The result is reduced production and change in composition of the understory. Cheatgrass and medusahead can be a very invasive weed on this site, especially after fire. Once they become established the fire frequency increases. As a result, the shrub component can be lost.

Influence of wildlife:

Relatively low numbers of wildlife use this site and impact it little. Pronghorn antelope is the dominant large herbivore using the site. They use the site yearlong but prefer it in the spring, fall and early winter. Sage grouse use the site for strutting grounds. Sage grouse may also use the site during the winter. Winter and spring use by mule deer occasionally occurs.

Watershed:

Decreased infiltration and increased runoff on slopes greater than 10 percent occur when low sagebrush is removed with frequent fires, particularly following the fire event. The increased runoff also increases sheet and rill erosion. The long-term effect is a transition to a different state.

**Plant Community and Sequence**:

Transition pathways between common vegetation states and phases.

State 1.

Phase A to B. Develops with fire. Fire only occurs with above normal precipitation about every 100-125 years.
Phase A to C. Develops under improper grazing management and no fire.
Phase B to A. Develops under prescribed grazing management program and no fire.
Phase C to A. Develops from prescribed grazing management and no fire.

State 1, Phase B to State 2. Results from continued improper grazing management and/or frequent fire.

State 2 to Unknown Site. Excessive soil loss and changes in the hydrologic cycle caused by continued improper grazing management and fire causes this state to cross a threshold and retrogress to a new site with reduced potential.

## Practice Limitations.

Moderate limitations exist for implementing vegetation management practices. Early spring grazing should be avoided due to prolonged wetness in the soil. The stones on the surface and any associated outcrops inhibit animal movement. Moderate to severe limitations exist for implementing facilitating practices on this site. Shallow and stony soils and slopes greater than 20% present severe limitations for range seeding by ground moving equipment and is not generally economically feasible due to low production potential.

**Plant Community Narrative**:

State 1. Plant Community A. Historic climax plant community. The HCPC is dominated by Sandberg bluegrass and low sagebrush. Bluebunch wheatgrass is sub-dominant. Small amounts of Idaho fescue, bottlebrush squirreltail and Nevada bluegrass may be present. A large variety of forbs are present but each represents a small amount in the community. Other shrubs such as dwarf green rabbitbrush and antelope bitterbrush can be present in small amounts. The natural fire frequency is about 100-125 years.

State 1. Plant Community B. This plant community is dominated by bluebunch wheatgrass and Sandberg bluegrass. Small amounts of Idaho fescue, bottlebrush squirreltail, Nevada bluegrass, a variety of forbs, and dwarf green rabbitbrush can be present. This phase has developed due to fire.

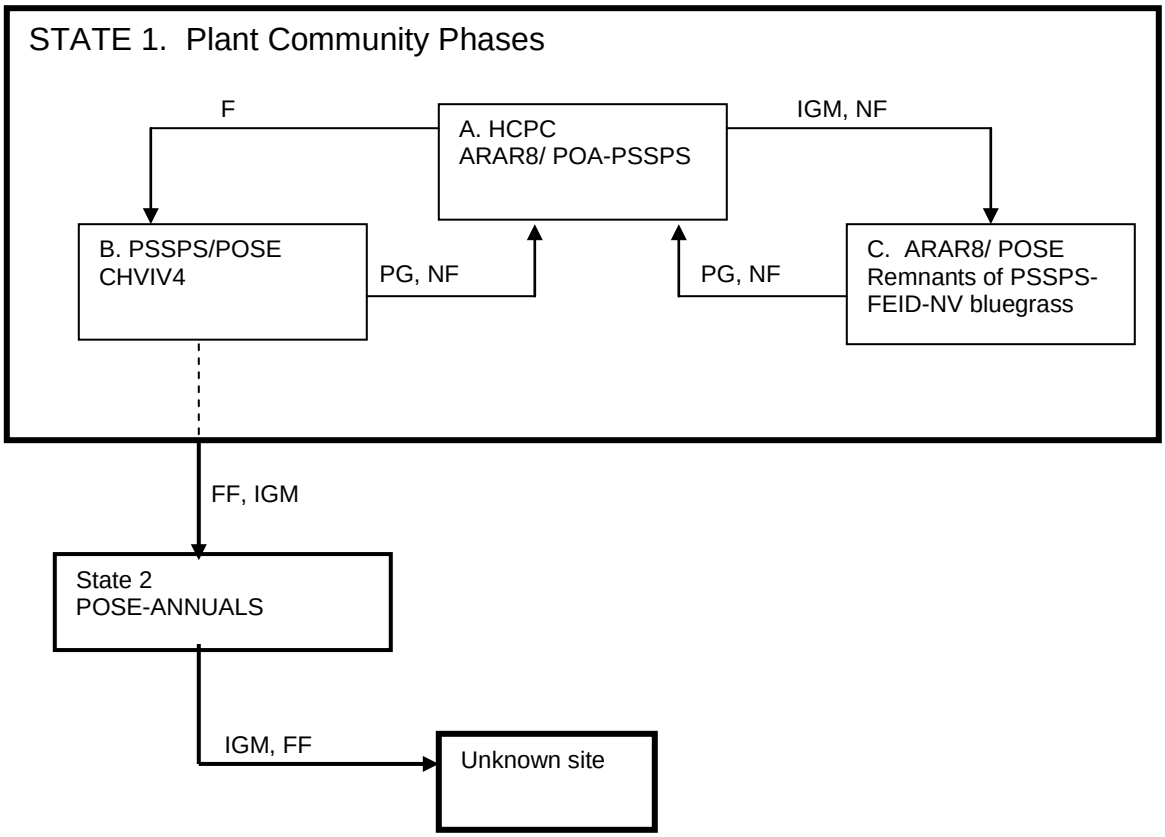
State 1, Plant Community C. This plant community is dominated by low sagebrush with Sandberg bluegrass in the understory. Bluebunch wheatgrass and other deep- rooted perennial bunchgrasses are present but in reduced amounts and in low vigor. This phase has developed due to improper grazing management and no fire.

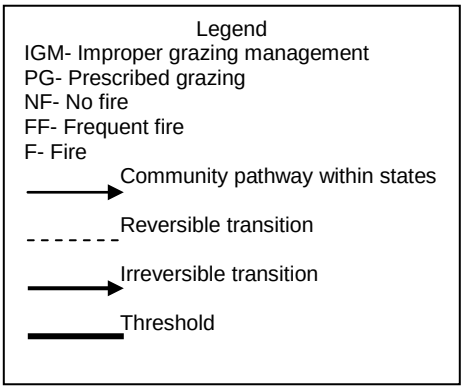
State 2. This plant community is dominated by Sandberg bluegrass, cheatgrass, medusahead and a variety of forbs. Some perennial forbs are present. The community has developed due to continued improper grazing management and fire. Some soil loss has occurred. The site has crossed the threshold. It is not economical to return this site to State 1 with accelerating practices.

Unknown Site. This plant community has gone over the threshold to a new site. Site potential has been reduced. Significant soil loss has occurred. Infiltration has been reduced and run-off has become more rapid. This community has developed due to continued improper grazing management and/ or fire.
The unknown new site may resemble Shallow breaks 14-18" JUOC/ ARTRV/ FEID when a juniper seed source is present.

## State and transition model diagram:

The Historic Climax Plant Community (HCPC) moves through many phases depending on the natural and man-made forces that impact the community over time. The traditional HCPC is Phase A. The plant species composition of Phase A is listed later under "HCPC Plant Species Composition".




## HCPC Plant Species Composition:

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 1 | Grasses & Grass-like | | | | |
| | | FEID | 0-2 | 0 | 3 |
| | | PSSPS | 5-8 | 8 | 20 |
| | SANDBERG BLUEGRASS | POSE | 30-40 | 44 | 105 |
| | | ELEL5 | T-2 | 1 | 5 |
| | NEVADA BLUEGRASS | POSE | 5-10 | 9 | 23 |

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 2 | Forbs | | | | |
| | | PHCH | T-1 | 1 | 3 |
| | | BAHO | 3-5 | 5 | 12 |
| | | POLYG | 1-3 | 3 | 6 |
| | | CASTI2 | T-1 | 1 | 3 |
| | | PHLOX | 1-3 | 3 | 6 |
| | STEMLESS GOLDENWEED | STAC | 1-5 | 4 | 9 |
| | | ASTRA | T-1 | 1 | 3 |
| | | ANTEN | 1-3 | 3 | 6 |
| | | ERCA2 | T-2 | 1 | 5 |
| | | AGOSE | T-2 | 1 | 5 |
| | | LOMAT2 | 1-3 | 3 | 6 |

| Group | Common Name/ Group Name | Symbol | % Comp. | Low Prod. | Hi Prod. |
|---|---|---|---|---|---|
| 3 | Shrub/Vine | | | | |
| | | ARAR8 | 5-10 | 9 | 23 |
| | | CHVIV4 | T-1 | 1 | 3 |
| | OWYHEE SAGEBRUSH | ARPA16 | 2-7 | 6 | 14 |
| | | PUTR2 | T-1 | 1 | 3 |

ANNUAL PRODUCTION BY PLANT TYPE

| Annual Production lbs/ac | Low | RV | High |
|---|---|---|---|
| Grass and Grass-likes | 88 | 149 | 210 |
| Forbs | 8 | 14 | 19 |
| Shrubs | 11 | 19 | 26 |
| Total | 107 | 181 | 255 |

**Growth Curve:**

Growth curve number: ID0910

Growth curve name: ARNO4/ ACTH7/ PSSPS
Growth curve description: STATE 1

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 10 | 25 | 35 | 15 | 5 | 0 | 5 | 5 | 0 | 0 |

Growth curve number: ID0911
Growth curve name: POSE/ BRTE- ANNUALS
Growth curve description: STATE 2

| JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 15 | 25 | 40 | 5 | 0 | 0 | 5 | 5 | 5 | 0 |

**Ground Cover and Structure:**
Ground cover by litter and vegetation is 20-35%.

**Soil Surface Cover-**

| | |
|---|---|
| Plant Basal Cover: | no data |
| Microbiotic crusts: | no data |
| Litter: | no data |
| Surface Fragments: | 30-50% |
| Bare Ground: | no data |
| Other: | no data |

**Ground Cover (Vertical view)-**

| | |
|---|---|
| Plant Canopy Cover (species or groups): | no data |
| Microbiotic Crusts: | no data |
| Litter: | no data |
| Surface Fragments: | no data |
| Bare Ground: | no data |

**Structure of Canopy Cover-**

| | | |
|---|---|---|
| Herbaceous: | no data | Height: 0.5-1.5 Feet |
| Shrub: | no data | Height:1-1.5 Feet |
| Tree: | none | |

# Ecological Site Interpretations:

## Animal Community.

## Wildlife Interpretations:

This site provides fair to good habitat for various upland wildlife species. Mule deer, pronghorn, feral horses and sage grouse make use of the site yearlong. Pronghorn antelope is the dominant large

herbivore that use the site. They use the site yearlong but prefer it in the spring, fall and early winter. Sage grouse use the site for strutting grounds. Winter and spring use by mule deer occasionally occurs.

## Grazing Interpretations:

This site is most suitable for livestock grazing in late spring and early fall. Natural water supplies are limited.

Estimated initial stocking rate will be determined with the landowner or decision-maker. They will be based on the inventory which includes species, composition, similarity index, production, past use history, season of use and seasonal preference. Calculations used to determine estimated initial stocking rate will be based on forage preference ratings

## Plant Preference by Animal Kind:

Plant list for Beef Cattle and Rocky Mountain Elk.

| |
|---|
| PSSPS |
| POSE |
| BAHO |
| POLYG |
| PHLOX |
| STAC |
| ANTEN |
| LOMAT2 |
| ARAR8 |
| ARPA16 |

Plant list for sheep, mule deer, and pronghorn antelope.

| |
|---|
| PSSPS |
| POSE |
| BAHO |
| POLYG |
| PHLOX |
| STAC |
| ANTEN |
| LOMAT2 |
| ARAR8 |
| ARPA16 |

## Hydrology Functions.

The soils on this site are in hydrologic group D. They have high run-off potential.

## Recreational Uses.

This site is used for hunting, horseback riding, and hiking. The site provides some diversity to the landscape. Colorful flowers blooming in the late spring and early summer provide excellent opportunities for photography and nature study.

## Wood Products

None

## Other Products

None

# Supporting Information

## Associated Sites

Shallow claypan 12-16" ARAR8/ FEID
Juniper savanna 10-14" JUOS/ PSSPS
Rock Outcrop

## Similar Sites

| | |
|---|---|
| Shallow claypan 12-16" | ARAR8/ FEID |
| Clayey 12-15" | ARARL/ FEID |
| Stony clayey 12-16" | ARARL/ FEID |
| Shallow calcareous loam 10-16" | ARNO4/ PSSPS |
| Very shallow stony 8-12" | ARNO4/ ACTH7 |
| Mountain ridge 14-18" | ARAR8/ FEID |
| Shallow claypan 11-13" | ARAR8/ PSSPS |

## Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. Those involved in developing this site description include

Dave Franzen, co-owner, Intermountain Rangeland Consultants, LLC

Jacy Gibbs, co-owner, Intermountain Rangeland Consultants, LLC

Jim Cornwell, State Rangeland Management Specialist, NRCS, Idaho

| Data Source | Number of Records | Sample Period | State | County |
|---|---|---|---|---|

## State Correlation
None

## Type Locality

**State**:Idaho **County**:Owyhee **Latitude**: **Longitude**

| **Township**: | **Range**: | **Section**: |
|---|---|---|
| 10S. | 5W. | SE4, SEC. 6 |
| 10S. | 6W. | NW4, SEC 24 |

**Is the type locality sensitive? (Y/N)**: No data **General Legal Description**:

## Field Offices
Marsing, ID
Twin Falls, ID
Mountain Home, ID
Ontario, OR

## Relationship to Other Established Classifications

Artemisia arbuscula/ Poa sandbergii HT in "Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush- Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35"

## Other References
Hironaka, M., M.A. Fosberg, A. H. Winward. 1983. Sagebrush- Grass Habitat Types of Southern Idaho. University of Idaho. Moscow, Idaho. Bulletin Number 35

USDA Forest Service, Rocky Mountain Research Station. 2004. Restoring Western Ranges and Wildlands. General Technical Report RMRS-GTR-136-vols. 1-3.

USDA, NRCS.2001. The PLANTS Database, Version 3.1 (http://plants.usda.gov.). National Plant Data Center, Baton Rouge, LA 70874-4490 USA

USDA, Forest Service, Fire Effects Information Database. 2004. www.fs.fed.us/database.

## Site Description Approval

_____ _____
State Range Management Specialist Date

_____ _____

Site Type: Rangeland
MLRA: **R025XY044ID**

State Range Management Specialist Date

_____ _____

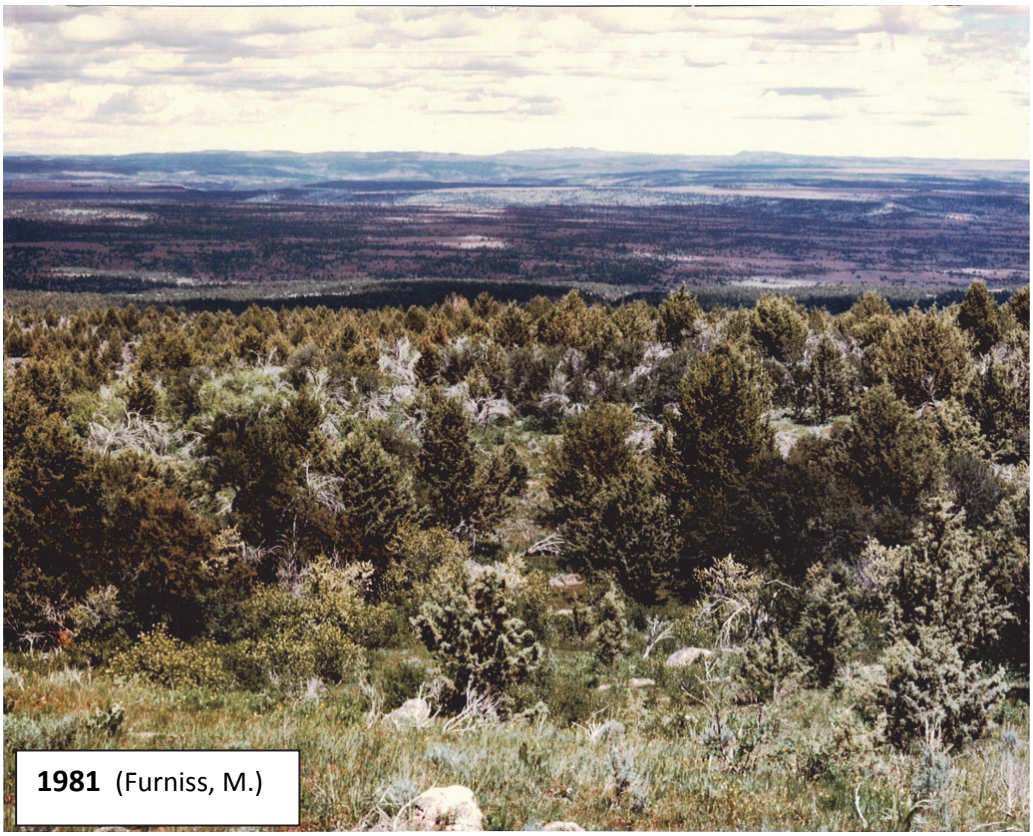
State Range Management Specialist Date

# Appendix I – Trout Springs Juniper Expansion Time Series Photography

**Appendix I.** Photo documentation of juniper expansion in the Juniper Mountain Area from 1963 to present. From: Furniss (1985).

