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Bureau of Land Management

Hamblin Valley Watershed Evaluation Report

Ely Field Office
Ely, Nevada

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Hamblin Valley Watershed
Draft Evaluation Report

Introduction

General Background

Hamblin Valley is one of sixty-one total watershed management units on the Ely District. This watershed is located southeast of Ely, Nevada, and south of Baker, Nevada, and extends into Utah. The Nevada portion of Hamblin Valley is flanked by the Mountain Home Mountains on the East, The South Snake Mountains on the North, the Limestone Hills and the Wilson Creek Mountains on the West, and the White Rock Mountains on the South. It is characterized by generally north to south trending mountains, gently to steeply sloping benches and bajadas, and one valley bottom characterized by level to slightly rolling terrain. The watershed drains internally into alkali sinks towards the northern portion of the valley. Elevations in the watershed vary from about 5, 500 feet in the valley bottom to 11, 200 feet on top of Granite Peak in Great Basin National Park in the South Snake Mountain Range. Precipitation varies from a yearly average of about 5 to 10 inches on the valley bottom to 35 or more inches on top of the South Snake Mountains. Precipitation occurs as winter snow or spring/fall thundershowers and rains with the driest period occurring from midsummer to early autumn. Average annual air temperature is from 40 to 50 degrees Fahrenheit, decreasing as elevation increases. The average frost-free season is from 90 to 140 days in the valley bottom to 50 to 70 days in upper elevations.

The watershed constitutes approximately 314, 738 acres. Included in this total are 304,950 acres (97 %) of Bureau of Land Management (BLM) administered public land, 4,548 (1.5 %) acres private land, and 5,240 (1.5 %) acres National Park Service (NPS) land. Allotments included within this watershed are large portions of the Hamblin Valley (#00133), Hamblin (#1201), Chokecherry (#10131), North Chokecherry (#20134), Delmue Burn (#1201), and Miller Use Area (#1201) Allotments (Map 1). A small portion of the Murphy Wash Allotment (#9435) is also included in this watershed. Portions of other allotments are too small to accommodate in this evaluation.

Vegetation communities within the watershed include sagebrush communities including black sagebrush, low sagebrush, basin big sagebrush, mountain big sagebrush communities, Wyoming big sagebrush, and Wyoming big sagebrush upland communities. Additional rangeland communities within the watershed include salt desert shrub, winterfat, and saline meadow communities at the valley bottom and mahogany communities at higher elevations. Woodland communities within the watershed include pinyon and/or juniper communities and mixed conifer and aspen at higher elevations. Riparian areas are located within the watershed.

BLM has worked in this watershed for several years to develop agreements with livestock permittees. Both cattle and sheep grazing occur in the watershed. The Hamblin Valley allotment was evaluated from 1982-1997. Hamblin Valley allotment is currently grazed by sheep and cattle, and is also utilized by mule deer, horse, and pronghorn antelope. Livestock actual use has ranged from a low of 3,041 animal unit months (AUMs) to a high of 8,602 AUMs. Actual use was determined from licensed use and Actual Grazing Use Report forms submitted. The season of use during the evaluation period 1986-1997 was 11/1 to 5/31. From 1985-1997, use averaged 6,011 AUMs, which is 73% of preference. The historical grazing use has been slight to light on the northern and southern ends, and light use in the middle with only a few areas of heavy use. Following the evaluation an agreement for the implementation of a rotational grazing system was implemented for the Chokecherry and Hamblin allotments. The grazing system is a three-pasture deferred grazing system, and includes three pastures in the Chokecherry Allotment. This temporary agreement will be active until the Chokecherry Final Multiple Use Decision is issued. The combined permitted use for these allotments is 5,850 AUMs (Chokecherry 3,327 AUMs and Hamlin 2,523). The permittee agrees to take ten percent voluntary non-use to implement this plan. Permitted use after ten percent voluntary non-use would be 5,265 AUMs. The pastures of the Chokecherry allotment are Big Springs, Young, and South. The season of use on the Hamblin allotment and the pastures within the Chokecherry allotment are as follows:

YEAR	HAMLIN	SOUTH	YOUNG/BIG SPRINGS
1	10/15-1/23	1/24-4/17	4/18-6/5
2	2/20-5/31	10/15-1/6	1/7-2/19 6/1-6/5
3	11/28-3/18	3/9-5/31	10/15-11/27 6/1-6/5
4	1/7-4/17	10/15-1/6	4/18-6/5
5	10/15-1/23	3/9-5/31	1/24-3/8 6/1-6/5
6	2/20-5/31	11/28-2/19	10/15-11/27 6/1-6/5
7	Same as year one		

The Miller Use Area was created to provide Frank Delmue with a transition use area from his winter use area (Hamblin) to his summer use area (Summer Native). According to data collected in 2001 on the Hamblin Valley Use area, most of the grazing occurred in the valley bottom where the dominant vegetation is winterfat. According to the Wilson Creek Final Multiple Use Decision, the season of use in Hamlin Valley is 11/1-4/15. A rotation schedule was also developed requiring herding away from the valley bottom onto the benches while alternating use on the east and west bench each year. At the time, the dispersion did not appear to have occurred due to very little observed use outside the valley bottom.

The watershed analysis guidelines and processes described in BLM Handbook, *H-4180-1 Rangeland Health Standards* are being used to analyze watersheds in the Ely district. This watershed approach allows the BLM to focus on flexible management techniques necessary to accommodate the functionality of the watershed. It allows for a shift from species and individual use-driven management to the natural systems that support s in properly functioning conditions.

Evaluation Process

This evaluation was done in accordance with BLM regulations regarding Rangeland Health Standards:

- Title 43 Code of Federal Regulation (43 CFR), subpart 4180
- Bureau of Land Management (BLM) Handbook *H-4180-1 Rangeland Health Standards*
- Standards and Guidelines for Nevada's Mohave-Southern Great Basin Area.

Standards are statements of physical and biological condition or degree of function required for healthy sustainable rangelands. Achieving or making significant progress towards these functions and conditions is required of all uses of public rangelands as stated in 43 CFR 4180.1. Standards were developed for the geographic area covered by the Mohave-Southern Great Basin Area Resource Advisory Council (RAC).

This report will evaluate the status of resource condition against the Mohave-Southern Great Basin Area RAC Standards for Rangeland Health using methods outlined in *H-4180-1 Rangeland Health Standards*. The standards and guidelines for the Mohave-Southern Great Basin Area are abbreviated below:

Standard #1 Soils
Standard #2 Ecosystem Components
Standard #3 Habitat and Biota
Standard #4 Wild Horses and Burro Populations
OHV Guidelines for Nevada Public Lands

Staff resource specialists from the Ely Field Office were included on the interdisciplinary (ID) team for public lands in Hamblin Valley Watershed. Available monitoring data, standardized methodologies and field assessments were used by the watershed evaluation ID team to characterize the status of resource conditions. The ID team used ecological site descriptions as developed by the Natural Resources Conservation Service (NRCS) to compare existing vegetative health and cover composition to vegetation potential. Appropriate ecological site descriptions were determined using current soil survey information. Summaries of assessment data are included in this evaluation report for clarity and all assessment data is available for review at the Ely Field Office.

Line-point intercept data was collected for the basin big sagebrush, mountain big sagebrush, Wyoming big sagebrush, black sagebrush, salt desert shrub, winterfat, and

saline meadow and mountain mahogany rangeland communities, and juniper, pinyon-juniper, and mixed conifer woodland communities. Line point intercept cover data was gathered on the watershed in 2007.

Allotment specific data such as utilization, ecological condition, line intercept cover, use pattern mapping and trend was also collected at key areas and examined as part of the allotment evaluations for livestock. These data have been analyzed and evaluated as a part of these evaluations and are summarized in this document in Appendix A.

Sequence of Events

The 4180-1 handbook defines four phases of watershed analysis: 1) assessment of the watershed data to estimate current conditions, 2) evaluation of the assessment data, 3) determination of standards, and 4) developing a landscape management strategy. This evaluation report is a land health evaluation based on watershed level assessment data used to estimate the current condition of 304,950 acres of public lands administered by the BLM. The report documents the evaluation process. The subsequent landscape implementation strategy would be a separate document for guiding activities in the watershed. This strategy would stem from the recommendations given in this evaluation.

In this evaluation report we compare existing conditions to RACs' rangeland health standards, by evaluating the degree of achievement of rangeland health standards. If a standard is not met, making significant progress toward achievement, or there is lack of conformance with guidelines, an analysis and interpretation of the causal factors is conducted and causal factors are identified. The determination document records the authorized officers' finding that existing grazing management practices or levels of grazing use on public lands either are or are not significant factors in failing to achieve the standards.

In addition to evaluating biological data and comparing the existing conditions to the RACs' standards, other uses such as recreation activities (indicated by roads and trails), rights-of-way grants, and mineral disturbances will be evaluated. These uses can also affect the health of a watershed and can create disturbance or are in combination with other factors a causal factor for not achieving a standard or standards.

This report also contains recommendations developed by the watershed evaluation ID team during field evaluation and analysis of existing data. Recommendations in this report focus on land use activities needed to have proper functioning conditions in the watershed. All land uses and programs are assessed and documented as part of this process. The authorized officer considers the evaluation to determine if rangeland health standards are being met, and then signs a *Determination of Standards* documenting the degree of meeting or not meeting a standard and the causal factors for not meeting.

The evaluation and recommendations in this report help to choose the most effective management to initiate progress towards meeting standards.

43 CFR 4180.2(c) states in part, “the authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards and conform with the guidelines…”. The 4180-1 handbook says, “Where existing grazing management or levels of grazing use are not significant factors, then watershed restoration plans will be developed to address management actions needed to achieve the standards. Landscape management strategies for the watershed will be developed in consultation and coordination with affected permittees, the state having lands or managing resources within the area and other interested parties.” Appropriate site-specific National Environmental Policy Act (NEPA) analysis would be completed prior to implementing management decisions.

Summary of Findings by Standards

"STANDARD 1. SOILS: Watershed soils and stream banks should have adequate stability to resist accelerated erosion, maintain soil productivity, and sustain the hydrologic cycle.

Soil indicators:

- Ground cover (vegetation, litter, rock, bare ground);
- Surfaces (e. g. biological crusts, pavements); and
- Compaction/infiltration.

Riparian soil indicators:

- Stream bank stability."

The analysis and interpretation of the findings by the Hamblin Valley Watershed evaluation ID Team indicates this standard is not being achieved. Line-point intercept cover data and road inventory data were analyzed and interpreted. Soil map units with similar characteristics and dominant vegetation were lumped together and categorized according to potential vegetation communities for this evaluation. The standards utilized in this evaluation are derived from the percent-by-weight composition values described in the ecological site descriptions for the soil map units. An in-depth description of the potential vegetation communities for the Hamblin Valley Watershed may be found in the following section summary entitled "Standard 2. Ecosystem Components."

Potential woodland communities in the Hamblin Valley Watershed comprise approximately 18 percent of the watershed ((Map 2, Figure 2.1 in Standard 2). Current estimates of the tree canopy cover for curl-leaf mountain mahogany, high-elevation mixed conifer woodlands, juniper savannahs, and pinyon-juniper woodlands and their standards are summarized in Table 1.1. Current estimates of the understory ground cover composition for woodlands in the Hamblin Valley Watershed and their standards are summarized in Table 1.2. As overstory tree canopy cover exceeds the mature woodland canopy cover limits described in the ecological site descriptions, understory vegetation in the interspaces will become sparse or absent. A reduction in interspace understory increases the potential for rapid runoff and sheet and rill erosion. However, if a significant amount of understory is still present and the understory composition is within the ranges described in the standards, then the potential increases for the understory to recover following an event that reduces canopy cover.

Current estimates of the average overstory canopy cover for curl-leaf mountain mahogany (27.3 percent) and high-elevation mixed conifer (45.8 percent) woodlands meet the soils standards. The estimated proportion of the total understory cover for curl-leaf mountain mahogany is 61.3 percent with functional group composition meeting the described standards as a whole. The estimated proportion of the total understory cover for high-elevation mixed conifer woodlands is 23.9 percent. The understory functional group composition for high-elevation mixed conifer woodlands does not meet the

described standards as a whole with shrub ground cover composition higher than the standard and foliar forb ground cover composition considerably lower than the standard.