Photo sequences are from three different locations.

*Sequence 1 – Facing East along Bedstead Ridge Rd.*



**1981** (Furniss, M.)

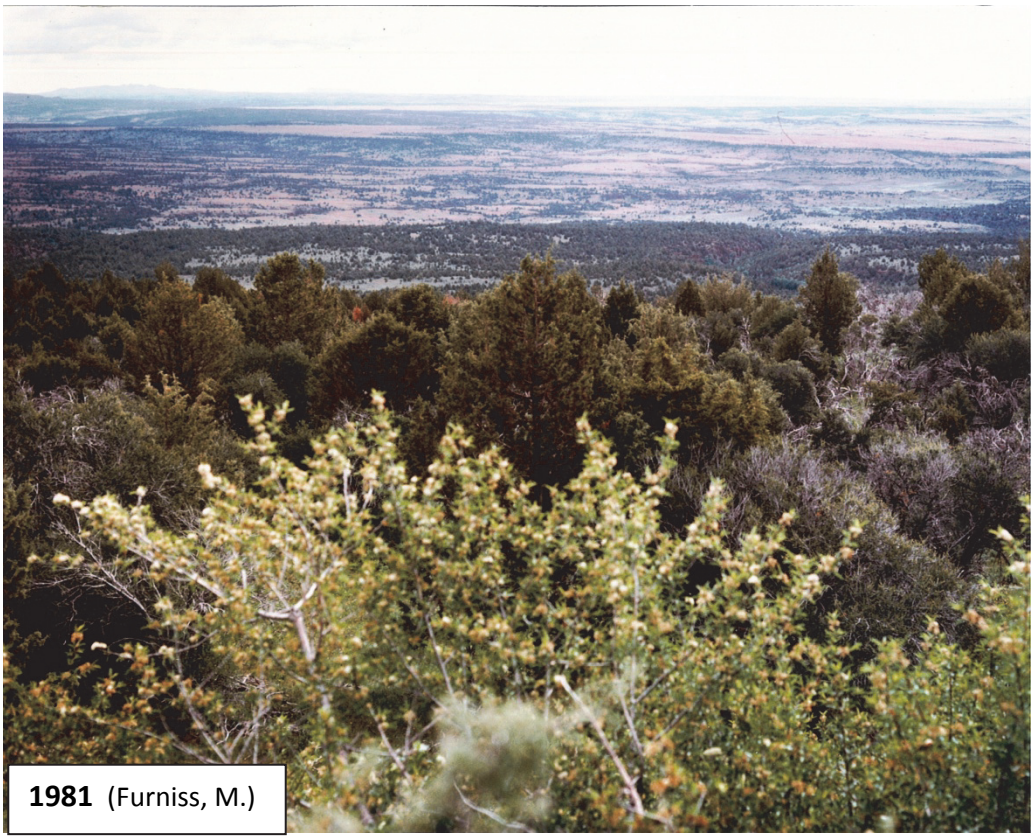
**2009** (BLM)

*Sequence 2 – Facing Northeast along Bedstead Ridge Rd.*

**1981** (Furniss, M.)

**2009** (BLM)

*Sequence 3 – Facing East along Bedstead Ridge Rd.*



**1981** (Furniss, M.)

**2009** (BLM)

# Appendix J – Special Status Animal Species

**Appendix J.** Special status wildlife species, status, and occurrence potential within the Trout Springs and Hanley FFR Allotments

| Species | Status[1]/Type[2] | Occurrence Potential[3] |
|---|---|---|
| Snake River Physa Snail<br>*Physa natricina* | ESA-E | Species not present due to lack of habitat |
| Columbia Spotted Frog<br>*Rana luteiventris* | ESA-C | Presence documented |
| Greater Sage-grouse<br>*Centrocercus urophasianus* | ESA-C | Presence documented |
| Yellow-billed Cuckoo<br>*Coccyzus americanus* | ESA-C | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Bald Eagle<br>*Haliaeetus leucocephalus* | BGEPA | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Golden Eagle<br>*Aquila chrysaetos* | BGEPA | Species may occur based on preferred habitat and/or nearby occurrences within 25 miles |
| Northern Leopard Frog<br>*Rana pipiens* | BLM/2 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Pygmy Rabbit<br>*Brachylagus idahoensis* | BLM/2 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Columbia River Redband Trout<br>*Oncorhynchus mykiss gibbsi* | BLM/2 | Presence documented |
| Black Tern<br>*Chlidonias niger* | BLM/3 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Brewer's Sparrow<br>*Spizella breweri* | BLM/3 | Presence documented |
| California Bighorn Sheep<br>*Ovis canadensis californiana* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| California Floater<br>*Anodonta californiensis* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Calliope Hummingbird<br>*Stellula calliope* | BLM/3 | Presence documented |
| Common Garter Snake<br>*Thamnophis sirtalis* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Ferruginous Hawk<br>*Buteo regalis* | BLM/3 | Species likely to occur based on preferred habitat and/or occurrences within 5 miles |
| Flammulated Owl<br>*Otus flammeolus* | BLM/3 | Presence documented |
| Fringed Myotis<br>*Myotis thysanodes* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Hammond's Flycatcher<br>*Empidonax hammondii* | BLM/3 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Lewis' Woodpecker<br>*Melanerpes lewis* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Loggerhead Shrike<br>*Lanius ludovicianus* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Longnose Snake<br>*Rhinocheilus lecontei* | BLM/3 | Species not present due to lack of habitat |
| Mojave Black-collared Lizard<br>*Crotaphytus bicinctores* | BLM/3 | Species not present due to lack of habitat |
| Mountain Quail<br>*Oreortyx pictus* | BLM/3 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |

| Species | Status[1]/Type[2] | Occurrence Potential[3] |
|---|---|---|
| Northern Goshawk<br>*Accipiter gentilis* | BLM/3 | Presence documented |
| Peregrine Falcon<br>*Falco peregrinus anatum* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Piute Ground Squirrel<br>*Spermophilus mollis artemisae* | BLM/3 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Prairie Falcon<br>*Falco mexicanus* | BLM/3 | Species likely to occur based on preferred habitat and/or occurrences within 5 miles |
| Sage Sparrow<br>*Amphispiza belli* | BLM/3 | Presence documented |
| Sharp-tailed Grouse<br>*Tympanuchus phasianellus columbianus* | BLM/3 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Spotted Bat<br>*Euderma maculatum* | BLM/3 | Presence documented |
| Townsend's Big-eared Bat<br>*Corynorhinus townsendii* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Western Ground Snake<br>*Sonora semiannulata* | BLM/3 | Species not present due to lack of habitat |
| Western Toad<br>*Bufo boreas* | BLM/3 | Species likely to occur based on preferred habitat and/or occurrences within 5 miles |
| Willow Flycatcher<br>*Empidonax trailii* | BLM/3 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Woodhouse's Toad<br>*Bufo woodhousii* | BLM/3 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Black-throated Sparrow<br>*Amphispiza bilineata* | BLM/4 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| California Myotis<br>*Myotis californicus* | BLM/4 | Species may occur based on preferred habitat and/or occurrences within 25 miles |
| Dark Kangaroo Mouse<br>*Microdipodops megacephalus* | BLM/4 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| Kit Fox<br>*Vulpes velox* | BLM/4 | Species not present due to lack of habitat |
| Little Pocket Mouse<br>*Perognathus longimembris* | BLM/4 | Species not present due to lack of habitat |
| Meriam's Ground Squirrel<br>*Spermophilus canus vigilis* | BLM/4 | Species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles |
| White-faced Ibis<br>*Plegadis chihi* | BLM/4 | Presence documented |
| Wyoming Ground Squirrel<br>*Spermophilus elegans nevadensis* | BLM/4 | Species may occur based on preferred habitat and/or occurrences within 25 miles |

[1]Status includes Candidate (ESA C) species listed under the Endangered Species Act (16 U.S.C. § 1531-1544), eagles (BGEPA) protected by the Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668d), and BLM Type 2 (BLM 2), Type 3, (BLM 3), and Type 4 (BLM 4) special status species (USDI BLM 2003). Additional designations under state and national conservation plans include Idaho Species of Greatest Conservation Need (SGCN; (IDFG 2006b)), Idaho Partners in Flight High Priority Breeding Bird (HPBB; (IPIF 2000)), and U.S. Fish and Wildlife Service Birds of Conservation Concern (BCC; (USDI USFWS 2008)).
[2]Type includes Rangewide/Globally Imperiled Species (2), Regional/State Imperiled Species (3), and Peripheral Species (4)
[3]Presence of habitat within project area was determined from Idaho Vertebrate Modeling Database (University of Idaho n.d.); Oregon Wildlife Viewer (Oregon State University n.d.); (Yensen and Sherman 2003); Idaho, Oregon and Nevada BLM unpublished data; and specialist expertise. Habitat descriptions modified from Idaho Vertebrate Modeling Database (University of Idaho n.d.).

# Appendix K – Migratory Bird Species

**Appendix K.** Migratory bird species with the potential to occur within the Trout Springs and Hanley FFR Allotments

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| American Avocet | *Recurvirostra americana* | S3 | Y | | Y | Y |
| American Coot | *Fulica americana* | | | | | |
| American Crow | *Corvus brachyrhynchos* | | | | | |
| American Dipper | *Cinclus mexicanus* | | Y | | | Y |
| American Goldfinch | *Carduelis tristis* | | | | | |
| American Kestrel | *Falco sparvarius* | | | | | |
| American Pipit | *Anthus rubescens* | | | | | |
| American Robin | *Turdus migratorius* | | | | | |
| American Widgeon | *Anas americana* | | | | Y | Y |
| Ash-throated Flycatcher | *Myiarchus cinerascens* | | | | | |
| Bank Swallow | *Riparia riparia* | | | | | |
| Barn Owl | *Tyto alba* | | | | | |
| Barn Swallow | *Hirundo rustica* | | | | | |
| Barrow's Goldeneye | *Bucephala islandica* | GAME | Y | | | Y |
| Belted Kingfisher | *Ceryle alcyon* | | | | | |
| Black Rosy-finch | *Leucosticte atrata* | S3 | Y | Y | | Y |
| Black-billed Magpie | *Pica pica* | | Y | | | |
| Black-capped Chickadee | *Poecile atricapilla* | | | | | |
| Black-chinned Hummingbird | *Archilochus alexandri* | | Y | | | |
| Black-crowned Night-Heron | *Nycticorax nycticorax* | S2B | | | | Y |
| Black-headed Grosbeak | *Pheucticus melanocephalus* | | | | | |
| Black-necked Stilt | *Himantopus mexicanus* | S3 | Y | | Y | Y |
| Black-throated Gray Warbler | *Dendroica nigrescens* | | Y | Y | | |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| Blue-winged Teal | *Anas discors* | | | | | Y |
| Bobolink | *Dolichonyx oryzivorus* | | | | | Y |
| Bohemian Waxwing | *Bombycilla garrulus* | | | | | |
| Bonaparte's Gull | *Larus phildelphia* | | | | | |
| Brewer's Blackbird | *Euphagus cyanocephalus* | | | | | |
| Broad-tailed Hummingbird | *Selasphorus platycercus* | | | | | |
| Brown Creeper | *Certhia americana* | | | | | |
| Brown-headed Cowbird | *Molothrus ater* | | | | | |
| Bufflehead | *Bucephala albeola* | | | | | Y |
| Bullock's Oriole | *Icterus bullocki* | | | | | |
| Bushtit | *Psaltriparus minimus* | | | | | |
| California Gull | *Larus californicus* | S2B | | | | Y |
| California Quail | *Callipepla californica* | GAME | | | | |
| Canada Goose | *Branta canadensis* | | | | | Y |
| Canvasback | *Aythya valisineria* | S2N | | | Y | Y |
| Canyon Wren | *Catherpes mexicanus* | | | | | |
| Caspian Tern | *Sterna caspia* | S2B | | | | Y |
| Cassin's Finch | *Carpodacus cassinnii* | | | | Y | Y |
| Cassin's Vireo | *Vireo cassinii* | | | | | |
| Cattle Egret | *Bubulcus ibis* | S2B | | | | Y |
| Cedar Waxwing | *Bombycilla cedrorum* | | | | | |
| Chipping Sparrow | *Spizella passerina* | | | | | |
| Chukar | *Alectoris chukar* | GAME | | | | |
| Cinnamon Teal | *Anas cyanoptera* | GAME | Y | | Y | Y |
| Clark's Grebe | *Aechmophorus clarkii* | S2B | | | Y | Y |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| Clark's Nutcracker | *Nucifraga columbiana* | | | | Y | Y |
| Cliff Swallow | *Hirundo pyrrhonota* | | | | | |
| Common Goldeneye | *Bucephala clangula* | | | | | Y |
| Common Loon | *Gavia immer* | S1B | | | Y | y |
| Common Merganser | *Mergus merganser* | | | | | |
| Common Nighthawk | *Chordeiles minor* | | | | | |
| Common Poorwill | *Phalaenoptilus nuttallii* | | | | | |
| Common Raven | *Corvus corax* | | | | | |
| Common Yellowthroat | *Geothlypsis trichas* | | | | | |
| Cooper's Hawk | *Accipiter cooperii* | | | | | |
| Cordilleran Flycatcher | *Empidonax occidentalis* | | | | | Y |
| Dark-eyed Junco | *Junco hyemalis* | | | | | |
| Double-crested Cormorant | *Phalacrocorax auritus* | | | | | |
| Downy Woodpecker | *Picoides pubescens* | | | | | |
| Dunlin | *Calidris alpina* | | | | | Y |
| Dusky Flycatcher | *Empidonax oberholseri* | | Y | | Y | Y |
| Eared Grebe | *Podiceps nigricollis* | | | Y | Y | Y |
| Eastern Kingbird | *Tyrannus tyrannus* | | | | | |
| Forster's Tern | *Sterna forsteri* | S1 | | | | Y |
| Franklin's Gull | *Larus pipixcan* | S2B | Y | | Y | Y |
| Gadwall | *Anas strepera* | | | | Y | Y |
| Grasshopper Sparrow | *Ammodramus savannarum* | S2B | Y | | | Y |
| Gray Flycatcher | *Empidonax wrightii* | N | Y | | Y* | |
| Gray Jay | *Perisoreus canadensis* | | | | | |
| Gray Partridge | *Perdix perdix* | GAME | | | | |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| Great Blue Heron | *Ardea herodias* | | | | | |
| Great Egret | *Ardea alba* | S1B | | | | |
| Great Horned Owl | *Bubo virginianus* | | | | | |
| Greater Yellowlegs | *Tringa melanoleuca* | | | | | Y |
| Green-tailed Towhee | *Pipilo chlorurus* | | | Y | Y | Y |
| Green-winged Teal | *Anas crecca* | | | | | Y |
| Hairy Woodpecker | *Picoides villosus* | | | | | |
| Hermit Thrush | *Catharus guttatus* | | | | | |
| Hooded Merganser | *Lophodytes cucllatus* | S2B | Y | | | |
| Horned Grebe | *Podiceps auritus* | S1 | | | | Y |
| Horned Lark | *Eremophila alpestris* | | | | | |
| House Finch | *Carpodacus mexicanus* | | | | | |
| House Wren | *Troglodytes aedon* | | | | | |
| Killdeer | *Charadrius vociferus* | | Y | | | Y |
| Lark Sparrow | *Chondestes grammacus* | | Y | | | |
| Lazuli Bunting | *Passerina amoena* | | | | | Y |
| Least Sandpiper | *Calidris minutilla* | | | | Y | Y |
| Lesser Goldfinch | *Carduelis psaltria* | S2 | | | | Y |
| Lesser Scaup | *Aythya affinis* | S3 | | | Y | Y |
| Lesser Yellowlegs | *Tringa flavipes* | | | | | Y |
| Lincoln's Sparrow | *Melospiza linconlnii* | | | | | |
| Long-billed Curlew | *Numenius americanus* | S2B | Y | Y | Y | Y |
| Long-billed Dowitcher | *Limnodromus scolopaceus* | | | | Y | Y |
| Long-eared Owl | *Asio otus* | | | | | |
| MacGillivray's Warbler | *Oporornis tolmiei* | | Y | | | Y |
| Mallard | *Anas platyrhynchos* | | | | Y | Y |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| Marbled Godwit | *Limosa fedoa* | S2 | | Y | | Y |
| Marsh Wren | *Cistothorus palustris* | | | | | |
| Merlin | *Falco comlumbarius* | S2B | | | | |
| Mountain Bluebird | *Sialia currucoides* | | | | Y | Y |
| Mourning Dove | *Zenaida macroura* | | | | | |
| Nashville Warbler | *Vermivora ruficapilla* | | | | | |
| Northern Flicker | *Colaptes auratus* | | | | | |
| Northern Harrier | *Circus cyaneus* | | | | | |
| Northern Pintail | *Anas acuta* | S2N | | | Y | Y |
| Northern Pygmy-owl | *Glaucidium gnoma* | | | | | Y |
| Northern Rough-winged Swallow | *Stelgidopteryx serripennis* | | | | | |
| Northern Saw-whet Owl | *Aegolius acadicus* | | | | | |
| Northern Shoveler | *Anas clypeata* | S2N | | | Y | Y |
| Northern Shrike | *Lanius excubitor* | | | | | |
| Orange-crowned Warbler | *Vermivora celata* | | | | | |
| Osprey | *Pandion haliaetus* | | | | | Y |
| Pied-billed Grebe | *Podilymbus podiceps* | | | | | |
| Pine Siskin | *Carduelis pinus* | | | | | |
| Red-breasted Nuthatch | *Sitta canadensis* | | | | | Y |
| Red-eyed Vireo | *Vireo olivaceus* | | | | | |
| Redhead | *Aythya americana* | GAME | Y | | Y | Y |
| Red-naped Sapsucker | *Sphyrapicus nuchalis* | | | | Y | |
| Red-necked Phalarope | *Phalaropus lobatus* | | | | Y | Y |
| Red-tailed Hawk | *Buteo jamaicensis* | | | | | |
| Red-winged Blackbird | *Aeglaius phoeniceus* | | | | | |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| Ring-billed Gull | *Larus delawarensis* | | | | | |
| Ring-necked Duck | *Aythya collaris* | | | | | Y |
| Rock Wren | *Salpinctes obsoletus* | | Y | | | |
| Rough-legged Hawk | *Buteo lagopus* | | | | | |
| Ruby-crowned Kinglet | *Regulus calendula* | | | | | |
| Ruddy Duck | *Oxyura jamaicensis* | S2N | | | Y | Y |
| Rufous Hummingbird | *Selasphorus rufus* | | Y | | Y | Y |
| Sage Thrasher | *Oreoscoptes montanus* | | Y | Y | Y | Y |
| Sandhill Crane | *Grus canadensis* | GAME | Y | | Y | Y |
| Savannah Sparrow | *Passerculus sandwichensis* | | | | | |
| Say's Phoebe | *Sayornis saya* | | | | | |
| Sharp-shinned Hawk | *Accipiter striatus* | | Y | | | |
| Short-eared Owl | *Asio flammeus* | S4 | Y | | | Y |
| Snow Bunting | *Plectrophenax nivalis* | | | | | |
| Snow Goose | *Chen caerulescens* | | | | | Y |
| Snowy Egret | *Egretta thula* | S2B | | | Y | Y |
| Song Sparrow | *Melospiza melodia* | | | | | |
| Sora | *Porzana carolina* | | | | | |
| Spotted Sandpiper | *Actitis macularia* | | | | Y | Y |
| Spotted Towhee | *Pipilo maculatus* | | | | | |
| Stellar's Jay | *Cyanocitta stelleri* | | | | | |
| Swainson's Hawk | *Buteo swainsoni* | S3B | Y | | Y | Y |
| Townsend's Solitaire | *Myadestes townsendi* | | | | | Y |
| Townsend's Warbler | *Dendroica townsendi* | | Y | | | Y |
| Tree Swallow | *Tachcineta bicolor* | | | | | |
| Tundra Swan | *Cygnus* | | | | | Y |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| | *columbianus* | | | | | |
| Turkey Vulture | *Cathartes aura* | | | | | |
| Vaux's Swift | *Chaetura vauxi* | | | | | Y |
| Veery | *Catharus fuscescens* | | | | | |
| Vesper Sparrow | *Pooecetes gramineus* | | | | | |
| Violet-green Swallow | *Tachycineta thalassina* | | | | | |
| Virginia Rail | *Rallus limicola* | | | | | |
| Warbling Vireo | *Vireo gilvus* | | | | | |
| Western Burrowing Owl | *Athene cunicularia* | S2 | | | | Y |
| Western Grebe | *Aechmophorus occidentalis* | S2B | Y | | Y | Y |
| Western Kingbird | *Tyrannus verticalis* | | | | | |
| Western Meadowlark | *Sturnella neglecta* | | | | | |
| Western Sandpiper | *Calidris mauri* | | | | Y | Y |
| Western Screech-Owl | *Otus kennicotti* | | | | | |
| Western Tanager | *Piranga ludoviciana* | | Y | | | Y |
| Western Wood-Pewee | *Contopus sordidulus* | | | | | |
| White-crowned Sparrow | *Zonotrichia leucophrys* | | | | | |
| White-headed Woodpecker | *Picoides albolarvatus* | S2 | Y | Y | Y | Y |
| White-throated Swift | *Aeronautes saxatalis* | | | | Y | |
| Willet | *Catoptrophorus semipalmatus* | | | | Y | Y |
| Wilson's Phalarope | *Phalaropus tricolor* | S3B | | | Y | Y |
| Wilson's Snipe | *Gallinago delicata* | | | | | Y |
| Wilson's Warbler | *Wilsonia pusilla* | | | | | |
| Wood Duck | *Aix sponsa* | | | | | Y |
| Yellow Warbler | *Dendroica petechia* | | Y | | | |

| Common Name | Species Name | ID SGCN[1] | HPBB[2] | BCC[3] | IWJV[4] | NABCI ID[5] |
|---|---|---|---|---|---|---|
| Yellow-breasted Chat | *Icteria virens* | | | | | |
| Yellow-headed Blackbird | *Xanthocephalus xanthocephalus* | | | | Y* | |
| Yellow-rumped Warbler | *Dendroica coronata* | | | | | |

[1]ID SGCN includes Idaho Species of Greatest Conservation Need with the following designations: S-State Rank, 1-critically imperiled, 2-imperiled, 3-rare, B-breeding population, N-nonbreeding population, and GAME - game bird (IDFG 2006b).
[2]HPBB includes Idaho Partners in Flight High Priority Breeding Bird species (IPIF 2000).
[3]BCC includes U.S. Fish and Wildlife Service Birds of Conservation Concern (USDI USFWS 2008).
[4]IMJV includes Intermountain West Joint Venture Continentally Important Species. Asterisk denotes that the species is not CIS in Intermountain West Avifaunal Biome.
[5]NABCI includes Continental and Regional Priority Bird Species of Idaho listed by North American Bird Conservation Initiative partners (North American Waterfowl Plan, U.S. Shorebird Conservation Plan, Partners in Flight, Waterbird Conservation for the Americas) under state and national conservation plans.

# Appendix L – Minimum Requirements Decision Guide, North Fork Wilderness Gap Fence

# MINIMUM REQUIREMENTS DECISION GUIDE
## WORKSHEETS

*". . . except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act..."*

– the Wilderness Act, 1964

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Project Title: **100ft Gap Fence - North Fork Owyhee Wilderness**

**Step 1:** Determine if any administrative action is <u>necessary</u>.

**Description:** Briefly describe the situation that may prompt action.

A range improvement project has been identified in the Trout Springs Allotment grazing permit renewal Environmental Assessment (EA). The range improvement would occur within the North Fork Owyhee River Wilderness and would be critical in protecting Outstandingly Remarkable Values (ORVs) within the wild river corridor. The improvement would consist of approximately 100ft of new construction of gap fence that would be installed along the top of the southern rim of the North Fork Owyhee River, which is a designated Wild River. The fence would restrict domestic livestock access into the river corridor and prevent any degradation of resources associated with livestock use, which is a historic use within the wilderness area, thus improving naturalness and scenic quality throughout the area. The fence would be constructed using native materials (ie. buck and pole and/or rock wall) under the minimum tool policy.

**A.** Describe Options Outside of Wilderness

Can the proposed action be accommodated or resolved by authorizing the activity outside of wilderness?

**Yes:** ☐ **No:** ☒

**Explain:**
The proposed action is not an activity that could occur outside of the wilderness area. The proposed action is an existing access point to the wild river corridor along the canyon rim of the

North Fork Owyhee River that is located within the Trout Springs Allotment. The construction of the gap fencing would eliminate livestock access to the river corridor and thus would protect the overall wilderness character and the ORVs of the "wild" river corridor. Grazing within the Trout Spring Allotment is a permitted use that is allowed within the wilderness area. Grazing within the wilderness area predates the actual designation of the North Fork Owyhee River Wilderness, thus making it an allowable grandfathered use.

**B1.** Describe Valid Existing Rights

Does the proposed action constitute or involve a valid existing right that BLM must recognize or for which BLM must take necessary action? Cite law and section.

**Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

**Explain:**

**B2.** Describe Special Provisions of Wilderness Legislation

Is there a special provision in wilderness legislation (the Wilderness Act of 1964 or subsequent wilderness laws) that allows consideration of actions involving prohibited uses, such as those described in Section 4(c) of the Wilderness Act? Cite law and section.

**Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

**Explain:**
Uses that would otherwise be prohibited in wilderness may be allowed in certain circumstances if they meet specific requirements.

Section 4 (c) of the Wilderness Act states that: "…there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area."

Section 4 (d)(4) of the Wilderness Act states that: "…the grazing of livestock, where established prior to September 3, 1964, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture [read *Interior*]."

Section 1503(2)(b)(3)(A) of the Omnibus Public Land Management Act of 2009 states that: "…the grazing of livestock in areas in which grazing is established as of the date of enactment of this Act shall be allowed to continue, subject to such reasonable regulations, policies, and practices as the Secretary considers necessary, consistent with section 4(d)(4) of the Wilderness Act (16 U.S.C. 1133(d)(4)) and the guidelines described in Appendix A of House Report 101-405."

Paragraph 5 of House Report No. 101-405: "…wilderness designation should not prevent the maintenance of existing fences or other livestock management improvements, nor the construction and maintenance of new fences or improvements"

Sec. 4 of House Report No. 101-405 states that: "…The construction of new improvements or replacement of deteriorated facilities in wilderness is permissible if in accordance with these

guidelines and management plans governing the area involved. However, the construction of new improvements should be primarily for the purpose of resource protection and the more effective management of these resources rather than to accommodate increased numbers of livestock."

## C. Describe Requirements of Other Legislation

Do other laws exist that may affect the proposed action or require BLM to take some administrative action?

**Yes:** ☐ **No:** ☒ **Not Applicable:** ☐

**Explain:**

## D. Describe Other Guidance

Would BLM's authorization of the proposed action conform to and implement BLM and DOI policy and direction, as well as unit and wilderness management plans, species recovery plans, tribal government agreements, state and local government and interagency agreements?

**Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

**Explain:**

Under Objective WNES 2, the 1999 Owyhee Resource Management Plan contains the following Management Action related to wilderness management:

> "Manage designated wilderness in accordance with enabling legislation and other applicable federal legislation and policies."

A Wilderness Management Plan has not as yet been completed for the affected area; therefore, we must rely on BLM's existing wilderness management policies and guidelines.

RECT 7 of the 1999 Owyhee RMP states: "…Prohibit the construction of new rangeland (livestock, watershed, and wildlife) facilities within the primitive settings of the SRMA lands associated with the Owyhee River system, except for a maximum of one linear mile of gap fences if needed to exclude livestock from river corridors."

Sec. .11of BLM Manual 8560 – Management of Designated Wilderness areas states that: "…BLM wilderness areas must be managed so as to be affected primarily by the forces of nature, with the imprint of human work substantially unnoticeable: so as to maintain the areas outstanding opportunities for solitude or primitive and unconfined recreation; and so as to protect any ecological, geological, or other features of scientific, educational, scenic, or historical value which the area may contain."

Sec. .13 of BLM Manual 8560 – Management of Designated Wilderness areas states that: "…Tools, equipment, or structures may be used for management when they are the minimum necessary for protection of the wilderness resource or when necessary in emergency situations for the health and safety of the visitor. Management must use the minimum tool, equipment, or structure necessary to successfully, safely, and economically accomplish the objective. The chosen tool, equipment, or structure should be the one that least degrades wilderness values temporarily or permanently."

Sec. .13 (a) of BLM Manual 8560 – Management of Designated Wilderness areas states that: "…Acceptable tools, equipment, and structures may include but are not limited to: fire towers, patrol cabins, pit toilets, temporary roads, spraying equipment, hand tools, fire fighting equipment caches, fencing, and controlled burning. In special or emergency cases involving the health and safety of wilderness visitors, or the protection of wilderness values, aircraft, motorboats, and motorized vehicles may be used."

Sec. .37(g)(3) of BLM Manual 8560 – Management of Designated Wilderness areas states that: "…new or existing improvements should be of materials which harmonize with the wilderness character…" and "Natural (native) materials must be used unless costs are unreasonable or they do not harmonize with the wilderness."

Section .51 (D) of BLM Manual 8351- Management of Wild and Scenic Rivers states that: "…Each component of the National Wild and Scenic Rivers System shall be administered in such a manner as to protect and enhance the values which caused it to be included in said system without, insofar as is inconsistent therewith, limiting other uses that do not substantially interfere with public uses and the enjoyment of these values. In such administration, primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features."

## **E.** Wilderness Character

Does BLM need to address the proposed action to preserve one or more of the following described wilderness characters?

**Untrammeled:** **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

**Explain:**

The gap fence itself would have some impact to the untrammeled characteristic by creating a "modern human control" within the wilderness. However, the gap fence would also eliminate domestic livestock from a larger portion of the wilderness and wild river corridor protecting the components of its ecological system. The grazing of domestic livestock would be considered an action by humans that can manipulate ecological systems. In this case, allowing livestock continued access into the wild river corridor would cause far greater degradation to wilderness characteristics and outstandingly remarkable values than a 100ft structure used to restrict livestock access and protect natural resources.

**Undeveloped:** **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

**Explain:**

The impact of the structure itself would be negligible due to the excellent topographic and vegetative screening within the area. However, the fence construction would contribute to a more developed condition and a slight adverse effect on wilderness character.

**Natural:** **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

**Explain:**

The small section of gap fencing would have a slight impact on the immediate areas naturalness by leaving an imprint of human work within the wilderness area. However, without the structure domestic livestock would have access to the wild river corridor and create a much more substantial impact or impairment to the river banks, riparian vegetation, and water quality in a much larger area. The fencing would eliminate this access point. Gap fencing would also be constructed using native materials in order to make the fence as unobtrusive as possible. The fencing would have a positive effect on a large portion of the wilderness area and wild river corridor overall as the areas naturalness and overall conditions throughout the river corridor improve due to restricted livestock access. The impact of the structure itself would be negligible due to the excellent topographic and vegetative screening within the area.

The gap fencing would be very beneficial to wilderness character and wild and scenic values as the fencing would prohibit livestock from accessing the North Fork Owyhee River corridor. Naturalness and the scenic quality values would benefit most from this proposed project as riparian vegetation improves. Much like wilderness characteristics, it's the BLM's responsibility to protect and enhance the ORVs of a wild and scenic river.

**Outstanding opportunities for solitude or a primitive and unconfined type of recreation:**

**Yes:** ☐ **No:** ☐ **Not Applicable:** ☒

**Explain:**

A 100ft gap fence in wilderness likely would not significantly alter these opportunities.

**Other unique components that reflect the character of this wilderness:**

**Yes:** ☒ **No:** ☐ **Not Applicable:** ☐

**Explain:**

The gap fence would be critical in protecting the scenic quality of the wild river corridor.
The fencing would have a positive effect on a large portion of the wilderness area and wild river corridor as overall conditions and scenic quality throughout the river corridor improve due to restricted livestock access. The impact of the structure itself would be negligible due to the excellent topographic and vegetative screening within the area.

## **F.** Describe Effects to the Public Purposes of Wilderness

Is the proposed action consistent with one or more of the public purposes for wilderness (as stated in Section 4(b) of the Wilderness Act) of recreation, scenic, scientific, education, conservation, and historical use?

**Recreation:** **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒
**Explain:**
A 100ft gap fence in wilderness likely would not significantly impact recreation opportunities.

**Scenic:** **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐
**Explain:**
The gap fence would be critical in protecting the scenic quality of the wild river corridor. The fencing would have a positive effect on a large portion of the wilderness area and wild river as overall conditions and scenic quality throughout the river corridor improve due to restricted livestock access. Riparian habitat, water quality, and river bank stabilization would greatly benefit from the fence construction. The impact of the structure itself would be negligible due to the excellent topographic and vegetative screening within the area.

**Scientific:** **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒
**Explain:**

**Education:** **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒
**Explain:**

**Conservation:** **Yes:** ☒ **No:** ☐ **Not Applicable:** ☐
**Explain:**
Gap fencing would be very beneficial to the conservation of natural resources within the wilderness area and wild river corridor. Without the structure domestic livestock would have access to the wild river corridor and create a much more substantial impact to the river banks, riparian vegetation, and water quality in a much larger area.

**Historical use:** **Yes:** ☐ **No:** ☐ **Not Applicable:** ☒
**Explain:**

**Step 1 Decision:** Does the proposed action require BLM to take any administrative action?

**Yes:** ☒ **No:** ☐ **More information needed:** ☐

**Explain:**
Administrative action is necessary, whether it is decided to construct the 100ft gap fence or to deny the proposed action. Mitigation measures are needed to protect wilderness character and ORVs throughout the area. The activity is identified as a prohibited use within the Wilderness Act. However, the proposed action is permissible through the Congressional Grazing Guidelines in House Report No. 101-405. These guidelines were identified in the 2009 Omnibus Public Land Management Act which designated this area as wilderness. The fence would also be in conformance with the Owyhee RMP RECT 7. Additionally the fence construction is permissible in BLM Manual 8560 – Management of Designated Wilderness Areas as well as Manual 8351 – Management of Wild and Scenic Rivers.

If administrative action is necessary, proceed to Step 2 to determine the minimum activity.

## **Step 2:** Determine the minimum activity.

**Description of Alternatives**

For each alternative, describe what methods and techniques will be used, when the activity will take place, where the activity will take place, what mitigation measures are necessary, and the general effects to the wilderness resource and character.

### Alternative # 1 - Proposed Action

**Description:**
Construct a 100ft gap fence within the wilderness using native materials to eliminate the access of domestic livestock into the wild river corridor.