Current estimates of the average overstory canopy cover for juniper savannahs (15.1 percent) and pinyon-juniper woodlands (45.8 percent) do not meet the described standards. The estimated proportion of the total cover described as understory for juniper savannahs is 63.8 percent with the understory functional group composition not meeting the standards as a whole. The average shrub ground cover composition for juniper savannahs does meet the standard but the average herbaceous ground cover composition is much lower than the standard. This may be due to the prevalence of cheatgrass within these communities, comprising an average 16.9 percent of the total understory ground cover.

The estimated proportion of total cover defined as understory for pinyon-juniper woodlands is 15.4 percent. The understory functional group composition for pinyon-juniper woodlands does not meet the described standards as a whole with basal and foliar grass ground cover composition lower than the standard described. This may, in part, be due to the presence of cheatgrass within these communities which comprise 4.5 percent of the total understory ground cover.

Table 1.1. Comparison of the Average Percent Tree Canopy Cover and the Ecological Site Descriptions' Standard for Woodland Communities in the Hamblin Valley Watershed.

Woodland Community Type	**Total Sites**	**Estimated Percent Tree Canopy Cover**	***Standard Percent Tree Canopy Cover***
Curl-Leaf Mountain Mahogany	6	27.3	***15-50***
High-Elevation Mixed Conifer Woodlands	4	45.8	***40-50***
Juniper Savannah	10	15.1	***<10***
Pinyon-Juniper Woodlands	26	45.8	***20-35***

Table 1.2. Comparison of the Average Percent Total Understory Ground Cover and Percent Understory Ground Cover Composition as Reported by Functional Group with the Ecological Site Descriptions' Standards for Woodland Communities in the Hamblin Valley Watershed.

Woodland Community Type	**Total Sites**	**Estimated Under-story Ground Cover**	**Estimated Understory Ground Cover Composition (Percent Cover)**				***Standard Understory Composition (Percent-by-Weight)***		
		(Percent of Total Cover)	Shrubs	Grasses	Forbs	Cheat-grass	***Shrubs***	***Grasses***	***Forbs***
Curl-Leaf Mountain Mahogany	6	61.3	49.1	40.5	10.3	0.1	***30-60***	***30-55***	***5-15***
High-Elevation Mixed Conifer	4	23.9	82.8	15.1	2.1	0	***70***	***15***	***15***
Juniper Savannah	10	63.8	56.4	22.6	4.1	16.9	***53-58***	***37-42***	***5-6***
Pinyon-Juniper Woodlands	26	15.4	53.2	30.2	11.0	4.5	***30-50***	***35-60***	***10-20***

In addition to canopy cover and understory ground cover composition, data was collected to estimate the soil surface composition of woodland communities in the Hamblin Valley Watershed (Table 1.3). No standard exists by which to compare the estimates of current conditions for soils surfaces. Heterogeneous vertical and horizontal vascular plant structure within vegetation communities optimizes growing conditions for biological soil crusts. The homogenization of functional group and species composition will decrease overall biological soil crust cover and species richness. The soil surface of all woodland communities in the Hamblin Valley Watershed is dominated by litter and bare soil. Very little or no biological soil crusts are present.

Table 1.3. Current Estimates of Average Soil Surface Composition for Woodland Communities in the Hamblin Valley Watershed.

Woodland Community Type	Bare Soil*	Biotic Crust	Lichen	Litter	Moss	Plant	Rock
Curl-Leaf Mountain Mahogany	30.2	0	0.2	59.1	0.2	1.5	8.8
High-Elevation Mixed Conifer Woodlands	7.3	0	0	85.2	0	0.8	6.9
Juniper Savannah	51.6	0.5	0.5	35.1	1.0	1.0	10.3
Pinyon-Juniper Woodlands	28.4	0	0.9	57.3	0.4	0.6	12.4

* 'Bare Soil' refers to the lack of any other soil surface at the point of observation and does not take into consideration whether vegetation occurred directly above (vegetation cover is referred to in this evaluation as 'ground cover').

Potential sagebrush communities comprise approximately 62 percent of the Hamblin Valley Watershed (Map 2, Figure 2.1 in Standard 2). Current estimates of percent ground cover for individual sagebrush communities compared to ecological site description standards are summarized in Table 1.4. The average percent ground cover for all sagebrush communities exceeds the described standards. Ground cover that is higher than expected may be interpreted as an increase in raindrop interception, decreasing erosion potential. However, if the increase in cover is primarily comprised of overstory canopy cover, the overstory species out-compete understory herbaceous species, reducing the herbaceous ground cover in the intercanopy spaces and increasing the erosion potential in these intercanopy areas.

Table 1.4. Comparison of Average Percent Ground Cover with the Ecological Site Descriptions' Standard for Sagebrush Communities in the Hamblin Valley Watershed.

Sagebrush Community Type	Total Sites	Estimated Ground Cover	*Standard Ground Cover*
Black Sagebrush	31	43.1	***5-25***
Mountain Big Sagebrush	13	60.2	***35-45****
Wyoming Big Sagebrush	15	35.7	***10-25***
Wyoming Big Sagebrush - Upland	3	64.9	***30-40***

* The reported standard for Mountain Big Sagebrush communities is an average range of the standards reported in the ecological site descriptions and does not necessarily reflect the absolute minimum or maximum cover for a given site.

The total ground cover broken down according to functional group composition for the sagebrush communities is summarized in Table 1.5. The standards as described in the

ecological site descriptions are summarized in Table 1.6. An increase in tree canopy cover or shrub ground cover coinciding with an increase in bare ground due to a decrease in herbaceous species cover, especially fibrous-rooted perennial grasses, increases the erosion potential.

The sagebrush communities do not meet the described functional group composition standards. The overstory ground cover composition for all sagebrush communities exceeds the described standards. Tree canopy cover composition is higher than desired for black sagebrush, mountain big sagebrush, and Wyoming big sagebrush communities. Shrub ground cover composition is higher than the described standards for Wyoming big sagebrush and Wyoming big sagebrush upland communities. The native herbaceous ground cover composition is well below the described standards for all sagebrush communities.

An increase in cheatgrass ground cover at the expense of fibrous-rooted perennial grasses may also increase erosion potential as cheatgrass does not have an extensive root system and the whole plant, roots included, dies at the end of the species' growing season. Cheatgrass is present in all sagebrush community types and is particularly prevalent in the black sagebrush and Wyoming big sagebrush communities. Its presence tends to be site-specific with a high percent ground cover at certain sites and little or no ground cover at other sites within the same sagebrush community type.

Table 1.5. Average Percent Ground Cover Composition of Sagebrush Communities in the Hamblin Valley Watershed as Reported by Functional Groups and Cheatgrass.

Sagebrush Community Type	**Total Sites**	**Trees**	**Shrubs**	**Grasses**	**Forbs**	**Cheat-grass**
Black Sagebrush	31	11.1	41.4	17.3	1.3	28.9
Mountain Big Sagebrush	13	43.7	22.4	16.4	5.6	1.9
Wyoming Big Sagebrush	15	3.0	72.6	10.8	1.2	12.4
Wyoming Big Sagebrush Upland	3	0.8	29.7	47.6	0.5	21.5

Table 1.6. Soils Standard: Average Percent-by-Weight Composition from Ecological Site Descriptions for Sagebrush communities by Functional Groups.

Sagebrush Community Type	Trees	Shrubs	Grasses	Forbs	Cheatgrass
Black Sagebrush	***0-3***	***45****	***50****	***5***	***0***
Mountain Big Sagebrush	***0-3***	***25****	***65****	***10***	***0***
Wyoming Big Sagebrush	***0***	***40-50***	***45-55***	***5***	***0***
Wyoming Big Sagebrush Upland	***0-3***	***25***	***65***	***10***	***0***

* Starred functional group standards are averages of the reported values in the ecological site descriptions for the sagebrush communities being described.

In addition to canopy cover and understory ground cover composition, data was collected to estimate the soil surface composition of sagebrush communities in the Hamblin Valley Watershed (Table 1.7). No standard exists for comparing the estimates of current conditions for soil surfaces. The soil surface of all sagebrush communities in the Hamblin Valley Watershed is dominated by bare soil and litter with very little or no biological soil crusts present.

Table 1.7. Current Estimates of Average Soil Surface Composition for Sagebrush Communities in the Hamblin Valley Watershed.

Sagebrush Community Type	Bare Soil*	Biotic Crust	Lichen	Litter	Moss	Plant	Rock
Black Sagebrush**	58.2	0.2	0.9	34.6	0.4	1.2	7.7
Mountain Big Sagebrush	25.3	0	0.7	63.6	0.4	1.1	8.9
Wyoming Big Sagebrush	61.7	0.1	0.2	35.3	0.7	1.3	0.7
Wyoming Big Sagebrush – Upland	32.0	0	0	62.8	0.5	2.2	2.5

* 'Bare Soil' refers to the lack of any other soil surface at the point of observation and does not take into consideration whether vegetation occurred directly above (vegetation cover is referred to in this evaluation as 'ground cover').
**The average soil surface calculations for Black Sagebrush communities do not equal 100 percent.

Potential non-sagebrush rangeland communities – including saline meadow, salt desert shrub, and winterfat communities – comprise approximately 20 percent of the Hamblin Valley Watershed (Map 2, Figure 2.1 in Standard 2). Current estimates of percent ground cover for these communities compared to their ecological site description standards are summarized in Table 1.8. Current estimates of total ground cover for all non-sagebrush rangeland communities described exceed the described soils standards.

Table 1.8. Comparison of Average Percent Ground Cover with the Ecological Site Descriptions' Standard for Non-Sagebrush Rangeland Communities in the Hamblin Valley Watershed.

Non-Sagebrush Rangeland Community Type	**Total Sites**	**Estimated Ground Cover**	***Standard Ground Cover***
Salt Desert Shrub	8	38.1	***20-30****
Saline Meadows	2	32.5	***15-30****
Winterfat	15	33.7	***10-25***

* The reported standards for Saline Meadow and Salt Desert Shrub communities are an average range of the standards reported in the ecological site descriptions and does not necessarily reflect the absolute minimum or maximum cover for a given site.

If an increase in the estimated ground cover coincides with an increase in shrub overstory and a decrease in herbaceous ground cover, especially fibrous-rooted perennial grasses, the erosion potential of a given site increases. Current estimates of the total ground cover broken down according to functional group composition for the sagebrush communities are summarized in Table 1.9. The standards as described in the ecological site descriptions are summarized in Table 1.10. For all of the communities described, the shrub ground cover composition exceeds the described standards while the herbaceous ground cover composition is far below the described standards. None of the non-sagebrush rangeland communities meet the soils standard.

Cheatgrass is present in all of the non-sagebrush rangeland community types and is particularly prevalent in the winterfat communities. Its presence tends to be site-specific with a high percent ground cover at certain sites and little or no ground cover at other sites within the same community types.

Table 1.9. Average Ground Cover Composition of Non-Sagebrush Rangeland Communities in the Hamblin Valley Watershed as Reported by Functional Groups and Cheatgrass.

Non-Sagebrush Rangeland Community Type	**Total Sites**	**Trees**	**Shrubs**	**Grasses**	**Forbs**	**Cheatgrass**
Salt Desert Shrub	8	0	81.5	1.0	0.7	16.9
Saline Meadow	2	0	46.7	42.2	0	11.1
Winterfat	15	0	57.2	11.4	0.2	31.2

Table 1.10. Soils Standard: Average Percent-by-Weight Composition described in Ecological Site Descriptions for Non-Sagebrush Rangeland Communities as Reported by Functional Groups.

Non-Sagebrush Rangeland Community Type	Trees	Shrubs	Grasses	Forbs	Cheatgrass
Salt Desert Shrub	***0-3***	***40****	***60****	***5***	***0***
Saline Meadow	***0-3***	***5-25***	***70-80***	***5-15***	***0***
Winterfat	***0***	***40-50***	***45-55***	***5***	***0***

* The reported standard for Salt Desert Shrub communities is an average range of the standards reported in the ecological site descriptions and does not necessarily reflect the absolute minimum or maximum cover for a given site.