**Effects: Wilderness Character**

> **Untrammeled - This quality is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness.**

The gap fence itself would have some impact to the untrammeled character by creating a "modern human control" within the wilderness. However, the gap fence would also eliminate domestic livestock from a larger portion of the wilderness and wild river corridor, thereby protecting the components of its ecological system. The grazing of domestic livestock is considered an action by humans that can manipulate ecological systems. In this case, allowing continued livestock access into the wild river corridor would cause far greater degradation to wilderness character and outstandingly remarkable values than a 100ft structure used to restrict livestock access and protect natural resources.

> **Undeveloped - This quality is degraded by the presence of structures, installations, habitations, and by the use of motor vehicles, motorized equipment, or mechanical transport that increases people's ability to occupy or modify the environment.**

Fence construction would contribute to a more developed condition and a slight adverse effect on wilderness character. However, the impact of the structure itself would be negligible due to the excellent topographic and vegetative screening within the area.

> **Natural - This quality is degraded by intended or unintended effects of modern civilization on the ecological systems inside the wilderness since the area was designated.**

The proposed gap fence would have a negligible effect on the area's naturalness due to the excellent topographic and vegetative screening. Without the structure domestic livestock would have access to the wild river corridor and create a much more substantial impact or impairment to the river banks, riparian vegetation, and water quality in a much larger area. Gap fencing

would be constructed using native materials in order to make the fence as unobtrusive as possible. The fencing would have a positive effect on a large portion of the wilderness area and wild river corridor overall as the areas naturalness and overall conditions throughout the river corridor improve due to restricted livestock access.

The gap fencing would be very beneficial to wilderness character and wild and scenic values as the fencing would prohibit livestock from accessing the North Fork Owyhee River corridor. Naturalness and scenic quality would benefit most from this proposed project as riparian vegetation improves.

**Outstanding opportunities for solitude or a primitive and unconfined type of recreation - This quality is degraded by settings that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, and management restrictions on visitor behavior.**

The proposed fence would have no effect on outstanding opportunities for solitude or primitive and unconfined recreation.

**Other unique components that reflect the character of this wilderness**

The gap fence would be critical in the conservation of wilderness and natural resources and protecting the scenic quality of the wild river corridor. The fencing would have a positive effect on a large portion of the wilderness area and wild river as overall conditions and scenic quality throughout the river corridor improve due to restricted livestock access. Riparian habitat, water quality, and river bank stabilization would greatly benefit from the fence construction. The impact of the structure itself would be negligible due to the excellent topographic and vegetative screening within the area.

**Heritage and Cultural Resources** –

The proposed fence would have no effect on heritage and cultural resources.

**Maintaining Contrast and Skills** –

Fence construction using non-motorized and non-mechanized methods would help to maintain wilderness construction skills.

**Special Provisions** -

See provisions listed in Step 1.

**Safety of Visitors, Personnel, and Contractors** –

The use of hand tools could entail some negligible safety concerns for personnel involved in the fence construction.

**Economic and Time Constraints** –

Costs associated with implementing the proposed alternative would be minimal. Construction of the gap fence would take a maximum of two days time by BLM personnel. The equipment needed to accomplish the task would also be minimal, as construction would utilize only hand tools, and native materials from the surrounding area.

The time constraints for the proposed action would be associated with the renewal of the permittee's authorization for livestock grazing within the allotment. Fence construction would need to be accomplished prior to the date in which cattle are authorized to graze.

**Additional Wilderness-specific Comparison Criteria** –

None Identified

## Alternative # 2 - Deny Proposed Action

**Description:**
The gap fence would not be constructed, and livestock would continue to access and degrade the wild river corridor.

**Effects:**

**Wilderness Character**

**Untrammeled -**

The grazing of domestic livestock is considered an action by humans that can manipulate ecological systems. In this case, livestock would be able to access the wild river corridor, which would adversely affect the functioning condition of the river, and thus degrade wilderness character and the wild river ORVs throughout the affected area.

**Undeveloped -**

There would be no impacted to the undeveloped character under this alternative.

**Natural -**

Livestock would have access to the wild river corridor and would substantially impact the natural character of the river corridor, affecting the river banks, riparian vegetation, and water quality throughout the corridor. Wilderness character and wild river ORVs would be degraded as livestock impact natural processes of the wild river corridor, affecting the functioning condition of the river itself.

**Outstanding opportunities for solitude or a primitive and unconfined type of recreation -**
This alternative would have no effect on outstanding opportunities for solitude or primitive and unconfined recreation.

**Other unique components that reflect the character of this wilderness -**

Conservation and scenic quality of the wilderness area and wild river corridor would be directly impacted as a result of this alternative, as water quality, river banks, and riparian vegetation continue to be degraded by livestock grazing throughout the corridor.

**Heritage and Cultural Resources –**

This alternative would have no effect on heritage and cultural resources.

**Maintaining Contrast and Skills** –

This alternative would have no effect on maintaining contrast and skills.

**Special Provisions** -

None identified.

**Safety of Visitors, Personnel, and Contractors** –

This alternative would have no impact on the safety of visitors, personnel, or contractors.

**Economic and Time Constraints** –

There would be no economic impacts or time constraints as a result of this alternative.

**Additional Wilderness-specific Comparison Criteria** –

None Identified.

## Alternative # 3 - Eliminate Grazing from Wilderness

**Description:**
A four mile-long fence would be constructed along the wilderness boundary to eliminate grazing from approximately 1,170 acres of the North Fork Owyhee wilderness area, which equates to approximately 100 AUMs. Grazing would continue throughout the remainder of the Trout Springs Allotment.

**Effects:**

**Wilderness Character**

**Untrammeled -**

The untrammeled nature of the wilderness area would be enhanced by the elimination of livestock grazing.

**Undeveloped -**

There would be no impacts to the undeveloped character under this alternative as fence construction would occur outside of the wilderness area.

**Natural -**

Naturalness throughout the formerly grazed portion of the wilderness area would be enhanced as upland and riparian vegetation condition improved due to the elimination of grazing.

**Outstanding opportunities for solitude or a primitive and unconfined type of recreation -**

There would be no impact to opportunities for solitude or primitive and unconfined recreation under this alternative.

**Other unique components that reflect the character of this wilderness -**

Conservation and scenic quality throughout the formerly grazed portion of the wilderness area would be enhanced as upland and riparian vegetation condition improves due to the elimination of grazing in wilderness.

**Heritage and Cultural Resources** –

This alternative would have no effect on heritage and cultural resources.

**Maintaining Contrast and Skills** –

This alternative would have no effect on maintaining contrast and skills.

**Special Provisions** -

None known

**Safety of Visitors, Personnel, and Contractors** –

When compared to a 100 fioot long fence, the construction of four miles of fence would entail higher safety risks for those involved with the construction.

**Economic and Time Constraints** –

There would be substantial economic impact associated with this alternative. Cadastral surveys would need to take place to determine the exact boundary of the wilderness area, materials purchased for approximately four miles of fence, contract crews hired for construction, etc. An even greater economic impact would be suffered from the permittee that was once allowed to graze the wilderness area within the Trout Springs allotment as 1,170 acres of forage would be lost.
This would require the permittee to either purchase additional feed or rent additional private pasture, or both.

Time constraints would also be a factor as surveys and construction would need to take place before the permitted grazing use began.

**Additional Wilderness-specific Comparison Criteria** –

None Identified

**Comparison of Alternatives**

It may be useful to compare each alternative's benefits and adverse effects to each of the criteria in tabular form, keeping in mind the law's mandate to "preserve wilderness character."

| | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Untrammeled | - + | - | + |
| Undeveloped | - | NE | NE |
| Natural | + | - | + |
| Solitude or Primitive Recreation | NE | NE | NE |
| Unique components | + | - | + |
| **WILDERNESS CHARACTER** | +1 | -3 | +3 |

| | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| Heritage & Cultural Resources | NE | NE | NE |
| Maintaining Traditional Skills | + | NE | NE |
| Special Provisions | NE | NE | NE |
| Economics & Timing | 0 | NE | - - |
| Additional Wilderness Criteria | NA | NA | NA |
| **OTHER CRITERIA SUMMARY** | +1 | 0 | -2 |

| | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|
| **SAFETY** (PUBLIC AND WORKERS) | 0 | NE | - |

**Safety Criterion**
Occasionally, safety concerns can legitimately dictate choosing one alternative which degrades wilderness character (or other criteria) more than an otherwise preferable alternative. In that case, describe the benefits and adverse effects in terms of risks to the public and workers for each alternative here but avoid pre-selecting an alternative based on the safety criteria in this section.

**Documentation:**
To support the evaluation of alternatives, provide an analysis, reference, or documentation and avoid assumptions about risks and the potential for accidents. This documentation can take the form of agency accident-rate data tracking occurrences and severity; a project-specific job hazard analysis; research literature; or other specific agency guidelines.

## **Step 2 Decision:** What is the Minimum Activity?

**Selected alternative:**
The Field Manager initiated a minimum tool analysis to evaluate the proposed 100ft gap fence within the North Fork Owyhee wilderness that would be used to restrict domestic livestock access into the wild river corridor. She determined that, according to the Congressional Grazing Guidelines and BLM Manual 8560, the construction of the gap fence was warranted, given that the primary purpose of the fence was for the protection of natural resources and the more effective management of the resources rather than to accommodate increased numbers of livestock.

While the effects of the various alternatives are not measured quantitatively, the analysis shows that qualitatively, the construction of the gap fence would be more beneficial to wilderness character and wild river ORVs than to allow livestock continued access into the wild river corridor. When the proposed action and two alternatives were evaluated against their impacts on wilderness character and values, the above Table shows the following:

| | Overall Effects | | Effects to Wilderness Character |
|---|---|---|---|
| Alternative 1: | positive effects | + 4 | + 3 |
| | negative effects | - 2 | - 2 |
| Alternative 2: | positive effects | + 0 | 0 |
| | negative effects | - 3 | - 3 |
| Alternative 3: | positive effects | + 3 | + 3 |
| | negative effects | - 3 | 0 |

The overall effects of each of the three alternatives include potential impacts to wilderness character, effects to wilderness public purposes, and public and worker safety. Potential impacts to wilderness character are, of course, weighted more heavily than other impacts because the Wilderness Act directs BLM to "preserve wilderness character." Thus, there has to be some overwhelming reason to select an alternative other than the one that best protects wilderness character.

Alternative 1 is selected as the preferrred alternative. The overall benefits to wilderness character and natural resources are the same or similar as those resulting from Alternative 3, but Alternative 1 does not include the substantial economic impacts and timeframes associated with Alternative 3. Impacts to the undeveloped character would be negligble due to the excellent topographic and vegetative screening of the area. The structure would only be noticable to a visitor in the immediate area of the fence.

While Alternative 3 is purely beneficial and poses no impacts to wilderness character, this alternative is inconsistent with the Wilderness Act or the Omnibus Public Land Act since it would eliminate grazing from the North Fork Owyhee Wilerness, which is an allowable grandfathered use. This alternative would also have the most impact economically and would be the most time sensitive. Although the 100 ft gap fence would not be constructed in Alternative 2, wilderness character and wild river ORVs would be degraded from continued

livestock use of the river corridor. Stream banks, riparian habitat, and water quality within the wild river corridor would all be adversly affected under Alternative 2.

**<u>Rationale</u> for selecting this alternative (including safety criterion, if appropriate):**
The Owyhee Field office is seeking to protect wilderness character and ORVs from livestock impacts within the North Fork Owyhee Wild River corridor. The mitigation measures should be consistent with the Wilderness Act and Omnibus Public Land Act in that they protect wilderness character while at the same time allow for grazing, a grandfathered use, to continue within wilderness. The Congressional Grazing Guidelines provide land managers with a tool that accomplishes both. The guidelines provide for a possible exception that would allow for the small structure to be constructed within wilderness, so long as the structure is for the primary purpose of natural resource protection and the more effective management of those resources.

Although the fence construction would slightly impact the area's naturalness in the immediate area of the fence (100ft), this impact would be considered negligible due to the small stature of the structure and the excellent topographic and vegetative screening throughout the area. The structure would only be visible in the immediate area and would not impair wilderness character. In the long-term, the conservation and protection of the area's riparian habitat, stream banks, water quality, and other natural resources would be extremely beneficial to naturalness and scenic quality within the wilderness. Overall this small structure would enhance wilderness character and the outstandingly remarkable values throughout the wilderness and wild river corridor. The benefits to the wilderness area and wild river corridor far outweigh and the minimal impacts associated with the 100ft fence. The selected alternative would also be cost efficient and timely and would have no impacts to cultural resources, traditional skills, or safety to visitors of the area.

**Monitoring and reporting requirements**:

**Check any Wilderness Act Section 4(c) uses approved in this alternative**:

- ☐ mechanical transport
- ☐ motorized equipment
- ☐ motor vehicles
- ☐ motorboats
- ☐ landing of aircraft
- ☐ temporary road
- ☒ structure or installation

Record and report any authorizations of Wilderness Act Section 4(c) uses according to agency procedures.

| **Approvals** | Signature | Name | Position | Date |
|---|---|---|---|---|
| Prepared by: | /s/ Ryan Homan | Ryan Homan | Outdoor Recreation Planner | 7/9/2012 |
| Recommended: | | | | |
| Recommended: | | | | |
| Approved: | /s/ Loretta V. Chandler | Loretta V. Chandler | Owyhee Field Office Manager | 7/9/2012 |

# Appendix M – Plant Names

**Appendix M.** Plant species names for common names used in the Trout Springs EA

| **Common Name** | **Scientific Name** |
|---|---|
| aspen | *Populus tremuloides* |
| Bacigalupi's downingia | *Downingia bacigalupii* |
| bitter cherry | *Prunus emarginata* |
| bitterbrush | *Purshia tridentata* |
| bluebunch wheatgrass | *Pseudoroegneria spicata* |
| bulbous bluegrass | *Poa bulbosa* |
| Canada thistle | *Cirsium arvense* |
| ceanothus | *Ceanothus velutinus* |
| cheatgrass | *Bromus tectorum* |
| chokecherry | *Prunus virginiana* |
| crested wheatgrass | *Agropyron cristatum* |
| curl-leaf mountain mahogany | *Cercocarpus ledifolius* |
| currant | *Ribes spp.* |
| dimeresia | *Dimeresia howellii* |
| diverse-leaved pondweed | *Potamogeton diversifolius* |
| Idaho fescue | *Festuca idahoensis* |
| intermediate wheatgrass | *Thinopyrum intermedium* |
| Japanese/field brome | *Bromus arvensis* |
| leafy spurge | *Euphorbia esula* |
| low sagebrush | *Artemisia arbuscula* |
| meadow foxtail | *Alopecurus pratensis* |
| medusahead | *Taeniatherum caput-medusae* |
| mountain big sagebrush | *Artemisia tridentata ssp. vaseyana* |
| Mud Flat milkvetch | *Astragalus yoder-williamsii* |
| needlegrass | *Achnatherum spp.* |
| Oregon grape | *Mahonia repens* |
| prickly lettuce | *Lactuca serriola* |
| rabbitbrush | *Chrysothamnus & Ericameria spp.* |
| rabbitbrush goldenweed | *Ericameria bloomeri* |
| Russian knapweed | *Acroptilon repens* |
| Sandberg bluegrass | *Poa secunda* |
| serviceberry | *Amelanchier alnifolia* |
| short-lobed penstemon | *Penstemon seorsus* |
| smooth brome | *Bromus inermis* |
| snowberry | *Symphoricarpos oreophilus* |
| squirreltail | *Elymus elymoides* |
| sulfur cinquefoil | *Potentilla recta* |
| thinleaf goldenhead/one-flowered goldenweed | *Pyrrocoma linearis/Haplopappus uniflorus var. howellii* |
| western juniper | *Juniperus occidentalis* |
| whitetop | *Cardaria draba* |
| wild rose | *Rosa woodsii* |
| willow | *Salix spp.* |
| ventenata | *Ventenata dubia* |

Nomenclature reference: USDA, NRCS PLANTS database as of July 2010

# Appendix N – Response to Draft Environmental Assessment Comments

Trout Springs and Hanley FFR Permit Renewal EA
DOI-BLM-ID-B030-2009-0030-EA
Response to Comments on the 7/12/2012 Draft EA
April 2013

Comments were received from the following:

1. Idaho Department of Fish and Game, Southwest Region (IDFG)
2. Owyhee Range Service (on behalf of Hanley Ranch Partnership) (HRP)
3. Ted and Dorothy Payne
4. Brett Nelson
5. Western Watersheds Project (WWP) – Katie Fite

The following guidelines were used by Owyhee Field Manager and Pole Creek Allotment Interdisciplinary (ID) Team in considering, reviewing, and responding to Draft Environmental Assessment (EA) comments. Relevant comments were either:

1) considered pertinent suggestions which could be incorporated into the alternatives;
2) considered as Other Alternatives Considered, but not analyzed;
3) considered as issues to be addressed in the effects analysis;
4) considered as indicators of where BLM needed to provide better clarification in the environmental assessment; or,
5) considered concerns in which BLM provided a specific response, in this Appendix.

Comments are separated and responded to, by commenter, in the order listed above.

## Idaho Department of Fish and Game

**1. Comment:** The availability of forage, particularly forbs, is important for providing quality habitat for mule deer on summer range. The Department recommends that grazing use levels do not exceed 35%. This is particularly important when approaching plant senescence as there is limited opportunity for recovery of plant height. We refer the BLM to Holechek et al (1989) which recommends livestock utilization levels do not exceed 25-35% in arid regions of the intermountain west (Chapter 8, page 192). Other literature suggests livestock utilization should not exceed 30-35% for improvement of rangeland vegetation (Holechek et al. 1999).