In addition to canopy cover and understory ground cover composition, data was collected to estimate the soil surface composition of non-sagebrush rangeland communities in the Hamblin Valley Watershed (Table 1.11). No standard exists for comparing the estimates of current conditions for soil surfaces. The soil surface for all non-sagebrush rangeland communities described is dominated by bare soil and litter with very little or no biological soil crusts present.

Table 1.11. Current Estimates of Average Soil Surface Composition for Non-Sagebrush Rangeland Communities in the Hamblin Valley Watershed.

Non-Sagebrush Rangeland Community Type	Bare Soil*	Biotic Crust	Lichen	Litter	Moss	Plant	Rock
Saline Meadow	66.2	0	0	33.2	0	0.3	0.3
Salt Desert Shrub	54.7	3.8	0.1	39.9	0.1	0.8	0.6
Winterfat	69.7	0.9	0.1	27.8	0.3	0.6	0.6

* 'Bare Soil' refers to the lack of any other soil surface at the point of observation and does not take into consideration whether vegetation occurred directly above (vegetation cover is referred to in this evaluation as 'ground cover').

Roads

A recent road inventory was performed in the Hamblin Valley Watershed. According to data evaluated, the road density for Hamblin Valley Watershed is .84 miles of road per square mile. There are 398 miles of inventoried roads covering a total of 492 square miles within the Lincoln County portion of the watershed. Many of these roads are recent developments and have been pioneered as a result of increased use of public lands for off-highway vehicle use. Many roads or trails run counter to the slope and act as berms capturing sheet flow from runoff and snowmelt and converting it into channel flow along the roads. This causes accelerated erosion where roads capture water flow in this manner.

There are approximately 96 miles of inventoried roads and trails that intersect sensitive soils within the Lincoln County portion of the Hamblin Valley Watershed. These soils are associated with winterfat communities and have low shear strength that causes them to "powder out" and erode with increased traffic.

Causal Factors

The causal factors for the Hamblin Valley Watershed not meeting the Soil Standard are derived from many interrelated issues, many of the same factors that affect the majority of Great Basin ecological province. Based on scientific research, there is a consensus that the alteration of Great Basin ecosystems and their historical natural disturbance regimes includes the following landscape-scale causes:

- Historic livestock management practices in the wake of European settlement of the West.
- Increasingly effective fire suppression in last century.
- The introduction and spread of non-native annual grasses.
- Climatic fluctuations in recent years.
- Localized overuse especially near water sources and on winterfat sites by livestock, wild horses from Utah and/or elk.
- Improperly designed roads and density of roads in some areas.
- Improper water distribution, and season of use on winterfat

Recommendations

- Develop treatments with the objective of increasing herbaceous cover and decreasing spread of annual grasses as economically and ecologically feasible. Treatments used should include a variety of mechanical, chemical and prescribed-burn pinyon-juniper and brush removal methods as well as native grass seedings and or transitional non-native seedings to increase herbaceous ground cover.
- Focus fuel reduction and restoration as indicated by FRCC modeling tool to achieve land health standards.
- Continue livestock management that conforms to guidelines.
- Continue management of wild horse herds and wildlife habitat. Where feasible, build protective fences around riparian areas.
- Develop a transportation plan to address improvement of road locations, closure of roads, and prevent the creation of new roads.

"STANDARD 2. ECOSYSTEM COMPONENTS:

Watersheds should possess the necessary ecological components to achieve state water quality criteria, maintain ecological processes, and sustain appropriate uses.

Riparian and wetlands vegetation should have structural and species diversity characteristic of the stage of the stream channel succession in order to provide forage and cover, capture sediment, and capture, retain, and safely release water (watershed function).

Upland indicators:

- Canopy and ground cover, including litter, live vegetation, biological crust, and rock appropriate to the potential of the ecological site;
- Ecological processes are adequate for the vegetation communities.

Riparian indicators:

- Stream side riparian areas are functioning properly when adequate vegetation, large woody debris, or rock is present to dissipate stream energy associated with high water flows.
- Elements indicating proper functioning condition such as avoiding accelerating erosion, capturing sediment, and providing for groundwater recharge and release are determined by the following measurements as appropriate to the site characteristics:
    - Width/Depth ratio;
    - Channel roughness;
    - Sinuosity of stream channel;
    - Bank stability;
    - Vegetative cover (amount, spacing, life form); and
    - Other cover (large woody debris, rock).
- Natural springs, seeps, and marsh areas are functioning properly when adequate vegetation is present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics.

Water quality indicators:

- Chemical, physical, and biological water constituents are not exceeding the state water quality standards."

Upland Standards

The analysis and interpretation of the findings by the Hamblin Valley Watershed evaluation ID Team indicates this standard is not being achieved. Line-point intercept cover data and Fire Regime and Condition Class (FRCC) were analyzed and interpreted.

Figure 2.1. Potential Major Vegetation in the Hamblin Valley Watershed as Estimated from Soil Survey Data.

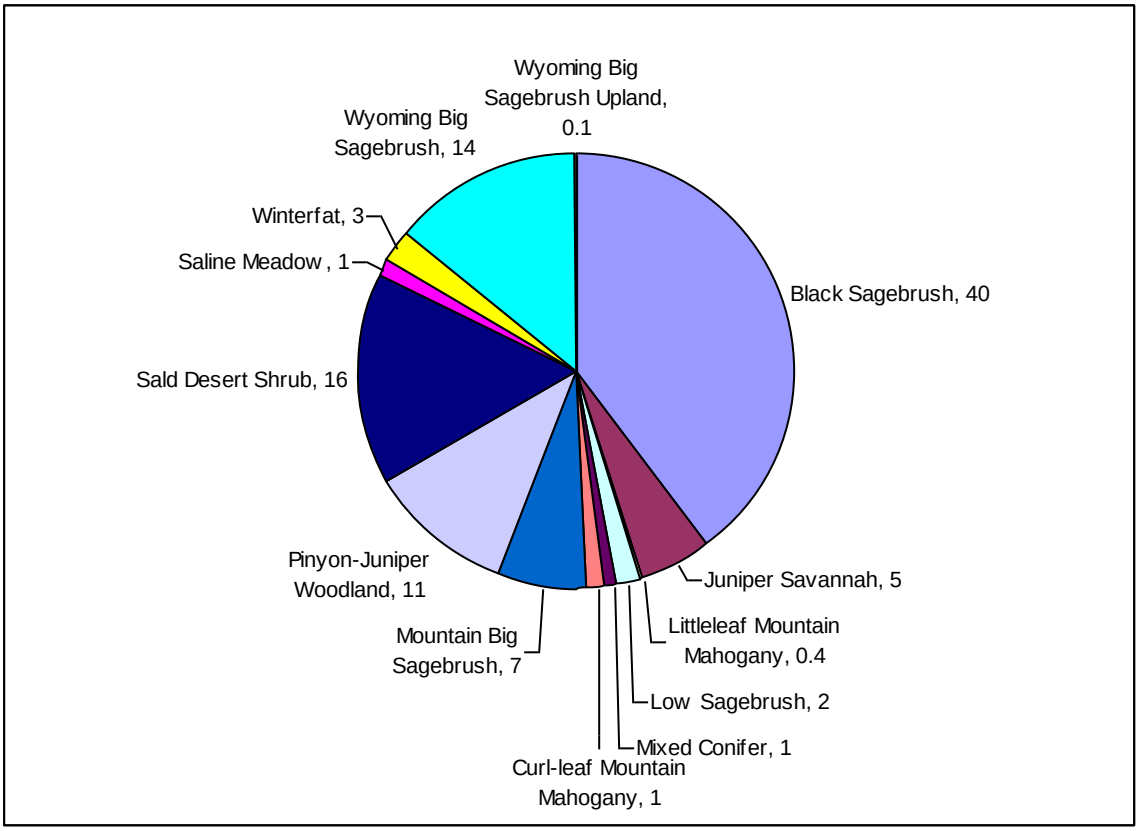


Figure 2.1 depicts the proportion of the watershed that has the potential for each major vegetation community to be present. The potential vegetation communities for the Hamblin Valley Watershed were estimated by assuming the dominant vegetation for a given soil map unit represented the vegetation for the entire area in the soil map unit. The potential vegetation estimated for a given area does not necessarily reflect the actual vegetation present at sites visited by field crews. Potential littleleaf mountain mahogany communities (1,048 acres or 0.3% of watershed) and potential low sagebrush communities (4,992 acres or 2% of watershed) were not encountered by field crews during the 2007 field season. Data for these communities were not collected and the communities were not characterized at this scale of analysis. These communities, however, will be assessed at a smaller scale where they pertain to more site-specific needs associated with pre-monitoring ahead of project level implementation.

Potential pinyon-juniper woodland communities comprise approximately 31,234 acres (11%) of the watershed (Map 2, Figure 2.1). Forestland ecological site descriptions indicate the average overstory canopy in pinyon-juniper woodlands should be 20 to 35 percent. A total of 26 pinyon-juniper woodland sites were assessed by field crews in 2007. Current estimates from professional observations indicate that the pinyon-juniper

woodlands are not meeting the upland standard with an average canopy cover of 46 percent.

Understory ground cover composition in pinyon-juniper woodlands are fairly close to the upland standard as described in the ecological site descriptions. The average shrub ground cover composition was determined to be 53 percent, just slightly higher than the standard of 30 to 50 percent-by-weight understory composition. The average basal and foliar grass ground cover composition of the understory was determined to be 31 percent of the total understory, just slightly lower than the standard of 35 to 60 percent-by-weight understory composition. The average foliar forb ground cover composition fell within the range of the standard. Cheatgrass was also present in pinyon-juniper woodlands, composing 5 percent of the total understory.

Potential juniper savannahs comprise approximately 15,412 acres (5%) of the watershed (Map 2, Figure 2.1). Rangeland ecological site descriptions indicate the average overstory canopy in juniper savannahs should be less than 10 percent with an average percent-by-weight composition of 5 to 15 percent for trees. A total of 10 juniper savannah sites were assessed by field crews in 2007. Current estimates from professional observations indicate that the pinyon-juniper woodlands are not meeting the upland standard with an average canopy cover of 15 percent and an average percent cover composition of 36 percent. This does not meet the upland standard for juniper savannahs.

The described standards for juniper savannahs indicate the understory components should be 45 to 55 percent-by-weight shrubs, 35 percent-by-weight grasses, and 5 percent-by-weight forbs. The ground cover composition in juniper savannahs for all understory functional groups is below the specified upland standard with estimated average ground cover compositions for shrubs at 36 percent, grasses at 14.4 percent, and forbs at 2.6 percent. Cheatgrass is also present with an estimated average of 10.8 percent of the total ground cover. The prevalence of cheatgrass at all juniper savannah sites is actually very low but, relative to the prevalence of other functional groups, its understory composition appears high.

Potential high-elevation mixed conifer woodlands make up 2,193 acres (1%) of the watershed (Map 2, Figure 2.1). Woodland ecological site descriptions indicate the average overstory canopy in mixed conifer woodlands should be 40 to 50 percent. A total of 4 high-elevation mixed conifer woodland sites were assessed by field crews in 2007. Current estimates from professional observations indicate that the mixed conifer woodlands are meeting the upland standard with an average canopy cover of 46 percent. For understory composition standards, the ecological site descriptions specify the understory vegetation should be composed of approximately 70 percent shrubs, 15 percent grasses, and 15 percent forbs. The estimates of understory composition for mixed conifer woodlands indicate that shrub composition is higher (83 percent) and forb composition is lower (2 percent) than the specified upland standard. Estimated native grass composition equals the specified upland standard. The understory upland standard for mixed conifer woodlands is not being met as a whole.

Potential curl-leaf mountain mahogany encompasses approximately 3,534 acres (1%) of the watershed (Map 2, Figure 2.1). Rangeland ecological site descriptions indicate the average overstory canopy in mountain mahogany should be 15 to 50 percent with curl-leaf mountain mahogany composing nearly the entire overstory canopy. A total of 10 curl-leaf mountain mahogany sites were assessed by field crews in 2007. Current estimates from professional observations indicate that the curl-leaf mountain mahogany are meeting the upland standard with an average canopy cover of 39 percent. However, only 68 percent of the overstory canopy is composed of curl-leaf mountain mahogany with pinyon-pine and juniper trees accounting for 27 percent of the overstory canopy.

For the understory composition standards for curl-leaf mountain mahogany communities, the ecological site descriptions specify the understory vegetation should be composed of 30 to 60 percent shrubs, 30 to 55 percent grasses, and 5 to 15 percent forbs. The estimates of current conditions indicate that the shrub and forb components meet the standards but the estimated native grass composition of the understory (24.8 percent) is less than the standard specifies. The upland standard is not being met for understory composition as a whole. Cheatgrass is present but not prevalent in curl-leaf mountain mahogany.

Potential sagebrush communities cover approximately 178,971 acres (63%) of the Hamblin Valley Watershed (Map 2, Figure 2.1). Table 2.1 summarizes the percent cover composition for the individual sagebrush communities. Table 2.2 summarizes the standards as described in the ecological site descriptions. The percent canopy cover composition of trees exceeds the described standards for black sagebrush, mountain big sagebrush, and Wyoming big sagebrush community types. Pinyon and/or juniper trees are most prevalent in the mountain big sagebrush communities due to the close proximity of the communities to pinyon-juniper woodlands.

Shrub ground cover composition in the Wyoming big sagebrush communities exceeds the composition described in the ecological site descriptions. For all of the sagebrush communities evaluated, basal and foliar grass ground cover and foliar forb ground cover is less than the described standards. Cheatgrass is present in all sagebrush types but is especially prevalent in the black sagebrush and Wyoming big sagebrush upland communities. In the black sagebrush communities, most sites had moderate to very high cheatgrass cover but a few sites exhibited little to no cover. All of the Wyoming big sagebrush upland sites exhibited moderate to very high cheatgrass cover, possibly due to the close proximity of the sites to a road. Both Wyoming big sagebrush and mountain big sagebrush had a few sites with moderate to high cheatgrass cover but most sites exhibited little to no cover. For all of the sagebrush communities, cheatgrass prevalence appears to be site-specific and may be due to a spatial correlation not examined during this evaluation.

Table 2.1. Comparison of Current Condition Estimates of Sagebrush Communities in Hamblin Valley Watershed from Average Percent Ground Cover Composition as Reported by Functional Groups and Cheatgrass.

Sagebrush Community Type	**Total Sites**	**Trees**	**Shrubs**	**Grasses**	**Forbs**	**Cheat-grass**
Black Sagebrush	31	11.1	41.4	17.3	1.3	28.9
Mountain Big Sagebrush	13	43.7	22.4	16.4	5.6	1.9
Wyoming Big Sagebrush	15	3.0	72.6	10.8	1.2	12.4
Wyoming Big Sagebrush Upland	3	0.8	29.7	47.6	0.5	21.5

Table 2.2. Upland Standard: Average Percent-by-Weight Composition described in Ecological Site Descriptions for Sagebrush communities as Reported by Functional Groups.

Sagebrush Community Type	***Trees***	***Shrubs***	***Grasses***	***Forbs***	***Cheatgrass***
Black Sagebrush	***0-3***	***45****	***50****	***5***	***0***
Mountain Big Sagebrush	***0-3***	***25****	***65****	***10***	***0***
Wyoming Big Sagebrush	***0***	***40-50***	***45-55***	***5***	***0***
Wyoming Big Sagebrush Upland	***0-3***	***25***	***65***	***10***	***0***

* Starred functional group standards are averages of the reported values in the ecological site descriptions for the sagebrush communities being described.

Non-sagebrush rangeland communities comprise 20 percent of the watershed with potential salt desert shrub communities occupying approximately 44,611 acres (16%) of the watershed, potential saline meadow communities occupying approximately 2,231 acres (1%) of the watershed, and winterfat communities occupying approximately 7,344 acres (3%) of the watershed (Map 2, Figure 2.1). Table 2.3 summarizes the current condition estimates for these communities. Table 2.4 summarizes the standards as described in the ecological site descriptions. Neither pinyon-pine nor juniper trees are present in any of these community types, which corresponds with the location of the communities in the valley bottom rather than adjacent to pinyon-juniper woodlands.

The shrub ground cover composition for salt desert shrub and saline meadow communities surpasses the described standards. Even though the described standard for salt desert shrub communities has a wide range given the broad variability amongst ecological site descriptions, examining the sites individually indicated that the shrub cover composition for most sites were considerably higher than the described standard for that specific ecological site. The shrub ground cover composition for winterfat communities also exceeds the described standard but the difference between the observed and the standard is not as dramatic as the first two community types. Alternately,

herbaceous ground cover composition is considerably less than the described standards for all three vegetation community types. For salt desert shrub communities, nearly all of the forb cover is composed of halogeton (*Halogeton glomeratus)*. Half of the forb cover in winterfat communities is also composed of halogeton. Neither the shrub ground cover composition nor the herbaceous ground cover composition meets the upland standards for these communities.

Cheatgrass is present in all three rangeland community types and is especially high in the winterfat communities. In the salt desert shrub communities, several sites exhibited very high cheatgrass cover with the rest exhibited low or no cover. In the saline meadow communities, one site demonstrated moderate cheatgrass cover while the other site had none. For the winterfat communities, approximately half of the sites exhibited moderate to very high cheatgrass cover while half exhibited very low or no cheatgrass cover. As with the sagebrush communities, cheatgrass prevalence appears to be site-specific in the non-sagebrush rangeland communities and may be due to a spatial correlation not examined during this evaluation.

Table 2.3. Comparison of Current Condition Estimates of Non-sagebrush Rangeland Communities in the Hamblin Valley Watershed from Average Ground Cover Composition as Reported by Functional Groups and Cheatgrass.

Non-Sagebrush Rangeland Community Type	**Total Sites**	**Trees**	**Shrubs**	**Grasses**	**Forbs**	**Cheat-grass**
Salt Desert Shrub	8	0	81.5	1.0	0.7	16.9
Saline Meadow	2	0	46.7	42.2	0	11.1
Winterfat	15	0	57.2	11.4	0.2	31.2

Table 2.4. Upland Standards: Average Percent-by-Weight Composition described in Ecological Site Descriptions for Non-Sagebrush Rangeland Communities as Reported by Functional Groups.

Non-Sagebrush Rangeland Community Type	**Trees**	**Shrubs**	**Grasses**	**Forbs**	**Cheatgrass**
Salt Desert Shrub	***0-3***	***40****	***60****	***5***	***0***
Saline Meadow	***0-3***	***5-25***	***70-80***	***5-15***	***0***
Winterfat	***0***	***40-50***	***45-55***	***5***	***0***

* The reported standard for Salt Desert Shrub communities is an average range of the standards reported in the ecological site descriptions and does not necessarily reflect the absolute minimum or maximum cover for a given site.

Fire History and Fire Regime and Condition Class

Fire statistics:

Over the past 27 years, there have been 58 fires recorded ranging from less than one acre spot fires to 10,000 acres. The watershed averaged 2.5 fires per year. Total area burned is approximately 23,000 acres.

Fire Regime Condition Class (FRCC) Analysis:

Another method of assessing ecological condition is using the FRCC Mapping Tool (developed by the USDA Forest Service for the National Interagency Fuels Coordination Group, NIFTT). The analysis quantifies the departure of current vegetation conditions from a set of reference conditions. It is not a fire risk or fuels hazard assessment. Data used to perform the analysis is provided by LANDFIRE (Landscape Fire and Resource Management Planning Tools Project), an interagency vegetation, fire, and fuel characteristics mapping project. (See http://www.landfire.gov) FRCC analysis of Hamblin Valley is summarized below in Table 2.5.

Table 2.5. Fire Regime Condition Class Descriptions and Proportion of the Meadow Valley Wash North and South Watersheds categorized within each condition class.

Class	Class Description	Proportion of Watershed
1	Fire regimes are within the natural or historical range of variation and risk of losing key ecosystem components is low. Vegetation attributes (composition and structure) are intact and functioning.	9 %
2	Fire regimes have been moderately altered. Risk of losing key ecosystem components is moderate. Fire frequencies may have departed by one or more return intervals (either increased or decreased), potentially resulting in moderate changes in fire and vegetation attributes	57 %
3	Fire regimes have been substantially altered. Risk of losing key ecosystem components is high. Fire frequencies may have departed by multiple return intervals, potentially resulting in dramatic changes in fire, fire intensity and severity as well as landscape patterns. Vegetation attributes have been substantially altered.	34 %
None	Consists of rocks, water, bare ground, agriculture, etc.	<1 %

Ninety-one percent of the watershed is in Condition Class 2 or 3. This may infer that 91% percent of the watershed is not meeting the Upland Standard or Habitat Standard.

Riparian Standards

The analysis and interpretation of the findings by the Hamblin Valley Watershed evaluation ID Team indicates this standard is not being achieved. Formal Proper Functioning Condition (PFC) assessments have been performed for 22 lentic riparian sites in the Hamblin Valley Watershed during 2006. Only a select number of lentic riparian sites were chosen for evaluation. The sites at which PFC assessments were performed were selected due to the increased potential for these sites to be impacted by livestock, wild horse, and wildlife use.

Figure 2.2. Percentage of Lentic Riparian Systems within each Condition Class Assessed for Proper Functioning Condition in the Hamblin Valley Watershed.

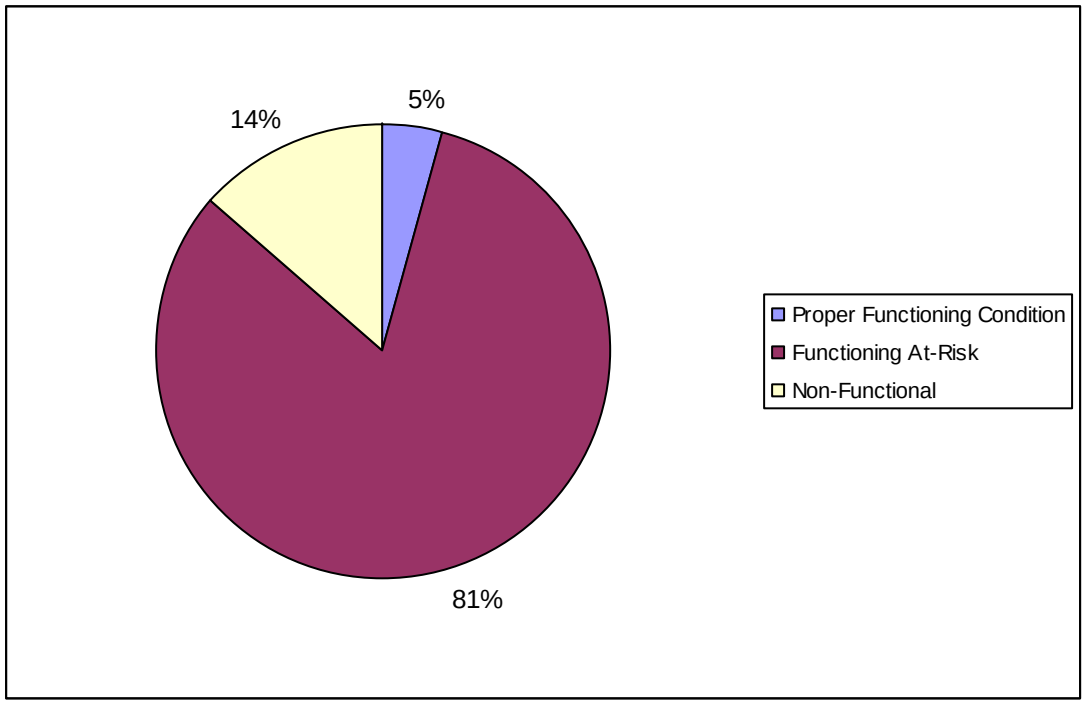


Figure 2.2 depicts the condition class distribution for the lentic sites assessed for PFC in the Hamblin Valley Watershed. The indicator data evaluated for the lentic riparian systems show only 1 of the 22 sites are functioning properly. Of the remaining sites, 18 were determined to be functioning at-risk, 15 of which were trending downwards, 2 trending upwards, and 1 with no apparent trend, and 3 were determined to be non-functional.