**BLM Response:** BLM does not dispute the importance of forage, especially forbs, for wildlife. The BLM addresses existing conditions relative to mule deer (Section 3.4.1) and also discusses the effects of the alternatives on mule deer habitat (Section 3.4.2). BLM also found that the purpose and need for the action was consistent with the objectives and management actions in the North American Mule Deer Conservation Plan (Section 1.7.4).

The grazing rotations described in the alternatives allows for improvement of vegetation by providing deferment or rest from grazing. In addition, Alternative E considers a 40% upland use level. The BLM has determined that these actions will move vegetation toward meeting Standards and will therefore, provide for vegetation recovery. Additionally, the Wildlife Biologist determined that vegetation conditions were adequate for mule deer (see sections referenced above). The 1999 Owyhee Resource Management Plan (ORMP) establishes utilization levels for allotments that have deferred or rest rotations systems (50% use) and for allotments that are grazing during the critical (active) growth period every year (40% use). These use levels were established to provide for a sustained level of livestock use compatible with meeting other resource objectives, including wildlife (ORMP, LVST 1 p. 23). For these reasons, the BLM did not consider use levels other than those discussed in the alternatives.

**2. Comment:** The Department recommends that treated areas be top-seeded with a sagebrush/forb/grass mix during the winter immediately following treatment if initial treatments do not produce desirable results in understory vegetation.

**BLM Response:** As identified in the EA (section 2.2.4), juniper treatment would occur in areas where good herbaceous plant recovery is expected, based on the soil types, precipitation zone, and existing plant composition. Therefore, large-scale post-fire broadcast seeding is not planned. As described in the EA (Section 3.2.1), the nearby Crutcher Fire, which burned in 2007, provides a good representation of expected recovery and demonstrates that even in areas mapped as Phase 3 juniper and with the severe fire effects of a wildfire, these areas are well within the recovery threshold once juniper is removed. Seeding is provided for in the Standard Operating Procedures (SOPs) (Section 2.2.4) in areas that are disturbed, such as in fire breaks or other unplanned disturbed areas.

**3. Comment:** The Department recommends the following guidelines be used when constructing new fences near sage grouse leks and other important habitat areas:

- Avoid new fences within one kilometer of occupied leks;
- Mark key sections of fence to reduce impacts;
- Careful consideration should be given to important seasonal habitat areas, such as brood rearing areas, wintering areas, etc.

**BLM Response:** These guidelines are consistent with Boise District Office fence specifications and would be followed for new fence construction.

**4. Comment:** We recommend evaluating the potential of fencing particularly fragile portions of riparian areas to protect and enhance riparian plant production and prevent streambank degradation.

**BLM Response:** The EA proposes several projects that would protect fragile riparian systems (Section 2.2.3). The Cottonwood Headwaters Exclosure would provide protection to the headwaters of Cottonwood Creek; excluding livestock from the area would prevent excessive bank sloughing from hoof impacts and allow deep-rooted riparian vegetation currently present to increase and eventually stabilize the area. The North Fork Owyhee River Buck and Pole Gap Fence would eliminate livestock access to the North Fork Owyhee River.

**5. Comment:** Although the EA does not analyze potential effects to bighorn sheep as a result of the proposed project, the Department believes that sheep habitat will benefit from juniper treatments, as identified in the Department's Bighorn Sheep Management Plan (IDFG 2010).

**BLM Response:** Sections 3.4.1 and 3.4.2.2 have been updated to analyze potential effects to bighorn sheep as a result of the proposed juniper treatments.

**2. Owyhee Range Service (on behalf of HRP)**

**1. Comment:** The EA attempts to provide a discussion as to the permit status as to Hanley Ranch Partnership (HRP). However, this discussion is incomplete and omits correctly identifying the Preference Status for HRP and for Payne within the Trout Springs Allotment.

**BLM Response:** The BLM acknowledges that HRP may still retain preference status. A discussion of the entity that holds preference is not relevant to the analysis.

**2. Comment:** This table [Table 1.1] needs some clarification as to who owns what… Since the pasture configurations are different among some alternatives the EA should provide accurate acreage and ownership information for each pasture for each different configuration. This information is needed to properly evaluate the differences in timing and amount of use proposed for each pasture in each alternative. The difference in pasture designation among alternatives also needs to be fully explained (see maps 2 and 5).

**BLM Response:** Section 1 has been updated to address this comment. Table 1.1 has been added and Table 1.2 has been updated to reflect acreages for all pastures.

**3. Comment:** The referenced map 4 clearly shows a great deal more than 42% of the allotment in Phase 3. Map 4 shows at least 60% of the allotment in Phase 3. If the values in the 2005 study have been updated or otherwise modified the EA should explain how that was done or otherwise explain the difference.

**BLM Response:** The figures in the EA have been corrected, and now indicate 69% of the Trout Springs Allotment in Phase 3, 24% in Phase 2, and only 7% in Phase 1, which more closely match Map 4. The reference has also been clarified.

**4. Comment:** Clearly, a "Need for and Purpose of Action" for any final EA must be the immediate treatment of juniper on at least the Trout Springs Allotment.

**BLM Response:** The Need for and Purpose of Action (Section 1.2) clearly identify juniper treatment as a needed action. In fact, item 3 in that section discusses that juniper treatment is needed here and now to address land health issues.

**5. Comment:** As to the "recent past livestock grazing" any RHS determination is suspect, given that the most recent determination was pre-2002, i.e. 10-years ago, and BLM issued a decision in 2002 to make significant progress in meeting applicable RHS standards. Moreover, due to disputed BLM decision-making, no livestock use has occurred on the public land pastures within the Trout Springs allotments since 2008, which would further implicate any "recent" RHS determination.

**BLM Response:** Appendix A of the EA contains rangeland health evaluations and determinations for the allotments. The evaluation and determination for the Trout Springs allotment was updated in July 2012 to include monitoring data that had been collected through 2008 and discusses the implications of no authorized livestock grazing on the allotment since 2008 (with the exception of Pasture 4, which was being grazed in conjunction with adjacent private property that is not fenced separately. The evaluation and determination for the Hanley FFR was completed in September 2010.

**6. Comment:** Not withstanding the foregoing, the EA does not address the relative impacts associated with the two alleged causal factors. Given that approximately 60% of the allotment is advanced to Phase 3 juniper woodland, no grazing management action or even livestock removal would by itself be expected to result in achievement of all Range Health Standards or is showing measurable progress toward the RHS throughout the allotment.

Alternatively, the proposed juniper treatment would result in significant progress even if grazing management did not changed…. It is neither rational nor credible to presume grazing management is a significant factor when complete removal of grazing would not meet or even make progress toward meeting all RHS throughout the allotment absent juniper treatment.

**BLM Response:** The BLM acknowledges in its Need for and Purpose of Action that "land health standards cannot be met unless vegetative treatments are implemented" (section 1.2). The Evaluation and Determination identifies juniper expansion as a causal factor in not meeting

Standards 1, 4 and 8, and grazing as a causal factor for not meeting all applicable Standards (1, 2, 3, 4, 7 and 8). Therefore, throughout the Affected Environment and Environmental Consequences sections of the EA the BLM discusses the impacts to various resources from livestock grazing and juniper expansion/treatment.

**7. Comment:** Notably absent from the listed considerations is the socio-economic impact of the intended action upon HRP and upon Owyhee County. NEPA requires an analysis of such impact and expects consideration of such findings in making decisions.

**BLM Response:** Socio-economic impacts are analyzed in Section 3.11 of the EA. While Section 1.3 – The Decision to be Made does not specifically identify permittee and county economics as an individual factor, it is clear that these factors are addressed in the EA and will be considered when making a final decision. The Taylor Grazing Act, as discussed in the Owyhee Resource Management Plan (ORMP; p. 23), directs stabilization of the livestock industry dependent on public lands. Section 1.2 – Need for and Purpose of Action directs that the BLM respond in accordance with both the Taylor Grazing Act and the ORMP; thus as the Decision to be Made will be consistent with the purpose and need, the socio-economic impacts to HRP and Owyhee County will be considered in the final decision.

**8. Comment:** This alternative [Alternative A] does not factually represent the current situation or current management.

**BLM Response:** See Section 1.7.2 of the EA for a discussion on why Alternative A is considered current situation or management.

**9. Comment:** Furthermore, this alternative is not comparable to other alternatives nor does it provide a valid benchmark without the juniper treatment program. Grazing management alone cannot and will not overcome the negative impact of juniper woodland development even with complete removal of livestock.

**BLM Response:** See BLM Response to comment #6. Because livestock grazing is a causal factor in not meeting all applicable standards on the Trout Springs Allotment and Standards 4 and 8 on the Hanley FFR allotment, BLM determined that this alternative is appropriate to use in establishing a benchmark.

**10. Comment:** This project [North Fork Owyhee River Buck and Pole Gap Fence] appears to result in the closure of the historic Grasshopper trail that stretches from Jordan Valley to Nevada and is still used for livestock movement from private ranch property north of the river to ranch properties south of the river and should remain open.

**BLM Response:** This gap fence will be constructed with a gate at the actual trail. The intent of the gap fence is to eliminate cattle access to the North Fork Owyhee River while they are on the allotment. This river corridor is outside of the allotment boundary and livestock grazing is not authorized there. The BLM is unaware of any trailing along the described route; any trailing proposed on BLM land along the described route would require application for and approval from the BLM prior to trailing.

**11. Comment:** The contention that the level and manner of grazing is the sole factor responsible for the current conditions is an indefensible and extreme exaggeration and totally ignores the huge effects of juniper encroachments. (See EA appendix J)

The characterization of alternative A as the **No Action alternative** is not factual. In addition to being the wrong current situation the description of alternative A misrepresents the actual grazing management that has occurred.

**BLM Response:** The basis of these comments reflects the commenter's belief that Alternative A does not reflect the No Action alternative. As described is Attachment 1-2 of IM ID-2011-045, the "Idaho BLM Livestock Grazing Permit Renewal Desk Guide recommends that each NEPA analysis analyze the No Action alternative as a means to provide and analyze important baseline information pertinent to the proposal." Because it sets the baseline information against which the other alternatives were compared, Alternative A reflects the management that was occurring on the allotment until grazing was halted and was therefore considered the No Action alternative.

BLM acknowledges that some of the resource concerns on the allotments result from juniper encroachment as well as livestock grazing. The 2010 and 2012 Evaluation and Determinations completed for the Hanley FFR and Trout Springs Allotments (respectively), found that current livestock management, as well as juniper encroachment, were causal factors in Standards not being met on the allotments.

Livestock numbers and season of use established for alternative A are based on information submitted by the permittees on the allotment during that time period and are therefore indicative of their management of the allotment. The NA indicated in Appendix F does not mean that the pasture was rested as the commenter suggests but that utilization data was not collected on that pasture that year.

**12. Comment:** The assumption that livestock could remain on the allotment through December 5 every year is not justified. There is little expectation that grazing use could be sustained beyond November 15 in most years due to weather conditions. Thus, any expectation that 1,430 AUMs would actually be available in all years is not rational.

**BLM Response:** Review of actual use records submitted for the allotment indicate that large numbers of cattle have remained on the allotment from mid- to late November and even as late as mid-December in some cases. It is not unreasonable, therefore, to assume that livestock could remain on the Trout Springs allotment until December. However, the permittee could apply for a refund of unused AUMs in the event that they are required to remove livestock prior to the off date because of weather conditions.

**13. Comment:** The EA provides no rationale for proposing the grazing management scheme in alternative B.

**BLM Response:** The EA discusses in Section 3.0 the effects and the effects of the proposed grazing system in Alternative B. All sections, but especially those related to soil, water, vegetation and wildlife (Sections 3.1.2.2, 3.2.2.2, 3.3.2.2, 3.4.2.2, 3.5.2.2 and 3.8.2.2), outline the benefits this system would have if implemented.

**14. Comment:** Based on the Interim Management strategy, pastures that are rested for three years during juniper treatments along with prescribed Rest treatments would receive 6-7 years or more of rest from gazing due to juniper treatments. Clearly, the juniper treatment program would dictate most of the rest that occurs during the term of the permit regardless of the grazing program. Thus, if any benefit is derived from Rest it will occur primarily due to juniper treatment not the grazing management scheme.

**BLM Response:** See Appendix A Evaluation and Determination documents that state that livestock grazing is a causal factor in the allotment not meeting Standards 1, 2, 3, 4, 7, and 8. The rest prescribed for the first three years ensures that adequate fine fuels are present to carry fire the year of the burn, and the following two years allows vegetation to recover sufficiently from the prescribed burn. The rest incorporated into the grazing management alternatives analyzed ensures that riparian and upland vegetation, especially shrubby vegetation, is allowed a period of recovery after being browsed the previous year, resulting in greater improvement in herbaceous and woody vegetation on an allotment that is not meeting Rangeland Health Standards.

**15. Comment:** *"1. Utilization of key upland herbaceous forage species by livestock of no more than 50% if pasture includes rest or deferred rotation."*

Since all grazing would be deferred the term and condition should only specify 50% utilization.

**BLM Response:** The comment has been incorporated into the EA.

**16. Comment:** *"2. Utilization of key upland herbaceous forage species by livestock of no more than 40% if pasture is grazed during the critical growth period (when perennial grasses are actively growing) every year."*

Since there is no scheduled grazing during growing season this term and condition is meaningless and should be removed.

**BLM Response:** The comment has been incorporated into the EA.

**17. Comment:** Terms and Conditions 3, 4, 5 and 6 should be deleted. Historically, BLM has not conducted these studies or measurements under any meaningful schedule if at all.

**BLM Response:** Items 3, 4, 5, and 6 are monitoring criteria based on goals and objectives outlined in the Owyhee Resource Management Plan (RMP). The RMP does not outline a schedule for monitoring these parameters, but does require that the parameters be met. Therefore, they have been included as terms and conditions for this alternative, as well as for Alternative E.

**18. Comment:** *7. With prior approval by the Authorized Officer, livestock numbers in the Fairylawn Pasture and Hanley FFR Allotment could vary at the permittee's discretion, as long as permitted AUMs are not exceeded and resource degradation does not occur on public land."*

The contradiction b*etween* *approval by the Authorized Officer* and *at the permittees discretion,* needs to be resolved.

**BLM Response:** The permittee is required to apply for any changes to permitted grazing use, which are then authorized through the grazing bill. These changes may (or may not) be approved by the Authorized Officer. No contradiction exists.

**19. Comment:** *"10. Pasture use flexibility would be authorized allowing seven days to make pasture moves, provided pastures are cleared of cattle within seven days following the annually scheduled pasture move date and as long as AUMs are not exceeded."*

The presumption that pasture move dates scheduled 10 years in advance would result in proper grazing management is irrational. Existing grazing permits using the same approach routinely deny opportunity to improve grazing management of pastures by not allowing sufficient flexibility in move dates… The 7 day window is simply recognition that not all livestock can be moved on the same day and is neither intended for nor effective for providing sufficient flexibility to achieve proper grazing management.

The best approach to management flexibility is to assign a specified number of days of use in each pasture with appropriately applied+/- days of flexibility to accomplish livestock movement at a time most beneficial to the use pasture and/or other pastures used later in the season. BLM clearly recognized that the assigned dates of use 10 years in advance will not accommodate proper grazing management during all years (See ***Other Terms and Conditions*** # 11 & 12).

**BLM Response:** The commenter is correct in that this term and condition is meant to allow flexibility to the permittee when moving livestock from pasture to pasture and not meant to allow for flexibility in forage use. It is difficult, and often impossible, to gather all livestock in one day in very large, rugged pastures such as those on the Trout Springs allotment. This term and condition allows the permittee up to seven days to backride and gather any livestock that were missed in the initial gather of that pasture without risk of trespass. The BLM has based season of use for each pasture on the actual use data submitted by the permittees, as well as estimated capacity of each pasture.

**20. Comment:** *"12. Livestock turnout dates are subject to Boise District Range Readiness Criteria."*

Since all scheduled grazing would take place in the fall, this term and condition is specious. The use of terms and conditions that are in no way applicable suggest that the alternatives were not individually and specifically developed but contain boiler plate language regardless of whether it is applicable in a specific case.

**BLM Response:** This term and condition has been removed from Alternatives B and E.

**21. Comment:** *"18. BLM will periodically measure the resources associated with the various management indicators to determine whether objectives are being met and/or trending toward desired condition. If BLM, in its sole discretion, determines that livestock need to be immediately moved between pastures and/or off of the allotment based upon BLM's monitoring of the resources associated with the objectives, it will notify the permittee. The permittee must comply with the BLM's movement order."*

The term and condition establishes a new standard *"<u>If BLM, in its sole discretion, determines that livestock need to be immediately moved"</u>*. Clearly, this term and condition would give BLM arbitrary authority to issue a closure order that would not be allowed under the grazing regulations.

**BLM Response:** CFR 4130.3-2 allows the authorized officer to "specify in grazing permits or leases other terms and conditions which will assist in achieving management objectives, provide for proper range management or assist in the orderly administration of the public rangelands."

**22. Comment:** Remarkably absent from the presentation of this alternative [Alternative C] is the handling of range improvements during the 10 year closure of the allotment.

**BLM Response:** Sections 2.4.3 and 3.11.2 of the EA have been updated to reflect this comment.

**23. Comment:** The EA is unclear as to the exact proposal that was submitted to BLM and how much of the proposal was constructed by BLM [commenter is referencing Alternative D]. For example, it would not seem likely that the Payne Family would have proposed grazing management for the Hanley FFR where they do no hold permitted use. The EA needs to fully disclose how BLM formulated this alternative.

**BLM Response:** Section 2.4.4 of the EA discusses that the Payne Family proposal is defined as such and that portion that was constructed by the BLM is represented as Permit 1 in the alternative. Table 2.5 also clearly illustrates the same. Additional clarification has also been provided.