Water discharge rates and water quality parameters were estimated as part of the PFC assessment for the 22 lentic sites visited. The water quality standards for Class A and Class B waters as defined in the Nevada Administrative Code (NAC), Chapter 445A.118-445A.225, are summarized in Table 2.6. The water quality and discharge parameter

estimates are also summarized according to condition class in Table 2.6. The amount of water discharged was estimated and reported as gallons per minute (GPM). Water quality parameters measured included water temperature and pH, dissolved solids, and electrical conductivity. The pH, temperature, and dissolved solids estimated averages at the lentic sites within the watershed all fall within the acceptable ranges defined by the State water quality standards. Electrical conductivity is not defined in the state water quality standards.

The primary causes for the three non-functioning lentic sites vary with each site. For Miller Basin Spring 3, upland species encroachment and excessive grazing were listed as primary causes. At True Whiskey Spring, unsustainable livestock use was also listed but could be prevented if the gate on the fence protecting the spring source is kept closed. The evaluators found the gate open when visiting the spring. New Whiskey Spring 3 also exhibited heavy grazing but the predominant reason for lack of function at the spring is its newness. The water flowing from New Whiskey Spring 3 was released following a wildfire in 2000 and the habitat has yet to fully develop the associated functions.

For the lentic sites assessed as functioning at-risk with a downward trend, the primary cause for 11 of the 15 springs was unsustainable livestock use. Three of these sites are also undergoing upland species encroachment as their riparian zones decrease and one of these sites is also being invaded by non-native thistle. Repairing and building fences to protect the water sources was recommended for several sites. Of the remaining lentic sites, the primary cause for decreased function for two springs is upland species encroachment into the riparian zone. The water flow for one spring is being altered by a road and exacerbated by extensive livestock use. The last lentic site's riparian habitat is decreasing and its surface flow is being altered but no reason was noted.

For the lentic site categorized as functional at-risk with no apparent trend, the primary causes listed were upland species encroachment and moderate grazing. The evaluators recommended fencing the water source to encourage an upward trend in function. The two lentic sites categorized as functional at-risk trending upwards had two different causes. One lentic site exhibited some animal trailing and headcuts at the source but was functioning properly overall. The second spring is a newly formed spring whose waters were released following a wildfire in 2000 and had yet to fully develop a riparian habitat and its associated functions. While this new spring's vegetation may not be as vigorous as an established spring's, the riparian habitat is expanding.

Table 2.6. Nevada State Water Quality Standards and Current Condition Estimates of Water Quality Parameters and Water Discharge Rates Summarized According to Condition Class for Lentic Sites Assessed for Proper Functioning Condition in the Hamblin Valley Watershed.

	State Water Quality Standards[@]	Proper Functioning Condition Class	Functioning At-Risk Condition Class	Non-Functioning Condition Class
Total Lentic Sites		1	18	3[#]
Temperature	Class A Waters: max ≤ 20 °C Class B Waters: With Trout: max ≤ 20 °C Without Trout: max ≤ 24 °C	21.9 °C	Range: 14.5-27.7°C Average: 22.9°C*	-
Dissolved Solids	≤ 500 mg/L or 1/3 above natural conditions	0.17 ppt	Range: 0.11-0.54 ppt Average: 0.25 ppt**	0.18 ppt
Dissolved Solids Converted to Standard (ppt to mg/L)	≤ 500 mg/L or 1/3 above natural conditions	170 mg/L	Range: 110-540 mg/L Average: 250 mg/L**	180 mg/L
Electrical Conductivity	NA	320 µS/cm	Range: 220-720 µS/cm Average: 442 µS/cm**	360 µS/cm
pH	6.5 – 9.0	-	Range: 7.6-8.2 Average: 7.9**	7.8
Discharge Rate	NA	12 GPM	Range: 1/16 - 3 GPM Average: 0.8 GPM***	5 GPM

[@] The summarized water quality standards for Class A and Class B waters are defined in the Nevada Administrative Code (NAC), Chapter 445A.118-445A.225.

[#]The numbers reported for each parameter under 'Non-Functioning' is representative of 1 lentic site as the other two sites classified as 'Non-Functioning' did not demonstrate any discernible flow.

*The averages were determined for 16 lentic sites as the parameters were not measured for two sites classified as 'Functioning-At-Risk.'

**The averages were determined for 17 lentic sites as the parameters were not measured for one site classified as 'Functioning-At-Risk.'

***The average was determined for 14 lentic sites classified as 'Functioning At-Risk' as four sites did not demonstrate any discernible flow.

Most lotic systems in Hamblin Valley Watershed are small spring brooks that travel relatively short distances from their source lentic systems. For practical purposes, the conditions of the lotic systems are deemed similar to the conditions of the source lentic systems. Cobb Creek is one lotic system with several lentic system sources. Five of the lentic system sources were formally assessed for proper function condition. Of the five, four were deemed to be functioning at-risk with a downward trend, and the fifth was deemed to be functioning at-risk with an upward trend. The primary cause for decreased function for all five displaying a downward trend was unsustainable livestock use. One of these springs was also experiencing upland species encroachment. The spring functioning at-risk and an upward trend is a newly formed spring that had yet to fully develop the associated functions of riparian habitat. From the collective condition of the lentic systems, the Cobb Creek lotic system may be deemed to be functionally at-risk with a downward trend.

Other Areas of Concern for Hamblin Valley Watershed

Weeds

The BLM defines a weed as a non native plant that disrupts or has the potential to disrupt or alter the natural ecosystem function, composition and diversity of the site it occupies. A weeds presence deteriorates the health of the site, it makes efficient use of natural resources difficult, and it may interfere with management objectives for that site. It is an invasive species that requires a concerted effort (manpower and resources) to remove from its current location, if it can be removed at all. "Noxious" weeds refer to those plant species which have been legally designated as unwanted or undesirable. This includes national, state and county or local designations.

Noxious weed inventories are typically performed using the Tier 1 methods delineated by the Nevada Invasive Weed Survey Protocol. Baseline weed inventories are performed along travel corridors, waterways, and man-made or natural disturbed areas as these areas are regularly disturbed where weed infestations are most likely to occur. In the Hamblin Valley Watershed, the BLM lands directly adjoining the Great Basin National Park that were formerly administered by the U.S.D.A. Forest Service have not been surveyed for weed infestations.

A total of 160 weed infestations have been mapped in the Hamblin Valley Watershed with 93 mapped in upland areas, 53 mapped within 25 feet of a water source in the watershed, and 14 mapped in areas that are seasonally wet. Of the mapped infestations, 101 have been treated between 2004 and 2007, 12 of which exhibited no weeds present at the time of treatment. All but two weed infestations in the watershed are located in the White Rock Mountains in the southern portion of the watershed, an area predisposed to wildfires and frequent reburns. These areas have reburned during several events, making the discovery and spread of weed infestations more likely.

Weed species are more likely to spread along road rights-of-way because there are more vectors (humans and vehicles) to transport weeds and there are more disturbed areas with less resilient native vegetation in which noxious weeds can thrive. Weed propagules are transported by humans and vehicles when the propagules are caught on vehicle tires, bumpers, undercarriages, shoes, clothing, and other equipment and are then transported to other disturbed areas.

The infestations inventoried in the watershed include bull thistle (*Cirsium vulgare*), musk thistle (*Carduus nutans*), diffuse knapweed (*Centaurea diffusa*), Scotch thistle (*Onopordum acanthium*), spotted knapweed (*Centaurea stoebe* ssp. *micranthos*), dalmation toadflax (*Linaria dalmatica*), and salt cedar (*Tamarix* spp.). Table 2.7 summarizes the total inventoried occurrences and coverage for each species and the number of infestations treated during the 2004 to 2007 treatment period. The use of integrated pest management practices - including chemical, mechanical, and cultural control – can be successful in controlling weed infestations. Bull thistle is the dominant weed in the valley comprising 51 percent of the total area infested and 49 percent of the total occurrences. Bull thistle is also the only weed species listed above not classified as "noxious" by the State of Nevada.

Cheatgrass (*Bromus tectorum*) is also present in the watershed. Cheatgrass is a highly invasive non-native annual grass that out-competes native vegetation for resources by sprouting earlier. Cheatgrass is also known to change the fire regimes of entire plant communities. Due to the high prevalence and naturalization of cheatgrass throughout the State of Nevada as well as the difficulty in removing the species from plant communities once introduced, cheatgrass has not been included on the state noxious weed list and is not controlled. Infestations are typically not mapped given the widespread distribution of the species.

Table 2.7. Summary of individual weed species infestations and the number and area of inventoried occurrences treated during the 2004 to 2007 treatment period in the Hamblin Valley Watershed

Weed Common Name	Nevada Status	Total Inventoried Occurrences	Total Area of Occurrences (sq ft)	Total Treated Occurrences	Total Area Treated (sq ft)
Bull thistle	Invasive	79	118, 750	13	17, 800
Musk thistle	Noxious	54	81, 600	52	83, 600
Diffuse knapweed	Noxious	9	7, 000	8*	~202, 020
Scotch thistle	Noxious	8	14, 900	8	14, 900
Spotted knapweed	Noxious	5	2, 700	5	3, 200
Dalmation toadflax	Noxious	3	4, 500	3	7, 500
Salt cedar	Noxious	2	1, 600	0	0
Watershed Total		**160**	**231, 050**	**89****	**329, 020**

*The total of treated occurrences includes at least one treatment polygon that may have included multiple mapped occurrences.
**Total of treated occurrences does not include the 23 inventoried occurrences visited during the 2004-07 treatment period at which no weeds were present.

Minerals Disturbance on Public Land

There are 5 mining explorations within the watershed on public land: Limestone Hills, Falcon Energy, Atlanta, the Shoshone, and the Democracy Mine. No new mining explorations have been proposed. Limestone Hills was an exploration, all 3.4 acres of road and pad disturbance was reclaimed. Falcon Energy was also an exploration with little disturbance, 0.3 acres were disturbed and reclaimed. Atlanta has a small portion on public land in this watershed. However, the majority of that site is on private patented land in the South Spring Valley Watershed located west of the Hamblin Valley Watershed. The Shoshone Mining District has 3 mines on patented/private land and 3 older mines nearby that have no inventoried data. They are located on the east side of the watershed. Democracy Mine lies on the western edge of the watershed south of Atlanta and does not appear to have any significant disturbances associated with it in this watershed.

There are no oil and gas pads in this watershed. There are no inventoried gravel pits in this watershed.

Rights-of-Way (ROW's)

ROW's are subject to the Terms and Conditions of the grant. Mitigation measures include but are not limited to, weed treatment/mitigation, re-vegetation of surface disturbance and following the 9100 Engineering Guide to road building standards.

Not all acres within a ROW are used in surface disturbing activities. For example, a telephone line may be 25 feet wide, but only 10 feet of the 25 feet was disturbed during construction. Also, those areas with buried lines should be successfully rehabilitated and/or re-vegetated.

Causal Factors

The causal factors for the Hamblin Valley Watershed not meeting the Upland and Riparian Standards can also be attributed to many of the same causal factors for not meeting Soil Standards:

- Historic livestock management practices in the wake of European settlement of the West.
- Increasingly effective fire suppression in last century.
- The introduction and spread of non-native annual grasses.
- Climatic fluctuations in recent years.

- PFC: Livestock, wild horses and elk are contributing factors to decreased herbaceous cover around many of the riparian ecological zones evaluated as "functioning-at-risk" or "non-functioning". Changes in riparian zone ecological function is also directly attributed to pinyon-juniper tree encroachment and expansion, drought, as well obstructions and diversions of springs and stream flow

Recommendations

- Develop treatments with the objective of increasing herbaceous cover and decreasing spread of annual grasses as economically and ecologically feasible. Treatments used should include a variety of mechanical, chemical and prescribed-burn pinyon-juniper and brush removal methods as well as native grass seedings and or transitional non-native seedings to increase herbaceous ground cover.
- Focus fuel reduction and restoration as indicated by FRCC modeling tool to achieve land health standards.
- Focus livestock management to conform to guidelines.
- Continue management of wild horse herds and wildlife habitat. Where feasible, build protective fences around riparian areas.
- Develop a transportation plan to address improvement of road locations, closure of roads, and prevent the creation of new roads.