**24. Comment:** Again, it is not rational that a minimal reduction in grazing use over the next 10 years would be necessary to support increased wildfire occurrence when the total fine fuels would have already increased at least 300% as a result of juniper treatments.

**BLM Response:** As indicated in Section 2.4.5, this alternative also responds to scoping comments requesting "a wider range of alternatives (including significant reductions) to improve resource conditions with greater consideration to topography, and to progress faster towards meeting Standards while meeting the purpose and need of this EA". While reestablishment of a natural fire regime is also part of the alternative, it is not the sole intent of this alternative.

**25. Comment:** The data in this case is clearly not applicable because it does not represent the entire allotment, does not represent an average utilization for a representative period of time and does not provide accurate utilization estimates.

**BLM Response:** Data used to calculate utilization were collected using standard BLM sampling protocols and are based on accepted range sampling techniques (see Technical Reference 1734-3).

**26. Comment:** It is apparent that the "desired utilization level" is an arbitrary number that has the sole purpose of arriving at a reduced number of AUMs. The Owyhee RMP calls for a utilization level of 40% or less only when grazing occurs annually or primarily during the active growing season which is not the case under alternative E.

**BLM Response:** See BLM Response to comment 24. This alternative was developed partially in response to comments that requested a range of alternatives, including reduced grazing, be developed.

**27. Comment:** It is inconceivable that the 14 purported representative samples from pasture 2 would not have a single common species represented in consecutive years. Because of differences plant structure, growth form and biomass distribution, it is essential that species identification is accurate in order to make a accurate estimate of utilization. In this case it is clear that misidentification of species is a significant problem with the data.

**BLM Response:** This comment has been addressed in Section 2.4.5 of the EA. Also see BLM Response to comment 25.

**28. Comment:** This requires use of average utilization; however, BLM did not use the average utilization value but instead used the median value in the formula… The reported actual use provides no information relative to the frequent well-documented and often significant use attributed to drift livestock during the same period.

Regardless of correct application of the formula, the lack of complete and reliable utilization and actual use (absent drift livestock) data precludes any defensible estimate of carrying capacity.

**BLM Response:** Median utilization rather than average was used because median values are less subject to unrepresentative, outlier figures. Utilization in 2006 and 2007 was assumed to correlate with permittee cattle rather than "drift livestock" because there are no documented records of trespass or unauthorized cattle in the Trout Springs Allotment in those years.

**29. Comment:** However, the EA does not provide any interpretation as to the relevance of soil type or range site inclusions, transition zones, site capability alteration due to long term juniper expansion or proposed changes in DEQ TMDL relative to streams in the allotment.

**BLM Response:** See Sections 3.1.1, 3.2.1, and 3.3.1 of the EA.

**30. Comment:** The EA fails to acknowledge actual or potential deficiencies associated with category 2 data. The actual use information is reported as total annual use without regard to pasture use rotations that occurred between 2002 and 2007 (See EA Appendix E). In addition, there is no acknowledgement of the frequent well documented and often significant use attributed to livestock drift entering the allotment from other locations during that same time period. While the EA does not consider grazing use by livestock drift, it does reveal their existence in Table 3.3.4 at page 71 that clearly demonstrates the presence and impact of such livestock.

**BLM Response:** Appendix E reflects actual use data that was submitted by the permittee. While livestock "drift" has been documented on the Trout Springs allotment in recent years, this unauthorized use was not made apparent by the permittees when they were authorized to use the Trout Springs allotment. Because the permittees reported that they still had livestock on the allotment much later than authorized, it is reasonable to assume that utilization occurred by these livestock and utilization, stubble height and other data collected is attributable to those livestock and not to "drift" livestock.

**31. Comment:** The NPFT and Photo Point trend information does not support any conclusion that vegetation changes have occurred or are occurring on the Trout Springs allotment (no data is available for the Hanley FFR or Trout Springs, Fairylawn pasture 4). The EA further reports in relation to upland trend data that, "*No clear trend is obvious, either within a given pasture or site or for any particular species (or species group) across sites between multiple readings.*" The tree shrub density data does indicate substantial juniper increases at two locations along with substantial reductions in sagebrush density (See also EA Appendix J) which is not related to grazing management.

Any conclusion or observation in the EA that purports ongoing deterioration of upland resources due to grazing management is clearly not supported by the available trend information. Furthermore, the lack of direct trend information relative to any of the 6 applicable RHS cannot support any claim that conditions are deteriorating.

**BLM Response:** Earlier trend data were not included in the analysis because the current analysis is primarily updating information since the 2001 Assessment and Determination. Although it is true that no consistent trend is obvious, the changes that did occur show decreasing frequency during higher use years and increasing frequency in lower use or rest years (see Appendix H). This suggests that grazing management, and not juniper alone, have affected vegetation in the Trout Springs Allotment. Because the lack of large bunchgrasses is clearly identified as a primary indicator of not meeting Standards and the trend data show a correlation between grazing management and large bunchgrass frequency, it is logical to link deterioration of upland resources and grazing management.

**32. Comment:** The primary information for determining whether Rangeland Health Standards are being met includes the subjective estimates in the RHA and PFC processes. Information from these sources relates only to points in time and in both cases the vast majority of information is now 10 years old and does not account for the disputed lack of livestock use between 2008 and 2012. More recent gathering of other information has yielded additional point in time information but there is still no direct trend data reported for riparian systems. When the RHS are purported to be not met, the next required step is to determine whether significant

progress is being made. The EA is severely lacking information that can reliably indicate trend through either measurable or observable change relative to any of the 6 applicable standards.

**BLM Response:** The RHA and PFC processes are valid processes used by the BLM in determining resource condition. An Evaluation and Determination for the Trout Springs Allotment was prepared in April 2012 (See appendix A of the EA). This document was prepared by specialists who relied on available information, documentation, personal knowledge and professional opinion to complete their analysis and determinations of whether Rangeland Health Standards are being met.

**33. Comment:** In 2008 the permittee submitted to BLM a report prepared by Owyhee Range Service documenting conditions on the allotment. The report disputed claims of poor plant vigor and production and disputed purported riparian damage in the headwaters of Cottonwood Creek. The EA contain no reference to this report (Copy Attached).

**BLM Response:** This document has been reviewed and incorporated into the EA. See Sections 3.2.1 and 3.3.1 (Affected Environment for Upland Vegetation and Riparian, respectively).

**34. Comment:** Commenter submitted Trout Springs Allotment Management Recommendation – New Alternative F.

**BLM Response:** See Section 2.3 of the EA.

## 3. Ted and Dorothy Payne

**1. Comment:** Alternative A – This is the best choice for us, but there should be juniper treatment. The BLM should build what fences need put in to meet there specs.

**BLM Response:** The BLM is considering several alternatives in detail, all of which consider juniper treatment with the exception of Alternative A (see EA, sections 2.2 and 2.4). There were also no fences proposed with this alternative. The purpose of completing the EA is to determine what level of livestock grazing can be authorized and still maintain or improve resource conditions, not develop the best grazing alternative for a permittee. The BLM promotes multiple use, but at a level that can sustain and promote the resource. In addition, Alternative D was submitted by the permittee and analyzed in detail (see Section 2.4). It is important to note that analysis of Alternative A determined that significant progress toward meeting Idaho Standards for Rangeland Health would not be achieved.

**2. Comment:** We have over 500 head AUMs on Whitehorse that come to Idaho about June 15-18th. For a balanced operation between Trout Springs and Pleasant Valley these cattle need to be distributed in both allotments. This is why we bought more AUMs in Oregon, to go with Trout Springs.

**BLM Response:** This comment is outside of the scope of this analysis, which deals specifically with the Trout Springs and Hanley FFR allotments. While the two allotments may be stocked with livestock that has been grazing in Oregon, the BLM is not developing a ranch management plan. It is analyzing the effects of livestock grazing on the Trout Springs and Hanley FFR allotments.

**3. Comment:** We should be able to turn out on Trout Springs in June and come back the first of October, with a buffer of 50 head until December 30 for those cattle that are hard to gather.

**BLM Response:** This proposal is very similar to Alternative A (see Section 2.4.1) and was therefore not analyzed separately.

**4. Comment:** If Mike gets back on, we could take the Tom's Creek side of the upper Trout Springs allotment and use it in conjunction with our Tom's Creek allotment for a rest rotation.

**BLM Response:** It appears that this is an alternative that is being proposed; however, enough information to adequately analyze this proposal as an alternative is not provided. Therefore, it will not be incorporated into the EA.

**5. Comment:** Alternative B is out – lots of years it is snowing by the 1st of October and grazing is out – This is bad for the cattle and often there is no grass showing to graze.

**BLM Response:** When developing alternatives for the Trout Springs and Hanley FFR allotments, the interdisciplinary team considered actual use information that had been submitted by permittees. This information clearly demonstrated that livestock were present on the allotment as late as December 30 and consistently through November 20. The BLM acknowledges that the permittee may not be able to utilize all permitted AUMs under this alternative; in the years that permittees are required to remove livestock prior to utilizing all AUMs because of snow, they may apply for a refund for the unused portion.

**6. Comment:** Alternative C – This is what has gone on now for 4 years at least. It is a fire hazard. It is also bad for the allotment. Eventually the grass will start dying out…….. Grazing is necessary to maintain a good ecosystem.

**BLM Response:** The BLM is required to consider a No Grazing alternative, as directed in IM ID-2011-045.

**7. Comment:** Alternative E would not work either as stated in Alternative B…..Cattle would be piling up on the fences wanting to come home.

**BLM Response:** See BLM Response to comment 5.

**8. Comment:** Grazing also helps the sage chicken. Ranchers have learned by years of experience that the sage grouse follow cattle.

**BLM Response:** The effects of grazing on sage grouse is discussed in Section 3.4.2.

**9. Comment:** Alternative D – This alternative would work some years but often on a cold or wet spring it will be boggy in April.

**BLM Response:** The selected grazing alternative will be subject to range readiness criteria (if applicable). This condition is outlined in Other Terms and Conditions for Alternatives A, B and E.

**4. Brett Nelson**

**1. Comment:** Damage from grazing is evident all throughout this allotment. Riparian areas are trampled and degraded, the worst examples of head cutting have ever seen are in evidence there…. Cattle do not belong there and will always create problems for the environment as long as they are grazed there. Since the government spends more money to maintain cows out there than it takes in for this, removing the cows will benefit all taxpayers.

**BLM Response:** The BLM is a multiple use agency and is mandated to support those uses when appropriate. Section 3 – Affected Environment and Environmental Consequences, discusses the impacts of the grazing alternatives, including no grazing, on the allotment. It also discusses the existing conditions on the allotment.

**2. Comment:** The idea that we should further damage the land with chainsaws and prescribed fire just so the destructive practice of grazing can continue there is a mistake.

**BLM Response:** See Section 1.2 – Need for and Purpose of Action; also see BLM Response to comment 1 above. Recreational impacts, as well as visual and socio-economic impacts are evaluated in Section 3.0.

## 5. WWP – Katie Fite

**1. Comment:** Just as with Pole Creek, BLM relies on flawed Soils/Draft Site information that attempts to paint this landscape - nearly the entire Juniper Mountain area – as lands that should have no trees. It misinterprets some of the existing soils info as well – such as Hat Soils characteristics, and other basic errors.

**BLM Response:** Trout Springs EA cites the Owyhee County Soil Survey, which was prepared by the USDA-NRCS. BLM relied on science from the NRCS as it is scientifically based and unbiased. BLM does not claim that these lands "should have no trees". For example, the Avtable site, which correlates to the Shallow Claypan 12-16" (025xy010i) range site, can have up to 5% western juniper in the climax plant community (Owyhee County Soil Survey – page 429). The EA also acknowledges in Section 3.2.1 that:

> "The ecological sites indicate that under a natural disturbance regime, the Trout Springs Allotment should be dominated by shrub/bunchgrass communities, primarily sagebrush or mountain mahogany with large perennial bunchgrasses. Other vegetation types, such as juniper, aspen, meadows, and riparian areas, are expected to occur as unmapped inclusions within the larger ecological sites."

The Hat series correlates to the Loamy 13"-16" range site (025xy012i). Although the Hat soil does not have western juniper in the climax plant community, it certainly can be subject to invasion by juniper in the absence of periodic wildfires.

**2. Comment:** BLM ignores the very important rare and sensitive species habitats of Juniper Mountain, including habitats for northern goshawk, watersheds that are home to redband trout, Columbia spotted frog, a host of forest-dwelling migratory birds including gray flycatcher and flammulated owl, and many others.

**BLM Response**: Section 3.0 - Affected Environment and Environmental Consequences of the EA specifically addresses rare and sensitive species habitats. See Sections 3.4.1 - 3.4.2 for analysis of pre-juniper invasion habitat conditions, the current habitat conditions of focal special status animal species and general animal taxonomic groups, and the direct and indirect environmental consequences of each alternative upon those species.

**3. Comment:** Western Watersheds Project requests that all comments, Protests, Appeal points, and Appeal filings that we have submitted to Owyhee BLM related to the parallel Pole Creek process be fully incorporated into this record for the parallel Trout Springs process. Please also include our 2012 e-mails describing conditions this spring in Bull Basin and elsewhere in the surrounding sagebrush and juniper wild lands. Please be sure that you do this. Will this be done?

**BLM Response:** WWP (Katie Fite) requested this in an e-mail to the Owyhee Field Office dated August 7 and 8, 2012. Owyhee Field Office manager Loretta Chandler responded back to Ms. Fite in an email dated August 9, 2012. Ms. Chandler stated in her email ". . . I have decided to decline your request to apply what you did for Pole Creek to Trout Springs. Instead, I strongly encourage you to submit original and targeted comments to the Trout Springs EA that

will help us make a solid decision for the Trout Springs Allotment, and or that highlight issues that we have missed. This will benefit both of us going forward. You may, of course, choose to simply send in everything you did for the Pole Creek Allotment. But considering that the issue is now grazing and juniper encroachment on the Trout Springs Allotment, I think BLM would benefit from your comments targeted to those issues."

BLM did extensive revision to the Pole Creek EA (DOI-BLM-ID-B030-2009-0004-EA) before issuing a final decision in August 2012 based on comments and protest points received from the commenter and the organization she represents. Responses to these comments, protests and subsequent appeal filings, have been incorporated and addressed in the Trout Springs EA, where applicable, as the EA was being written. However, many of the information provided for the Pole Creek EA was site specific for that EA.

Three major areas of concern have been pulled from the Pole Creek information that are not site specific to that allotment and can be assumed to apply to the Trout Springs and Hanley FFR allotments analysis. These comments can be summed and addressed as follows:

- Commenter disputes validity of USDA-NRCS Ecological Site Descriptions - See BLM Response to comment 1.
- Commenter believes that juniper encroachment is not occurring; the project is a juniper woodland that should be left intact – This comment has been addressed multiple times, including but not limited to BLM Responses to comments 1, 2 and 3.
- Commenter believes that an Environmental Impact Statement should be prepared to discuss juniper treatment on the Pole Creek and Trout Springs allotments – Because the grazing management alternatives vary greatly between the Trout Springs and Pole Creek allotments, which would have a direct effect on implementation of treatment plans (or lack thereof), a more site-specific analysis was prepared. The Cumulative Effects Section of the EA (Section 3.13) considers planned treatment on the adjacent Pole Creek allotment.

**4. Comment:** In order to justify its juniper and sagebrush destruction scheme, BLM ignores the value, and often even the existence, of the montane western juniper community that has long been recognized by renowned plant ecologists like Daubenmire, and botanical experts as well (Robert Moseley formerly of the Idaho Conservation Data Center). The wildlife and sensitive species habitat values, watershed values, the role of the forest in moderating of local climate, and the importance of the magnificent juniper expanses to wild lands recreational and aesthetic values, are all ignored or minimized.

BLM ignores the serious risks and hazards to soils, water, watersheds, native vegetation communities, wild lands and recreational uses, and very important rare and sensitive species habitats and populations (like northern goshawk, migratory songbirds and many others) that are posed by its proposition for profligate use of fire in Phase II and III.

**BLM Response:** BLM recognizes that juniper has become invasive due to the lack of periodic wildfires resulting from wildfire suppression and livestock grazing that has reduced fine fuels

that are necessary for periodic wildfires. The scientific literature supports this view and is cited in the Trout Spring EA in Section 1.1.1.

Montane is defined as "of, relating to, or being the biogeographic zone made up of relatively cool upland slopes below timberline and characterized by the presence of large evergreen trees as a dominate life form" Webster's Third New International Dictionary (1986). Juniper can only be considered dominant in the absence of periodic wildfires, except in rockier and/or shallow soil areas that generally do not have continuous fine fuels necessary to carry wildfires. The Bedstead Ridge photo sequence (Figure 3.2.2, Section 3.2.1) of the Trout Springs EA clearly indicates a substantial increase in juniper. It should be noted that even though the 1963 photographs indicate that juniper was not as prevalent as today, the 1963 photographs do not depict the area as devoid of juniper as would have been the case pre-settlement when domestic livestock grazing and the resulting lack of wildfires resulted in the beginning of the juniper expansion in the Owyhees. Research by Miller et. al. (2008) confirms this and is cited in the Trout Springs EA in Section 3.2.1.

This is the value of the Major, Corbin, and Heide models, which are an estimate of the pre-settlement expansion of juniper. It would be a substantial omission to not depict the Trout Springs allotment and adjacent areas as it was prior to pre-settlement and, as such, relatively devoid of juniper, except in rockier and/or shallow soil areas (see BLM Response to comment 1). The estimate of pre-settlement plant communities are the baseline ecological site information that is necessary to determine the feasibility of BLM's proposed management for the Trout Springs allotment.