- Follow up at all seeps, springs, wetlands and streams that have been evaluated as functioning-at-risk and non-functioning PFC to plan for water source improvements.
- Monitor known weed infestations and continue treatments throughout the Hamblin Valley Watershed.

"Standard 3. HABITAT AND BIOTA: Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses. Habitats of special status species should be able to sustain viable populations of those species.

Habitat indicators:

- Vegetation composition (relative abundance of species);
- Vegetation structure (life forms, cover, heights, or age classes);
- Vegetation distribution (patchiness, corridors);
- Vegetation productivity; and Vegetation nutritional value.

Wildlife indicators:

- Escape terrain;
- Relative abundance;
- Composition;
- Distribution;
- Nutritional value; and
- Edge-patch snags."

The analysis and interpretation of the findings by the Watershed ID Team indicates the habitat standard is not being partially achieved in uplands and partially achieved in riparian areas. This standard is similar to Standard two, but considers the assessment data in terms of the indicators as given in the Habitat standard and in terms of animal species habitat needs. The current habitat condition was compared to ecological site descriptions and to habitat composition within an ecological state, across the landscape in terms of the necessary structure of the state, and to transition models. These percentages reflect needs in animal species habitats associated with Great Basin sagebrush grassland semi-desert – basin big sagebrush, black sagebrush, and Wyoming big sagebrush – as well as greasewood and winterfat; mountain brush habitats including low sagebrush, mountain big sagebrush, Utah serviceberry, and mountain mahogany; woodland habitats including pinyon and/or juniper woodlands and mixed conifer and aspen at higher elevations; and riparian areas including wet meadows and riparian aspen or chokecherry.

The primary large wildlife species habitat managed for in the Hamblin Valley Watershed include pronghorn antelope (*Antilocarpa americana*), mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus canadensis*), and bighorn sheep (*Ovis canadensis).*

Rocky Mountain bighorn sheep *(Ovis canadensis)* have been identified as occupying 28,186 acres of range within the Hamblin Valley Watershed with an additional 6,310 acres of potential habitat unoccupied. Although Desert Bighorn Sheep (*Ovis canadensis nelsoni*) do not occupy any acres within the watershed, 13,590 acres are considered unoccupied potential habitat. Primary bighorn sheep forage includes grasses, grass-like plants, forbs, and shrubs.

Rocky Mountain elk occur in a wide variety of habitats within Hamblin Valley, from low to upper elevations. There are a total of 138,542 acres of yearlong elk habitat within the

watershed. In addition, the 16,056 acres of summer range includes mixed conifer, aspen, and higher elevation pinyon-juniper woodlands and meadows above 6,200 feet in elevation. The 160, 046 acres of winter range consists primarily of pinyon-juniper woodlands and sagebrush-grasslands between 5,000 and 9,500 feet in elevation. Pinyon-juniper, aspen, mixed-conifer forests, and mountain mahogany provide thermal and escape cover. Shrub species, including antelope bitterbrush and sagebrush, also provide important cover and forage for elk. Although elk forage largely on grass species, they also consume a wide variety of forbs and shrubs.

Mule deer are widespread within the planning area and typically are associated with middle to upper elevations. Habitat for mule deer within the Hamblin Valley includes big sagebrush, low sagebrush, shadscale, and grasslands. Deer generally are classified as browsers, foraging primarily on forbs and shrubs. However, the importance of forage type tends to vary by season and climate. Forbs and grasses are an integral part of the mule deer diet during the spring and fall growth seasons when succulence is greatest. Shrubs are utilized more heavily during dry summer and winter periods. Important forage on range for mule deer includes snowberry, sagebrush, serviceberry, antelope bitterbrush, and mountain mahogany. Mountain mahogany and pinyon-juniper woodlands are important for thermal and escape cover during winter. During summer, mule deer tend to rely on riparian and mountain sagebrush communities. Within Hamblin Valley, there are 31,597 acres of yearlong habitat for mule deer, as well as 19,347 acres of spring range, 37,211 acres of summer range and 32,256 acres of winter range. The western area of the valley, below the Snake Range, is considered crucial winter range for mule deer.

Pronghorn prefer gently rolling to flat topography that provides good visibility of the surrounding area, primarily Great Basin sagebrush/ grassland habitat type. Pronghorn diet consists of grasses, forbs, and browse plants. Sagebrush is important for both food and cover. Other important forage species include antelope bitterbrush, saltbush, rabbitbrush, cheatgrass, Indian ricegrass, and shadscale. During the summer, pronghorn are widely distributed throughout the valleys and mountain foothills and primarily are associated with low sagebrush habitat with mixed vegetation including grasses, forbs, and shrubs. The watershed provides 197,034 acres of pronghorn habitat, of which none is identified as crucial winter range. Three big game wildlife water developments were installed in the watershed. All were designed primarily for pronghorns. Additional pronghorn wildlife water developments are planned to be installed in 2009.

Although differing in their specific preferred browse, areas of seasonal use, and optimal habitat needs, to adequately sustain desired herd levels for all these species, the primary habitat management goal is a mosaic of healthy and diverse vegetative types. While the crested wheatgrass seedings historically planted in some of the valley bottom have nutritional value to wildlife, type conversion has resulted in the loss of preferred native wildlife forage plants and overall negative impacts on wildlife habitat. Pinyon-juniper forests provide important thermal cover, but this increasing establishment of woody species within ecological conditions that typically support shrub-dominated and grassland communities, has decreased herbaceous understory in terms of reduced plant productivity and diversity. Although these trends benefit species that occur primarily in woodland

habitats, these trends also lead to loss in forage (grass and forb) production within dense stands and a reduction of species diversity. Degraded habitat conditions due to pinyon-juniper invasion and decadent or senescent mountain brush communities across some areas of the watershed may impact the herds' full potential. In addition, cheat grass and other invasive plants occupy many acres of Hamblin Valley's sagebrush steppe.

Potential sagebrush communities comprise the majority of Hamblin Valley, approximately 63 percent. Although several wildlife species are dependent on the presence of sagebrush for survival, information concerning many of these species, their specific habitat needs, and precise distribution within the watershed is generally poor. A notable exception is sage grouse (*Centrocercus urophasianus*), of which there is considerable knowledge of their habitat requirements in comparison with other sagebrush obligates. Given the information and since sage grouse require large areas of sagebrush to survive, they may be considered an indicator species with the assumption that their habitat needs and relative condition may be extrapolated to other sagebrush obligates. In some cases, these other sagebrush obligates will have habitat needs in addition to what is desired for sage grouse. While those additional species' specific population distributions and needs surveys and studies are needed, they have not been completed.

Hamblin Valley Watershed is within Lincoln and Spring Valley Sage Grouse Population Management Units (PMU) and is a key area yearlong for sage grouse. Within this watershed, there are seven known active leks. Preferred lek habitat includes primarily shorter vegetation, with taller, more robust sagebrush within 300 to 700 feet for escape cover, and no trees or other raptor perches within five miles of the grounds. The valley holds a mosaic of different types of sagebrush that serve as nesting and wintering habitat. Optimal sage grouse habitat is in the range of 15 to 25 percent sagebrush canopy cover and an abundant, healthy, diverse herbaceous understory. For nesting and spring habitat, the optimal understory would be 15 percent grass and ten percent forbs. Hamblin Valley includes 89,642 acres of sage grouse nesting/early brood-rearing habitat, 214,802 acres summer (late brood-rearing) habitat, 144,922 acres of winter habitat and 183,027 acres of yearlong habitat. For the Lincoln PMU, southern Hamblin Valley is considered a key breeding area; western Hamblin Valley, a key nesting and early brood-rearing area; and White Rock Mountain, Cobb Creek drainage, and western Hamblin Valley, key late brood rearing areas. For the Spring Valley PMU, key wintering habitat includes western Hamblin Valley.

The Hamblin Valley sagebrush communities lack diverse vegetative composition and exceed the ecological site descriptions for ground cover (see Tables 2.1-2.4 and pages 21 to 23), thereby falling short of preferred sage grouse habitat standards. Some areas of stagnant sagebrush exist with little or no understory vegetation. Expansion of pinyon-juniper into sagebrush communities has fragmented and degraded the quality of sage grouse habitat, reducing perennial grass cover, forb composition, and diversity as well as reducing the productivity of water sources. Pinyon–juniper trees in sagebrush communities, fences, powerlines, windmills, and other structures all provide perches for raptors and corvids, thereby increasing the potential for predation. Such structures have a greater negative impact when located near sage grouse leks.

Within the watershed, there are no known populations of any currently federally listed threatened or endangered species according to Nevada Natural Heritage Program. However, there are several recorded occurrences of Ferruginous Hawks (*Buteo regalis*), a Nevada BLM Sensitive Species. The only other Nevada BLM Sensitive Species reported within the watershed and in the databases is an invertebrate which actually occurs on private land, the Bifid Duct Pyrg (*Pyrgulopsis peculiaris*). The NDOW database identified six species of raptors as occurring and/or nesting within the watershed including Northern Goshawk (*Accipter gentilis*), Golden Eagle (*Aquila chrysaetos*), Ferruginous Hawk (*Buteo regalis),* Prairie Falcon (*Falco peregrinus*), American Kestrel (*Falco sparverius*), and Great Horned Owl (*Bubo virginianus*).

A number of migratory bird species have distributions which overlap with Hamblin Valley. Based on known habitat associations, migratory bird species composition may be somewhat anticipated. Some of the more common bird species that would be expected to occur within the watershed include a wide range of neotropical migrant species including sagebrush shrubland species such as the sage thrasher, sage sparrow, and Brewer's sparrow; shrubland species such as the black-throated sparrow and lark sparrow; shrubland-grassland species such as the loggerhead shrike; grassland species such as the vesper sparrow; dry woodland species such as the gray flycatcher; riparian species such as the orange-crowned warbler and yellowbreasted chat; and pinyon-juniper woodland species such as the pinyon jay, gray vireo, juniper titmouse, black-throated gray warbler, and ferruginous hawk. These bird species are considered integral to natural communities and commonly are viewed as environmental indicators based on their sensitivity to environmental changes caused by human activities.

Migratory bird nesting and foraging habitats may be located throughout the watershed, with certain species adapted to specific habitat types. Changes in habitat condition and abundance may result in increases in the populations of some bird species at the expense of other bird species. Thus, there is no change that will benefit or adversely affect all migratory bird species. As such, the preferred management goal is to manage for a healthy and diverse mosaic of vegetative habitat types.

The analysis and interpretation of the findings by the Watershed ID Team indicates the habitat standard is not being partially achieved in uplands and partially achieved in riparian areas. Indicators on vegetation composition and productivity are not consistent with ecological site description productivity parameters or cover composition parameters or habitat composition and structure across landscapes. Cover data, FRCC data, and riparian PFC assessment data were discussed in the upland and riparian standards findings.

The habitat standard for woodland is being partially achieved. This is not being achieved in areas of over-mature woodlands (pinyon-juniper) as indicated by excessive canopy cover.

The habitat standard for sagebrush is not being achieved. Many sagebrush habitats exhibit minimal herbaceous understory with increasing sagebrush and pinyon-juniper canopy cover, thereby not meeting habitat needs for sagebrush obligates species, including sage grouse.

The presence of cheatgrass does not meet the standard, since cheatgrass is an invasive species which readily displaces native vegetation and alters the fire return interval, causing loss of native vegetation and reduced food and cover availability for numerous species.

The habitat standard for riparian habitats is not being met as a great majority of riparian areas were found to be functioning-at-risk. Degradation of riparian areas negatively impacts all wildlife species by reducing available food, water and cover.

The habitat standard for the salt desert shrub communities are not meeting standards based on excessive shrub canopy cover and herbaceous component, thereby providing decreased habitat for wildlife.

Hamblin Valley Watershed Wildlife Data *

Sage Grouse:
Year Long- 183,027
Winter- 144,922
Late Summer- 214,802
Nesting- 89,642
Known leks- 7

Big Game:
Deer:
Winter- 32,256
Summer- 37,211
Yearlong- 31,597
Pronghorn:
Crucial Winter-
Yearlong- 197,034
Elk:
Yearlong- 138,542
Winter- 160,046
Crucial Summer- 16,056
Desert Bighorn Sheep:
Occupied- 0
Unoccupied- 13,590
Rocky Mountain Bighorn Sheep:
Occupied- 28,186
Unoccupied- 6,310

Raptors:
Northern Goshawk (*Accipter gentilis*)
Golden Eagle (*Aquila chrysaetos*)
Ferruginous Hawk (*Buteo regalis)* Prairie Falcon (*Falco peregrinus*)
American Kestrel (*Falco sparverius*)
Great Horned Owl (*Bubo virginianus*)

Species of Special Concern:

Threatened or Endangered:
None

Nevada BLM Sensitive Species:
Birds
Ferruginous Hawk (*Buteo regalis)*

Invertebrate
Bifid Duct Pyrg (*Pyrgulopsis peculiaris*)

** Data extracted from Nevada Department of Wildlife (NDOW) and Nevada Natural Heritage Program computer databases*.

Other Areas of Concern

Weeds

A total of 160 weed infestations have been mapped in the Hamblin Valley Watershed The infestations inventoried in the watershed include bull thistle (*Cirsium vulgare*), dalmation toadflax (*Linaria dalmatica*), diffuse knapweed (*Centaurea diffusa*), musk thistle (*Carduus nutans*), salt cedar (*Tamarix* spp.), Scotch thistle (*Onopordum acanthium*), and spotted knapweed (*Centaurea stoebe* ssp. *micranthos*). Cheatgrass (*Bromus tectorum*), an invasive non-native annual grass, is also present in the watershed but is neither inventoried nor controlled for reasons discussed in Standard 2. Ecosystem Components. Table 2.5 in the section Standard 2: Ecosystem Components summarizes the total inventoried occurrences and coverage for each species and the number of infestations treated during the 2004 to 2007 treatment period.

Within areas infested by noxious weeds, the composition, structure, distribution, productivity, and nutritional value of vegetation is altered. The degree of this alteration is dependent on the patch size, estimated cover values, and the specific infesting species.

Bull thistle is an aggressive weed that can form very dense stands along roadsides, fence lines, ditch banks, open dry areas and in pastures. While bull thistle is not listed in the State of Nevada as a noxious weed, it may impede water flow, crowd out native vegetation, and destroy wildlife habitat. Because of these impacts, bull thistle is inventoried and treated when it occurs in sensitive areas. Bull thistle is the easiest of the thistles to control. Within the watersheds, all inventoried infestations of bull thistle are between less than 10 and 6,100 square feet with 56 percent of infestations 1,000 square feet or less in size. Eleven (11) infestations have an estimated cover value of greater than 25 percent. Since 2004, 17,800 square feet of infestations (15 percent of total inventoried) have been treated.

Dalmation toadflax is a highly competitive noxious weed that can reduce the livestock carrying capacity of rangelands, especially when an invasion coincides with overgrazing or large soil disturbances. Livestock generally avoid grazing dalmation toadflax, preferentially grazing native species. Dalmation toadflax can spread both reproductively and vegetatively by vertical and lateral creeping roots and can form large, dense colonies. Improving the competitive advantage of native species, especially grasses, is effective in controlling populations, especially if management protocol includes the prevention of overgrazing combined with augmenting the native community by planting more competitive grass species. Within the watershed, three (3) infestations of dalmation toadflax have been inventoried, ranging in size from 200 to 2,200 square feet. All three infestations have estimated cover values of greater than 25 percent, two (2) of which are estimated at greater than 50 percent cover. Since 2004, 7,500 square feet (170 percent of total inventoried) have been treated.

Diffuse knapweed spreads primarily by seed and readily invades disturbed open spaces such as fields, roadsides, grasslands and degraded rangelands. Diffuse knapweed can

form dense stands that out-compete native vegetation and exclude wildlife. All inventoried infestations of diffuse knapweed are between less than 10 and 5,000 square feet. Two (2) infestations have an estimated cover value greater than 25 percent. Within the watershed, 202,020 square feet of infestations (2,900 percent of total inventoried) have been treated since 2004.

Musk thistle invades overgrazed pasture and forestlands, ditch banks, waste areas, and stream banks. Musk thistle is a threat in disturbed areas and in agricultural fields but seldom a threat to established natural communities. Low-intensity fires that do not damage root crowns have been shown to favor musk thistle production. Within the watershed, all inventoried infestations of musk thistle are between less than 10 square feet and 5,100 square feet in size. No infestation has an estimated cover value greater than 25 percent. Of the infestations inventoried, 83,600 square feet (102 percent of total) have been treated since 2004.

Salt cedar species are aggressive noxious trees that alter riparian habitats by out-competing native plant species for resources, introducing fire to less adapted wetland habitats, and altering the riparian channel morphology. Salt cedar can form dense stands and extensive root systems that, combined with the trees' high evapotranspiration rates, can reduce underground water tables and surface water. The reduction in the width of riparian channel width can also increase flooding downstream. Salt cedar can reproduce both vegetatively and reproductively and readily recovers from fire and mechanical treatments. Effective control requires both physical and chemical treatments to kill the root systems. Following initial treatment, subsequent seedling removal and native plant establishment is required to prevent re-infestation. Within the watersheds, two (2) infestations of salt cedar have been inventoried, one at 500 square feet and the other at 1,100 square feet in size. Both infestations have an estimated cover value of less than two (2) percent.

Scotch thistle is an aggressive noxious weed that can form very dense stands along roadsides, fence lines, ditch banks, open dry areas, and in pastures. Scotch thistle impedes water flow, crowds out native vegetation, and destroys wildlife habitat. Within the watershed, all inventoried infestations of scotch thistle are between les than 10 square feet and 5,100 square feet in size. One (1) infestation has an estimated cover value of greater than 25 percent. Of the infestations inventoried, 14,900 square feet (100 percent of total) have been treated since 2004.

Spotted knapweed is an aggressive weed that is able to compete in areas receiving less than eight inches of annual precipitation. Spotted knapweed uses a combination of an early growing season and allelopathy to compete with native plants, resulting in the displacement of native species, thus degrading the quality of wildlife habitat. Spotted knapweed establishes within disturbed areas and expands outward into stable native communities. Within the watershed, all inventoried infestations of spotted knapweed are larger than 1,100 square feet or less in size. One infestation has an estimated cover value greater than 25 percent. Since 2004, 3,200 square feet of infestations (120 percent of total inventoried) have been treated.

Causal Factors:

- the introduction of large herds of livestock and unsustainable grazing practices in the wake of European settlement of the West
- increasingly effective fire suppression and control in last century
- the introduction and spread of non-native annual grasses
- climate change or drought conditions in recent years
- localized overuse especially near water sources by livestock, wild horse and elk
- improperly designed roads and density of roads in some areas
- road density that creates fragmentation of habitat.
- weeds transported along travel corridors that get established and displace viable habitat.

Recommendations:

- Develop watershed restoration strategy and apply habitat restoration treatments with the objective meeting those desired habitat conditions outlined in the Ely Resource Management Plan.
- Continue monitoring wildlife habitat.
- Maintain livestock management that conforms to guidelines.
- Continue management of wild horse herds and wildlife habitat.
- Where feasible, build protective fences around riparian areas.
- Remove roads from "The Troughs" or put in a culvert to stop diversion of water from the riparian habitat.
- Maintain and add wildlife guzzlers where needed.

Standard 4. Wild Horses and Burros: Wild horses and burros within HMAs should be managed for herd viability and sustainability. HMAs should be managed to maintain a healthy ecological balance among wild horse and/or burro populations, wildlife, livestock, and vegetation.

Herd health indicators:

- General horse and/or burro appearance.
- Crippled or injured horses and/or burros.

Herd demographics indicators:

- Size of bands.
- Size of bachelor bands.

Herd viability indicators:

- Heavy trailing into water sources.
- Waiting for water.
- Availability of water.
- Depleted forage near all available water sources.

The conditions of the wild horse populations and their habitat in the Hamblin Valley Watershed are currently not meeting the described standards. The Eagle (Formerly the Wilson Creek) Wild Horse and Burro Herd Management Area (Eagle HMA) is the only HMA to occur in the Hamblin Valley Watershed management unit. The Eagle HMA spans across portions of at least 5 different watersheds within the Ely BLM District, including the southern and western portions of the Hamblin Valley. The current herd sizes within the entire HMA is currently estimated as above the appropriate management level of 180-210 wild horses. The current population is estimated to be 508 horses. The current condition of the Eagle HMA for forage, water, space, cover, and reproductive viability are all deemed inadequate. Across the Utah Nevada border are two HMA's (Sulphur and chokecherry) that also compete for forage in the watershed because the fence is in poor condition and allows drift on to winterfat bottoms.

Causal Factors

- Horse numbers are above AML
- Utah Nevada boundary fence is in poor condition.

Recommendations

It has been recommended that the use of the Eagle HMA by wild horses be continued and the herd sizes be managed within the appropriate management level range for the HMA.

Repair the Utah-Nevada Boundary fence.

OHV ADMINSTRATION GUIDELINES FOR NEVADA PUBLIC LANDS as defined by the Nevada Northeastern Great Basin RAC and the Mojave-Southern Great Basin (RAC), as chartered by the Department of the Interior: "These guidelines are to be used to insure the protection of land health and the availability of the public lands for all multiple users" (RAC guidelines).

As defined by:

- On-the-ground management guidelines.
- Planning guidelines
- Education guidelines

The analysis and interpretation of OHV travel management by the Watershed ID Team indicates Resource Advisory Council (RAC) **On the Ground Management guidelines are** being conformed with as follows:

- The Ely district permits OHV use on existing or designated roads and trails, except in closed areas.
- The Ely district has identified all the linear transportation routes resulting from OHV use in the Hamblin Valley Watershed. A route transportation planning process will attempt to conserve soil functionality, vegetative cover, and watershed health by evaluating all the transportation routes within the watersheds and designating those which meet the social and biological demands, while maintaining OHV access.
- The Ely district does manage and monitor permitted OHV activities to minimize impacts to travel routes, to minimize impact on plant and animal habitats and to conserve watershed and water quality. This is done by directing use to the most resistant and resilient routes in the watershed which still meet the social needs of the public. Any travel routes used in the permitted event found to be highly impacted, require rehabilitation in accordance with the OHV special recreation permit stipulations. Routes that do not respond to rehabilitation as desired are consciously discouraged in the future.
- The Ely District is making efforts to utilize benefits based management objectives as those objectives relate to managing for recreation within the Hamblin Valley Watershed. The Hamblin Valley would be part of an extensive recreation management area (ERMA) where dispersed recreation is the primary use as identified in the proposed Land use plan.
- The BLM is directing OHV recreation onto designated trails. Part of this effort is the nationally designated Silverstate Off-Highway Vehicle Trail. This trail is not located in Hamblin Valley.

- Long term monitoring concerning travel on the Silverstate Trail are being done sufficiently.
- OHV use pursuant to a permitted activity shall be governed by the terms of the permit is being followed by the Ely district.
- The Ely District does engineer, locate, and relocate important transportation roads to accommodate OHV activities while minimizing resource impacts, as budgets allow. On the ground road inventories have been completed on portion of the Hamblin Valley Watershed. Based on current road inventory in the Lincoln County portion of Hamblin Valley there are approximately 477 miles of roads. This results in an average of 1.4 miles of road per square mile in the inventoried portions of Hamblin Valley. These averages are within the acceptable range when compared with another transportation planning effort (duck creek transportation plan) completed within the Ely district.
- The Ely District does encourage cooperation in law enforcement among all agencies in regards to OHV management.