**5. Comment:** BLM has again failed to take a "hard look" at current ecological science, at competing or conflicting information and then recalibrate analysis based on solid systematically collected site specific information on what actually exists on the ground.

The direct, indirect and cumulative impacts to soils, microbiotic crusts, water quality and quantity, watershed processes, native vegetation communities and condition, weed invasion/dominance and vulnerability risk, quantity and quality of habitats and populations of important rare and sensitive species, recreational, wild land and aesthetic uses and enjoyment, and climate change effects and the interplay of grazing coupled with a massive disturbance regimen under the TS EA on the ability of the land to buffer climate change – are all not assessed. Just as with PC.

These degraded lands have not yet begun to heal from effects of chronic severe livestock damage, and BLM never addressed the degree and severity of erosion, and desertification and loss of both upland and riparian potential upon which any treatment and grazing disturbance would play out. This elevates risk of irreversible degradation of treatments that is compounded by chronic cattle grazing disturbance, as well as likely intensified disturbance following "treatments" as cattle use is shifted while "resting" treated areas.

**BLM Response:** BLM addresses the concerns raised by the commenter. See Section 3.0 – Affected Environment and Environmental Consequences - of the EA. Also see BLM Response to comment 2.

**6. Comment:** As with Pole Creek, the EA relies on an "in review" office cubicle modeling exercise by Majors that plugs in inaccurate fire intervals and flawed soils and ESDs that describe juniper out of existence. BLM's own records show these often don't match the soils and plant communities on the ground. Similarly, Heide and Corbin 2009 and others with outdated and erroneous inputs are also the basis for BLM's conclusions in TS just as in PC. Please review the Pole Creek Admin. Record Corbin Trend analysis soil discrepancy discussion – and this all carries over into TS.

**BLM Response:** See BLM Response to comments 2, 4 and 5.

**7. Comment:** BLM never clearly and carefully identifies where mature and old growth trees are found, and where trees of particular ages are present. What are the ages of trees in each of the specific sites that would be disturbed (these of course are not identified at all – just general areas).

**BLM Response:** The age classes and distribution of juniper are addressed in Sections 1.1.1 and 3.2.1 of the EA.

**8. Comment:** There is no guaranteed protection of any kind for old growth trees. All of these deficiencies that are found with Pole Creek continue in TC.

**BLM Response:** Section 2.2.4 of the EA discusses steps that will be taken to protect old growth juniper. Although Section 3.2.1 contains site-specific data regarding juniper, that section has been updated to reflect information gathered in relation to juniper response to the 2012 Grasshopper Fire, which burned on the northern portion of the Trout Springs allotment.

Section 3.2.2 of the EA discusses direct and indirect effects of the alternatives. For juniper treatment, the EA indicates that "30-50% of the seral juniper is expected to remain, along with most of the old growth". It further states that most of the juniper old growth is located in non-treatment areas or in cut/jackpot burn areas, further reducing the potential for loss of old growth juniper.

**9. Comment:** BLM tries to some degree to use sage-grouse as a stalking horse to justify massive deforestation across lands that have not been recognized to have any restoration value for sage-grouse under any applicable sage-grouse plans. Only a small area – ¼ or less of PC, and an even smaller part of TS, was ever considered for restoration by IDFG, or BLM under the 2006 Idaho Sage-Grouse Plan, or the 2011-2012 "Priority" habitat mapping scheme. I note that no Priority sage-grouse habitat mapping is provided with the TS PEA. See EA Map 9. Trying to make significant sage-grouse habitat out of the rugged canyon-cut dissected PC and TS wild lands is impossible. In fact, even if BLM burns up every tree, it will also have to raze the canyon-cut mountain. Juniper Mountain is too rugged and rocky (plus burned trees stand for 20-50 years) also precluding grouse use in the mid, and even into the long-term. Not only will the sagebrush required by sage-grouse burned up (and takes a very long time to recover) but the rot-resistant burned trees remain standing hindering any grouse use as well. See USFWS March 2010 Warranted But Precluded Finding for Greater sage-grouse, describing sage-grouse avoidance of tree areas.

**BLM Response:** See Sections 3.4.1 - 3.4.2.5 for analysis of pre-juniper invasion habitat conditions, the current habitat conditions of greater sage-grouse, and the direct and indirect environmental consequences of each alternative upon that species. Sage grouse habitat and lek locations are identified in Map 8. In addition, the EA in Section 1.2 – Need for and Purpose of Action clearly identify juniper treatment as a needed action. In fact, item 3 in that section discusses that juniper treatment is needed here and now to address land health issues.

**10. Comment:** BLM fails to provide detailed site-specific information on sensitive species actual (not theoretical) occupancy of habitats, the habitat conditions, and the extent and viability of the populations of aquatic and terrestrial species… There are no site-specific biological surveys of any kind for these species or the on the ground existing conditions related to specific habitat requirements, or any consideration whatsoever including population status for tree-reliant important sensitive and rare species – including northern goshawk, flammulated owl, sapsuckers and others in Appendix K (of TS) in TS and PC… This all violates NEPA's hard look, FLPMA, requirements of the ORMP, and BLM sensitive species and conservation IMs/policies/promises to the public. BLM greatly ignores the adverse impacts of cattle grazing and disturbance – including during sensitive periods – on these species as well as sage-grouse and big game and many others.

**BLM Response:** See BLM Response to comments 2 and 4. BLM proposes implementation Standard Operating Procedures (SOPs) for Trout Springs Allotment Juniper Treatments as described in the Trout Springs EA (Section 2.2.4.1). Specifically, SOPs designed to protect wildlife and dependent habitats are numbers 9 through 14.

**11. Comment:** BLM's 2012 analysis has not separated grazing effects from juniper effects. In 2012, BLM blames junipers for many things that its more careful analysis in 2002 did not. However, both never recognized montane western juniper communities, or that the "bare dirt" that is described in PC and that abounds in TS also - is where microbiotic crusts should be growing - but have been trampled away by cattle. BLM data (which is limited and from cherry-picked sites) shows a dearth of crusts – and these are at sites distant from more intensively used areas. Crusts thrive when protected from grazing by tree limbs, and in interspaces inaccessible to livestock. An EIS is necessary to separate out cattle impacts from BLM's constant scapegoating of juniper, a valuable native tree vital for holding these unraveling watersheds together, and that provides essential food, cover and space for a wealth of native species including many important sensitive species.

**BLM Response:** The 2012 Evaluation and Determination for the Trout Springs Allotment determined both livestock grazing and juniper encroachment as causal factors in not meeting Standards 1, 4 and 8; the 2010 Determination for the Hanley FFR found the same. The 2001 Determination for Trout Springs acknowledges that "western juniper is negatively influencing plant community integrity by impacting shrub densities." All three determinations discuss the impacts on the allotments from both livestock management and juniper encroachment.

Information from the evaluations and determinations is used throughout the EA, but Section 3.0 specifically discusses effects from grazing and juniper encroachment or expansion for most resources.

Biotic crusts are discussed in Sections 3.2.1 and 3.2.2 of the EA.

See also BLM Response to comment 4.

**12. Comment:** The 1987 Woodland Harvest Plan prohibited juniper cutting anywhere near streams and intermittent drainages. Yet in 2012, BLM appears to forget about that, as well – desiring only to maximize juniper destruction. It is all unclear about just what actions will occur where, and what the specific forested and other ecological conditions are – including the degree and severity of livestock-caused degradation in each area and site that would be disturbed by the very risky fire "treatment" in Phase II and Phase III. Since there is no solid baseline, thee can be no solid understanding of treatment outcomes.

**BLM Response:** Section 3.1.1 of the EA, as well as riparian discussions for Standards 2, 3 and 7 in the 2010 Trout Springs Evaluation and Determination discuss the detrimental impact that juniper encroachment is having on riparian, wetland and water quality. The EA also discusses in Sections 3.1.2 and 3.3.2 the benefits that juniper treatment will have on these systems. A description of treatment types and locations where they will be implemented is discussed in Section 2.2.4 of the EA.

**13. Comment:** BLM relies on flawed FRCC modeling schemes – with inaccurate idealized veg and outdated "disturbance" interval inputs, erroneous sagebrush fire intervals, no recognition of the very long several hundred year fire/disturbance intervals in many montane western juniper sites, and flawed soil and ESD claims/assumptions.

**BLM Response:** FRCC is a model accepted and used nationally to model fire behavior. Data used in the model are widely accepted as well.

**14. Comment:** BLM provides no information to base a conclusion on, or to show that ANY more grazing disturbance won't make the situation substantially worse. Let alone grazing plus massive treatment. (TS PEA screen 64). (Commenter is referring to cheatgrass and other invasives.)

BLM relies on old, outdated Bunting and other information in making its incorrect claims about fire.

The Draft ESDs (as in A-92) claims that grazing of fine fuels will make a difference. This is contradictory to BLM's own fuels modeling which claims has trees are a more major fire problem than sage, sage more than grass, and grass not a problem. So this all is the opposite of some of the BLM's the fuels-based claims.

BLM must address the added risk posed by climate change in this proposal that inflicts massive combined grazing and treatment disturbance.

Any treatment must be based on protecting cheatgrass/medusahead/bulbous bluegrass/brome-prone sites.

**BLM Response:** The EA addresses invasive plants and weeds, and the risks associated with treating juniper, in Section 3.2.1 and Section 3.2.2 for each of the alternatives.

In this same section, the Trout Springs EA cites scientific literature that addresses invasive plants and weeds (Shaw et al. 2005 and Davies et al. 2009). The analysis also determined that "the Trout Springs Allotment is generally above (i.e., higher elevation and precipitation) the xeric Wyoming sagebrush zone. Also, low sagebrush and other harsher sites would not be ignited for broadcast burning, although some fire may creep in from adjacent burn areas or jackpot burning. The targeted mesic mountain big sagebrush sites are expected to respond well to the mosaic of broadcast burning planned (Bunting et al. 2002)."

Sources used by the BLM, including Bunting and others, provide sound scientific, and in the case of Bunting, site-specific data and analysis on which to base conclusions, assist with providing rationale, etc.

The referenced ESD (A-92) discusses effects of season-long and excessive utilization, as well as effects of properly managed grazing on plant communities (native and invasive). This ESD also discusses the competitive advantage that juniper has when it has invaded a site, the detrimental effects that occur to plant communities, and the detrimental effects it has on watersheds as a whole (A-93).

Climate change is discussed in Section 3.12 of the EA.

Invasive species and the effects of each alternative (and treatment) are discussed in Section 3.2.1. Section 2.2.4.1 outlines steps that will be taken to prevent spread of invasive and noxious weeds if burning is implemented.

**15. Comment:** BLM ignores protections in the RMP, such as not burning shallow soil sites.

The 2012 EA does not analyze the adverse direct, indirect and cumulative environmental effects of the JMRS scheme, which is being implemented piecemeal.

BLM has not carefully determined what are the actual sites where juniper is invading in the Juniper Mountain landscape compared to where it is the naturally occurring climax native plant community actually are. The RMP states there are 600,000 acres. BLM has not shown that burning in highly cattle-degraded TS and PC will "improve rangeland health and increase biodiversity. Much of these projects really entail burning vast areas of shallow soil low sagebrush and other sites that are not supposed to be burned under the ORMP, while pretending it is loamy big sage.

**BLM Response:** See BLM Response to comment 4. Sections 1.1.1 and 3.2.1 of the EA discuss juniper expansion and Section 1.6 outlines compliance with the ORMP.

Section 2.2.4 of the EA discusses use of fire within the treatment area. Very Shallow Stony Loam and Rocky Canyon ecological sites are specifically identified as non-treatment areas within that section.

The cumulative effects section of the EA (Section 3.13) explains and compares the past, present and reasonably foreseeable effectiveness of each alternative. More importantly, the analysis summarizes that "The expected increase in herbaceous vegetation (fine fuels) as a result of prescribed fire treatment and grazing management changes, along with a mosaic of seral stages provided by juniper treatments, would have a cumulative effect of producing a landscape with more natural fuel structure; the diversity in fuel structure allows for more management opportunities to allow fire to play its natural role across the landscape."

**16. Comment:** BLM has not shown juniper has reduced riparian habitat.

The action considers use from the Payne ranch – with certain livestock trailing right through medusahead all over the Payne ranch and surrounding BLM lands where it is spreading. A primary access route (Mud Flat) is now lined with medusahead – so BLM's decade-long "treatment" vehicle travel, making hundreds or thousands of trips during all periods of the year will transport it as well.

BLM constantly relies on Miller (2005). But any Miller work was from 7 years ago (with data collection likely older). So the current degree of cheatgrass/medusahead/bulbous/brome presence cannot be based on Miller. Like the preceding exotics, Japanese and rattlesnake brome are other annual bromes also densely and aggressively compete with, and exclude native forbs, sagebrush, etc. They provide continuous ground-choking fine fuels like cheatgrass. These weeds all thrive on fire disturbance, and choke soil surfaces similar to cheatgrass, and pave the way for medusahead.

**BLM Response:** The Need for and Purpose of Action (Section 1.2), as well as the Evaluation and Determination (appendix A) clearly outline juniper expansion as a causal factor for riparian systems' failure to meet standards.

BLM is not proposing to use herbicide in this analysis, either for the control of cheatgrass or for any other reason. Section 3.2.1 specifically addresses invasive plants, including medusahead populations along the Mud Flat Road, and the effects each alternative will have on invasive species spread.

The BLM lists information sources in addition to Miller when discussing invasive species, which include information from trend monitoring site data, botanical surveys, and other field observations and assessments, some of which were completed as recently as 2010 (see Section 3.2.1).

**17. Comment:** BLM's various determinations claim standard are not being met at times merely because there are trees. But this is precisely where the trees are supposed to be - based on elevation, precipitation and soils according to plant ecologists. See Moseley, the HMP, the ORMP which identifies juniper burning in "swales" (so this is where the junipers are not supposed to be –in swales!). "Swales" are certainly not nearly all of TS and PC. That, instead, is the much more undulating terrain coming off of South Mountain, near Triangle, etc.

Rife with internal contradictions, in the EA and Determination for Standards 4 and 8 and others, BLM claims habitat is degraded because there are trees in these higher elevations, ignoring that this is where montane western juniper, as described by Moseley, is supposed to grow/naturally occurs. The trees are habitat for BLM sensitive species. The falseness of this approach is shown by BLM elsewhere admitting in vague terms (though never revealing areal extent, aspect, or any other clear info) that old growth/pre-settlement trees are present. So if old growth is present, the trees are supposed to be here!

BLM sweeps the serious weed risk under the rug. BLM ignored public comment, ignored careful mapping and quantification of areas of cheatgrass/exotic species occurrence, ignored mapping areas of reduced microbiotic crusts, and it also ignored assessing direct, indirect and cumulative adverse impacts of climate change effects. BLM appears to have collected little to no current site-specific data for any wildlife in the allotment. BLM cannot rely on lists of species and general discussions –the ORMP specifically stated that the RMP did not have much info on sensitive species.

WWP in Scoping for both TS and PC has explained its concerns in detail related to climate change, desertification, and the grave risk of cheatgrass/weed invasions and very harmful fire cycles, and added stresses on deforested and degraded watersheds, which all are anticipated due to climate change effects.

BLM did not balance uses of the public lands, as required by FLPMA, in its health and other analyses that ignored montane western juniper as a native climax vegetation community. BLM ignored any fair and balanced discussion of the values of trees in shading and cooling the ground surface, slowing snowmelt, moderating local climate, providing areas at their base protected from the elsewhere ubiquitous destructive cattle trampling impacts, sequestering carbon, and the very real recreational and aesthetic values to the public, too. It did not consider the value of the trees for holding the unraveling watersheds together, or their superlative wilderness character enhancement values. It did not consider that areas where trees may be expanding, which BLM has not accurately identified, may be a response to elevated atmospheric C02 levels.

It never weighed the value of the northern goshawk or flammulated owl– compared to cattle forage grass, or spending millions on the most marginal of sage-grouse habitat projects. It never provided site-specific information and analysis to show if there was one goshawk pair present, or a dozen across Juniper Mountain, in PC, or on all Idaho BLM lands. These are the very wildlife values that NEPA requires BLM to consider, and FLPMA and the RMP requires BLM to protect.

Grazing's direct, indirect and cumulative effects – both in PC as well as up-watershed in TS and on surrounding lands, and their effects on treatment outcomes in the short, mid and long term are simply not examined. Nor are the effects of all the past efforts to burn, chop, chain or otherwise destroy juniper and sage here. BLM must address the full range of interwoven treatment and grazing concerns that we have raised since Scoping on in both PC and TS

**BLM Response:** BLM addresses both noxious and invasive weed species, and the associated risks with implementation of each alternative in the EA in Sections 3.2.1, 3.2.2 and 3.13.2. See also BLM Response to comments 14 and 16.

BLM acknowledges receipt of WWP's scoping comments in Section 1.4 of the EA and discusses how their comments were addressed.

Section 1.2 Need for and Purpose of Action describes why juniper treatment is needed and Sections 3.1 through 3.12 address the effects of each alternative on several resource values, including soils/watershed (Section 3.1), water quality (Section 3.3), recreation (Section 3.6), visual resource management (Section 3.7) and air quality (Section 3.12), among others.

See Sections 3.4.1 - 3.4.2.5 for analysis of pre-juniper invasion habitat conditions, the current habitat conditions of migratory birds, raptors, and other birds (including Special Status Species), and the direct and indirect environmental consequences of each alternative upon species in that taxonomic group.

Section 3.13 of the EA addresses cumulative effects.

**18. Comment:** Microbiotic crusts are a critical issue… In lands with damaged crusts, that should be a frontline defense against weeds, BLM plans aggressive use of fire, including soil-scalding jackpot burning and broadcast burning that will greatly destroy crusts, plus significant unspecified motorized activity during any season of the year. In fact, the lack of crusts appears to be a key reason that bulbous bluegrass/cheatgrass is rapidly invading livestock-disturbed

**BLM Response:** Biotic crusts are discussed and analyzed in Sections 3.2.1 and 3.2.2 of the EA. See also BLM Response to comment 5.

**19. Comment:** BLM's assessment of degree, severity, and length of impacts are not valid. If BLM destroys sagebrush that takes 200 years to recover, or old growth juniper trees where northern goshawks are nesting and it takes 300-500 years or more to recover the habitat complexity and extent to support goshawks and their prey, this is not a "short term" setback.

**BLM Response:** Section 1.1.1 of the EA discusses recovery intervals and provides scientific literature to support those intervals.

**20. Comment:** BLM never identifies on-the-ground stand age, tree age, characteristics, climax montane juniper, or anything else – it has no basis for discarding alternatives, or developing a range of alternatives of any kind for "treatment".

**BLM Response:** See BLM Response to comment 7.

**21. Comment:** BLM rejected evaluating WWP's ACEC without taking into account changed environmental circumstances since the RMP – such as the Crutcher Fire and other wildfires and treatments, slow recovery, proliferation of bulbous and invasive annual grasses, climate change, etc.

**BLM Response:** BLM discusses in Section 2.3 why this alternative is outside of the scope of this analysis.

**22. Comment:** The fire modeling pretended largely that junipers should not exist – despite Idaho Wilderness Reports identifying a large expanse of climax western juniper. It used long-outdated and erroneous disturbance intervals for sagebrush. See USWFS Finding below. BLM's lax requirements and SOPs in the EAs contradict conservation actions required under BLM's Woodland HMP. BLM never once mentions the montane juniper plant community – or attributes of climax juniper plant communities. BLM ignores the treatment (and combined with grazing) damage to native bunchgrasses.

Prudent alternatives and procedures have been cast aside and never analyzed in any alternative. This includes Rest/no grazing for the permit term so the land can heal more, and then following that grazing in only a portion of the less rugged area, and careful and targeted treatment, with limited wood-cutting in the interim. BLM ignored fair consideration of alternatives, and failed to analyze differing alternative components, including basic common sense actions to help promote post-treatment disturbance and reduce weed proliferation.

**BLM Response:** See BLM Response to comments 4, 5, 6, 8, 9, and 13. Also see Sections 2.3 and 2.4 which discuss alternatives considered by the BLM.

**23. Comment:** Is BLM planning on using massive amounts of herbicide to try (vainly) to control weeds post-fire, all the while ignoring integrated livestock management? Please see WWP alternative describing integrated management and values of passive restoration.

BLM must fully assess in an EIS the massive amounts of herbicide that would be used, and effects on non-target vegetation, as well as sensitive and rare species like redband trout and Columbian spotted frog, as well as on recreational uses and enjoyment. It cannot rely on its flawed Weed/Veg Treatment EIS.

**BLM Response:** No use of herbicide is proposed.

**24. Comment**: There are no specific maps detailing old growth mature trees, pre-settlement trees, no specific descriptions of stand characteristics and their specific location in this complex landscape. There is no basic forestry information of any kind, including systematic aging of trees by forestry methods. The impacts on old and mature junipers, sagebrush in understories, mountain mahogany, bitterbrush, etc, all cannot be determined without concrete and specific details about each site and when, where and how treatments would be applied. Plus the type of specific treatments or combination of treatments to be applied in relation to this complex landscape and veg communities is not provided.

Flawed soils documents are used to claim certain ideal composition sites are supposed to be everywhere, and no juniper. BLM even comments on this curious discrepancy between the reality on the ground, and EA's assumptions.

**BLM Response:** See BLM Response to comments 1, 7, and 8.

**25. Comment:** Basic site-specific information and analysis that provides an honest representation and pins down specific required actions necessary to protect old growth, sensitive wildlife and fisheries species habitats and populations, Wilderness Characteristics and recreation,

and all other values of this very large and rugged region of montane juniper are not provided. BLM has greatly failed to analyze the undue degradation and irreversible losses to lands of Wilderness character that this scheme would cause, as well.

**BLM Response:** Section 3.0 of the EA discusses the environmental consequences of each alternative. Wildlife and fish are specifically discussed in Section 3.4, wilderness in Section 3.8 and recreation in Section 3.6. Actions that will protect old growth are described in Section 2.2.4.

**26. Comment:** And there is no evidence that the site-specific surveys necessary to identify raptor and other sensitive and important species habitats, occupancy, and populations have ever been conducted.

**BLM Response:** See Section 3.4 of the EA for wildlife discussion. Although surveys have not been completed for every sensitive species, focal species such as sage-grouse have been identified "because they can serve as an umbrella species for broader conservation of sagebrush habitats" (p. 91).

**27. Comment:** BLM ignores all current guidance for prudent treatment of junipers, instead pursuing aggressive scorched-earth "treatment" of Phase 3, and multiple overlapping treatments whose cumulative impacts are not assessed.

**BLM Response:** As outlined in Section 1.6, BLM treatment of juniper is consistent with that outlined in the 1999 ORMP. BLM discusses treatment options that were considered in Sections 2.2 and 2.3 of the EA, including non-treatment areas (2.2.4). The EA also references recent peer-reviewed science that substantiates BLM's actions.

**28. Comment:** BLM claims to conform with the LUP – but it selectively omits portions of the LUP that do not support its circular, self-centered reasoning her.

**BLM Response:** Conformance with the Land Use Plan is discussed in Section 1.6 of the EA.

**29. Comment:** BLM greatly ignores the serious risk of soil erosion, sedimentation, headcutting, loss of perennial flows, and elevated water temperatures – all amplified by climate change effects, that will result from this inter-twined deforestation and grazing scheme.

BLM greatly ignores assessment of the degree to which the abusive grazing that occurred for many decades here has resulted in soil erosion and loss – so that sites no longer have the potential to support the vegetation communities that BLM claims, based on highly flawed cattle industry consultant soils-eco-site info - should be present.

**BLM Response:** Sections 3.1 and 3.13.1 of the EA discuss the effects of all alternatives, as well as the cumulative effects to soils and watersheds. Also see BLM Response to comment 1. The Evaluation and Determination documents (Appendix A of the EA) also discuss past grazing practices and the effects on current conditions.

**30. Comment:** The very worst part, though, is the degree to which BLM, in its burn the junipers and sagebrush/bitterbrush up and start over scheme, ignores the serious risks of

cheatgrass invasion and expansion, and further proliferation of bulbous bluegrass, that will permanently doom sites in grazed landscapes.

**BLM Response:** See BLM Response to comment 5, 14, 16, and 17.

**31. Comment:** WWP believes that BLM must fully and fairly evaluate the ACEC we have proposed, and consider all issues of ecological concern and needs for protection that are raised. These lands and watersheds that are shared with other allotments in the Juniper Mountain region are under great stress from impacts of chronic (and any continuing) grazing disturbance, from effects of imposing grazing on lands that are not capable or suitable of supporting it with already drastically compromised water quality and quantity concerns, climate change effects, inter-twined invasive species expansion, a battery of proposed aggressive, destructive invasive s-species prompting deforestation schemes. They are also under great threat because BLM refuses to acknowledge that western juniper is a keystone element of the ecosystem on Juniper Mountain, that western montane juniper, as well as other juniper communities are the historical vegetation, as recognized by pre-eminent plant ecologists/botanists.

**BLM Response:** See Section 2.3 of the EA for a discussion of this alternative. Designation of an ACEC is a LUP decision and, therefore, is outside the scope of this EA.

**32. Comment:** BLM even considers disastrous proposals to inflict intensive early spring grazing use – that will severely compact soils across watersheds, reducing the potential of riparian systems to absorb and retain water over the summer.

**BLM Response:** See Section 3.0 for analysis of those alternatives (A and D) which propose spring grazing. BLM considered a wide range of alternatives (see Sections 2.3 and 2.4) to address issues and alternatives that were raised internally by the BLM and externally during the scoping process.

**33. Comment:** Climate change concerns and impacts have been known to BLM for some time now. Yet BLM ignores the projected stresses on arid lands and waters – finding it convenient to cast aside serious concerns by scapegoating junipers. The consequences of large-scale use of prescribed fire/highly invasive treatment in the context of scientific knowledge of the consequences of deforestation in 2012 have not been examined.

**BLM Response:** BLM discusses effects to the climate for each alternative in Section 3.12.1 of the EA. Climate change is also discussed to an extent in Section 3.2.2.

**34. Comment:** BLM also does not take into account that research shows that increased CO2 levels may be in part increasing junipers that thrive on increased CO2. The trees absorb CO2, helping to buffer climate change effects.

Climate concerns were never considered in the Owyhee RMP. Current knowledge about adverse impacts of climate change represents changed circumstances.

**BLM Response:** See BLM Response to above Comment 33. Carbon balance effects of juniper treatment are discussed in Section 3.12.2.

**35. Comment:** BLM applies no standard of any kind to limit cattle trampling disturbance to microbiotic crusts.

**BLM Response:** See BLM Response to comments 5, 11, and 18.
**36. Comment:** BLM ignores clear direction from the ORMP that requires mandatory riparian trampling standards on springs, seeps, streams

BLM is relying on greatly inadequate baseline information to develop a radical deforestation and grazing disturbance scheme.

**BLM Response:** See Sections 2.4.2 and 2.4.5, which identifies terms and conditions for Alternatives B and E, as well as Section 2.2.2 which identifies objectives for Alternatives A and D.

The level of juniper reduction is thoroughly analyzed throughout the Trout Springs EA.

**37. Comment:** The EA describes 60 springs being present, but PFC was only done a 10 or so, and somehow only one was FAR. We find this incredible. EVERY livestock-accessible spring-seep, or stream areas suffers significant degradation. BLM appears to have selectively cherry-picked springs in a claimed 2008 "assessment".

**BLM Response:** Although 12 springs were found to be at PFC, BLM determined that overall spring and riparian systems on the Trout Springs allotment are not meeting standards and that livestock grazing was a causal factor. See the Evaluation and Determination for the Trout Springs Allotment (Appendix A).

**38. Comment:** BLM cannot make a Determination under the Rangeland Heath standards for watersheds, riparian, sensitive species and other inter-related concerns until all springs are fully assessed, surveys and analyses of habitat and population conditions are conducted for Columbia spotted frog, riparian vegetation-dependent migratory birds, and other rare biota, and the adverse impacts of grazing, facilities, etc. are fully considered.

**BLM Response:** Section 3.8 of the EA discusses the detrimental impact livestock grazing is having to wildlife, including Columbia spotted frog and other special status species and riparian-dependent migratory birds in streams and wet meadows. This section also explains why BLM has made the determination that water-related standards (Standards 2, 3 and 7) as well as the wildlife standard (Standard 8) are not being met. Also see Appendix A – Evaluation and Determination for the Trout Springs Allotment.

**39. Comment:** The monitoring is very inadequate. Not only does BLM not provide any data at all for 50 springs in the allotment, the ones it does have any info are claimed to be at PFC – save one. This cannot be viewed as representative. ALL springs, seeps, meadows, etc. must be assessed, not just the ones marginally or not at all accessible to livestock (TS EA 68 indicates

that BLM may be aware that the PFC assessments likely are of largely cattle-inaccessible sites). Honest consideration must be given to the beneficial effects of several years of rest, and to the impacts of trampling by hundreds of cattle if the lands are re-opened to grazing. But back to the monitoring: There is no monitoring at all from any spring or seep. This outrageous -not even the greatly inadequate once-in-a-blue moon MIM monitoring.

WWP requests to be immediately provided with a map sufficient to understand the location of the 10 that were supposedly assessed. We wish to ground-check the quality of the information, and potential cherry-picking of sites.

**BLM Response:** See BLM Response to Comments 37 and 38. While BLM did not survey all springs within the allotment, BLM determined that these systems are not meeting standards (Appendix A) and proposed significant changes to the grazing system on the allotment, including no grazing (Description of Alternatives, Section 2.4).

**40. Comment:** BLM proposes to place further injurious hindrances to wildlife, and further despoil wild lands and Wilderness (and Wilderness characteristic lands) with more barbed wire hazards. These shift and intensify livestock use. Under WWP's alternative, none of these fences would be built, and the Juniper Mountain fence and several others would be removed. BLM must, at a minimum, consider removal of significant lengths of fencing and several destructive spring-dewatering projects, accompanied by grazing a controllable number of livestock in lands that might actually be capable of being grazed.

**BLM Response:** Impacts of range improvements are analyzed in Section 3.0 of the Trout Springs EA.

**41. Comment:** Water hauling will not only concentrate livestock likely to transport medusahead, rancher water hauling vehicle tires will transport it as well.

Plus, given that it has authorized massive disturbance in PC, BLM in the TS headwaters inflicting chronic cattle disturbance on damaged watersheds will pour sediment downstream into PC streams that will be suffering increased sediment loads, elevated temperatures from removal of shade, etc. is cause for serious concern.

**BLM Response:** See BLM Response to Comment 40. Water hauling is proposed in Alternatives B and E (Section 2.2.3).

**42. Comment:** An honest capability and suitability analysis is essential to determine the carrying capacity and sustainability of grazing use…. Moreover, the cattle number BLM comes up with its math exercise is based on the very high utilization levels that it seeks to impose – which are completely put of step with current science, and protection of sage-grouse and other wildlife habitats, as well as the health of native bunchgrasses. Juniper Mountain is not a uniform flat farm field, but BLM treats it like one.

**BLM Response:** Trout Springs EA (page 14) calculates carrying capacity - "(u)tilization and actual use data were used with the desired utilization level to calculate carrying capacity. Actual use data include use by cattle. The following formula was used:

$$\frac{\text{Actual Use (1,863 AUMs)}}{\text{Actual Utilization (65\%)}} = \frac{\text{Estimated Carrying Capacity}}{\text{Desired Utilization (40\%)}}$$

Estimated Carrying Capacity = _____

The actual use used in this formula was determined from the start of the grazing season (June 14, 2006 for the 2006 grazing season, and June 16, 2007 for the 2007 grazing season) averaged through the date utilization was read (November 3, 2006, and October 10, 2007, respectively). Although total actual use was higher in those years, these numbers reflect the actual use up to the time utilization was read, providing a more accurate estimate of carrying capacity. Years 2006 and 2007 were used because they were the only years for which both utilization and actual use data exists. Desired utilization levels were reduced from 50% to 40% for upland herbaceous species to compensate for an expected decrease in forage resulting from increased juniper encroachment, and to increase the rate at which the standards for rangeland health would be met. For actual utilization, the median utilization level for 2006 and 2007 (65%) was used. Refer to Appendices E and F for more specific information." Also, the effect of juniper encroachment on carrying capacity was documented in Trout Springs EA (page 50) – "Miller et al. (2000) documented that an increase in juniper biomass reduces the herbaceous component, likely decreasing the carrying capacity of the allotment."

**43. Comment:** BLM has failed to conduct current ESI inventories so the actual ecological conditions, not just extrapolated cattle consultant-influenced draft "site descriptions" full of slanted presentation of info (such as claims of grazing fine fuels reducing fire) can be used as the basis for actions.

BLM's limited upland monitoring sites are located distant from water, or areas of watersheds near the springs and streams – so the severe use that occurs in such areas goes undocumented.

**BLM Response:** BLM completed an assessment and determination for the Trout Springs allotment in July 2001. The current determination (see Appendix A) is based on data collected through 2008 as this data is more reflective of conditions when livestock grazing is occurring. A significant amount of work, including field visits, utilization measurements, trend data, and riparian monitoring (Multiple Indicator Monitoring {MIM}, which measures stubble height, streambank trampling, woody browse and other parameters, and Proper Functioning Condition {PFC}) has been conducted in the past several years. These data have been used to update, supplement, and replace the data used for the 2001 Assessment, Evaluation and Determination.

BLM also conducted riparian and wetland monitoring, which included utilization of herbaceous and woody riparian species in some cases. See Section 3.3, which provides monitoring information and analysis of stubble height, bank alteration and riparian woody browse information.

**44. Comment:** The Water Quality Restoration Plan is greatly inadequate. It greatly ignores the adverse combined impacts of the massive deforestation and continued chronic grazing disturbance, and cumulative effects across TS and PC, TS and CHL, TS and Bull Basin, TS and Pleasant Valley and other linked waters/watersheds/allotments. It also fails to honestly consider the effects of inflicting grazing use without any required mandatory annual term and condition use limits of any kind.

In reviewing the Water Plan (EA at 66 "Margin of Safety") it appears that BLM had been using Alternatives up to G. Where is this analysis?

**BLM Response:** The Water Quality Restoration Plan documents BLM's site-specific strategy to move those water bodies within the allotment not meeting Idaho water quality standards, determined by DEQ in cooperation with EPA, for beneficial uses into compliance with the standards. It is not meant to be a document that addresses cumulative effects on a broad scale (this is completed by the Idaho DEQ). Water quality, and the effects of the alternatives on it, is discussed in Section 3.3 of the EA.

Alternative "G" is an error and has been corrected in the final EA.

**45. Comment:** Alternative for Trout Springs, Owyhee Juniper Mountain Landscape; Ecological Recovery Alternative

**BLM Response**: See Section 2.3 of the EA.