The analysis and interpretation of OHV travel management by the Watershed ID Team indicates Resource Advisory Council (RAC) **On the Ground Management guidelines are not** being conformed with:

- A Travel Management plan for Hamblin Valley does not exist.
- Seasonal closures where applicable are not being done.
- Long term monitoring concerning non designated travel routes and route conditions are not being done sufficiently.

Recommendations:

- Work with the public, landowners and cooperating agencies to formulate a travel management plan for the Hamblin Valley Watershed. Designate suitable roads while preserving access. Rehabilitate unsuitable routes as guided by the completed transportation plan. These roads may require stabilization, closure or re-routing to prevent the further degradation of these roads and the watersheds. Efforts should be made to design and build sustainable routes where needed.
- Implement the recreation strategic plan as it relates to OHV management and other forms of recreation in the Hamblin Valley Watershed.
- Partner with ride and race vendors to design and deliver educational programs for OHV users.
- Select race routes that avoid weed infestations.
- Clean OHV's before and after authorized races.

The analysis and interpretation of OHV travel management by the Watershed ID Team indicates Resource Advisory Council (RAC) **Planning Management guidelines are** being conformed with:

- For addressing/resolving local site-specific OHV issues/concerns, The Ely district does actively participate in and use collaborative planning groups consisting of local representative(s), affected/interested group(s) and agency(s).
- Lands being managed will be re-designated to open limited or closed to motorized travel in the next land use plan to better implement the travel management process.
- In the proposed land use plan social and economic effects of OHV use including special recreation permits is addressed.
- The Ely district is working to establish and maintain an inventory of existing routes and trails for planning purposes.
- The Ely district recreation plan does assess and plan for the current and future OHV demand.

The analysis and interpretation of OHV travel management by the Watershed ID Team indicates Resource Advisory Council (RAC) **Planning Management guidelines are not** being conformed with:

- A new land use plan is implemented so we can now implement our recreation plan to the extent needed to address the needs and concerns associated with OHV management in the Hamblin Valley Watershed.

Recommendations:

- Provide opportunities for OHV recreation in a sustainable manner. OHV recreationists and the overall health of the watersheds would benefit from a network of signed and mapped roads, trails, and unloading areas that incorporate proper sustainable road and trail engineering practices. An overall transportation plan that includes signed and mapped roads for the area that provides for recreation needs while taking into account other resources will discourage the proliferation of unwanted roads and trails in the watershed.

The analysis and interpretation of OHV travel management by the Watershed ID Team indicates Resource Advisory Council (RAC) **Education guidelines are** being conformed with:

- The Ely district does utilize high use areas (Duck Creek Basin) and special events (OHV races) to maximize the dissemination of responsible use education materials and concepts to the public.
- The Ely district does Encourage the private sector, as well as the public sector, to conduct responsible marketing of activities on public lands while avoiding the promotion of products, behaviors and services that are inconsistent with existing regulations and land use plans.
- The Ely district does actively promote/expand/disseminate materials from

programs such as (but not limited to) “Tread Lightly!” and “Leave No Trace”.

- Communication and environmental education plan(s) do exist. We do assess all situations where OHV use may require public information and education, as well as develop materials and programs appropriate to each situation.

The analysis and interpretation of OHV travel management by the Watershed ID Team indicates Resource Advisory Council (RAC) **Education guidelines are not** being conformed with:

- More action needs to be done to cooperatively develop/improve public outreach programs to promote trail etiquette, environmental ethics, and responsible-use stewardship ethic.
- Implementation of the communication, environmental and education plans need to be better employed.

Recommendations:

- Increase education on OHV safety and responsible riding in the community.
- Increase the promotion of federally approved public education programs such as Tread Lightly and Leave no Trace.
- Increase the utilization of public communication channels such as newspaper radio, internet, booths, etc.
- Increase education related to OHV use as a weed vector. Information should be readily available for the public.

Evaluation Summary

Summary of achievement or non achievement land health standards for Hamblin Valley Watershed

Standard	Meeting	Not meeting	Current Livestock Management Compliant with Guidelines
Standard 1. Soils		X	Yes

Indicators considered:

- Vegetation ground cover
- Surfaces (e. g. biological crusts, pavements)

Why not meeting:

Tree overstory exceeds standards in most woodlands and sagebrush vegetation types. Shrub cover exceeds standard in all sagebrush and salt desert shrub types. Understory herbaceous vegetation cover is inversely related to overstory cover. As woody species increase, perennial bunch grasses and forbs decrease. Sparse or absent understory cover increases the potential for accelerated soil erosion and disruption of nutrient cycle. Annual grass cover is high in low to mid-elevation vegetation communities. In some riparian areas there is localized heavy use.

Causal Factors:

- Historic livestock management practices in the wake of European settlement of the West.
- Increasingly effective fire suppression in last century.
- The introduction and spread of non-native annual grasses.
- Climatic fluctuations in recent years.
- Localized overuse especially near water sources and on winterfat sites by livestock, wild horses from Utah and/or elk.
- Improperly designed roads and density of roads in some areas.
- Improper water distribution, and season of use on winterfat

Recommendations:

- Develop treatments with the objective of increasing herbaceous cover and decreasing spread of annual grasses as economically and ecologically feasible. Treatments used should include a variety of mechanical, chemical and prescribed-burn pinyon-juniper and brush removal methods as well as

native grass seedings and or transitional non-native seedings to increase herbaceous ground cover.

- Focus fuel reduction and restoration as indicated by FRCC modeling tool to achieve land health standards.
- Focus livestock management to adhere to standards and guidelines.
- Continue management of wild horse herds and wildlife habitat. Where feasible, build protective fences around riparian areas.
- Develop a transportation plan to address improvement of road locations, closure of roads, and prevent the creation of new roads.

Standard	Meeting	Not meeting	Current Livestock Management Compliant with Guidelines
Standard 2 Ecosystem Components		X	Yes

Indicators considered:

- Upland line-point intercept cover data
- Watershed-scale Fire Regime Condition Class analysis
- Riparian Proper Function Condition assessments
- Weed infestation inventories
- Mining and ROW surface disturbance surveys

Why not meeting:

- Functional group mean cover values do not meet ecological site standards. The majority of vegetation types in the Hamblin Valley Watershed show excessive cover of woody species and sparse to absent cover of herbaceous species.
- Cheatgrass is present in most vegetation types and will potentially increase in cover.
- FRCC analysis shows 91 percent of the watershed is in Condition Class 2 or 3.
- PFC evaluation indicates majority of riparian areas are either nonfunctional or functioning at risk.

Causal Factors:

- Historic livestock management practices in the wake of European settlement of the West.
- Increasingly effective fire suppression in last century.
- The introduction and spread of non-native annual grasses.

- Climatic fluctuations in recent years.
- PFC: Livestock, wild horses and elk are contributing factors to decreased herbaceous cover around many of the riparian ecological zones evaluated as "functioning-at-risk" or "non-functioning". Changes in riparian zone ecological function is also directly attributed to pinyon-juniper tree encroachment and expansion, drought, as well obstructions and diversions of springs and stream flow.

Recommendations:

- Develop treatments with the objective of increasing herbaceous cover and decreasing spread of annual grasses as economically and ecologically feasible. Treatments used should include a variety of mechanical, chemical and prescribed-burn pinyon-juniper and brush removal methods as well as native grass seedings and or transitional non-native seedings to increase herbaceous ground cover.
- Focus fuel reduction and restoration as indicated by FRCC modeling tool to achieve land health standards.
- Focus livestock management to adhere to standards and guidelines.
- Continue management of wild horse herds and wildlife habitat. Where feasible, build protective fences around riparian areas.
- Develop a transportation plan to address improvement of road locations, closure of roads, and prevent the creation of new roads.
- Follow up at all seeps, springs, wetlands and streams that have been evaluated as functioning-at-risk and non-functioning PFC to plan for water source improvements.
- Monitor known weed infestations and continue treatments throughout the Hamblin Valley Watershed.

Standard	Meeting	Not meeting	Current Livestock Management Compliant with Guidelines
Standard 3. Habitat and Biota		X	Yes

Indicators considered:

- Upland line-point intercept cover data
- Watershed-scale Fire Regime Condition Class analysis
- Riparian Proper Function Condition assessments
- Weed infestation inventories
- Mining and ROW surface disturbance surveys

Why not meeting:

- Functional group mean cover values do not meet ecological site standards. Many of the vegetation types in the Hamblin Valley watershed show excessive cover of woody species and sparse to absent cover of herbaceous species.
- Cheatgrass is present in most vegetation types and will potentially increase in cover.
- FRCC analysis shows 91 percent of the watershed is in Condition Class 2 or 3.
- PFC evaluation indicates majority of riparian areas are either nonfunctional or functioning at risk.

Causal Factors:

- the introduction of large herds of livestock and unsustainable grazing practices in the wake of European settlement of the West
- increasingly effective fire suppression and control in last century
- the introduction and spread of non-native annual grasses
- climate change or drought conditions in recent years
- localized overuse especially near water sources by livestock, wild horse and elk
- improperly designed roads and density of roads in some areas
- road density that creates fragmentation of habitat.
- weeds transported along travel corridors that get established and displace viable habitat.

Recommendations:

- Develop watershed restoration strategy and apply habitat restoration treatments with the objective meeting those desired habitat conditions outlined in the Ely Resource Management Plan.
- Continue monitoring wildlife habitat.
- Maintain livestock management that conforms to guidelines.
- Continue management of wild horse herds and wildlife habitat.
- Where feasible, build protective fences around riparian areas.
- Remove roads from "The Troughs" or put in a culvert to stop diversion of water from the riparian habitat.
- Maintain and add wildlife guzzlers where needed.

Standard	Meeting	Not meeting	Current Livestock Management Compliant with Guidelines
Standard 4. Wild Horse and Burros	X		N/A
Causal Factors: N/A			
Recommendations: It has been recommended that the use of the Wilson Creek HMA by wild horses be continued and the herd sizes be managed within the appropriate management level range for the HMA.			

OHV ADMINSTRATION GUIDELINE FOR NEVADA PUBLIC LANDS
On-the-ground management guidelines.
Conforming to the Guidelines**:**
• The Ely district only permits OHV use on existing or designated roads and trails, except in closed areas. • The Ely district has identified all the linear transportation routes resulting from OHV use in the Hamblin Valley watershed. Route inventory is route preparation for a route transportation planning process that will attempt to conserve soil functionality, vegetative cover, and watershed health by evaluating all the transportation routes within the watersheds and designating those which meet the social and biological demands, while maintaining OHV access. • The Ely district manages and monitors permitted OHV activities to minimize impacts to travel routes, to minimize impact on plant and animal habitats and to conserve watershed and water quality. This is done by

directing use to the most resistant and resilient routes in the watershed which still meet the social needs of the public. Any travel routes used in the permitted event found to be highly impacted, require rehabilitation in accordance with the OHV special recreation permit stipulations. Routes that do not respond to rehabilitation as desired are consciously discouraged in the future.

- The Ely District is making efforts to utilize benefits based management objectives as those objectives relate to managing for recreation within the Hamblin Valley Watershed. The Hamblin Valley would be part of an extensive recreation management area (ERMA) where dispersed recreation is the primary use as identified in the Ely Resource Management Plan.
- OHV use pursuant to a permitted activity shall be governed by the terms of the permit is being followed by the Ely district.
- The Ely District does engineer, locate, and relocate important transportation roads to accommodate OHV activities while minimizing resource impacts, as budgets allow. On the ground road inventories have been completed on portion of the Hamblin Valley Watershed. Based on current road inventory of Hamblin Valley there are approximately 398 miles of roads. This results in an average of .82 miles of road per square mile in the inventoried portions of Hamblin Valley. These averages are within the acceptable range when compared with another transportation planning effort (duck creek transportation plan) completed within the Ely district.
- The Ely District encourages cooperation in law enforcement among all agencies in regards to OHV management.

Not conforming to the Guidelines:

- A Travel Management plan for Hamblin Valley does not exist.
- Seasonal closures where applicable are not being done.
- Long term monitoring concerning non designated travel routes and route conditions are not being done sufficiently.

Recommendations:

- Work with the public, landowners and cooperating agencies to formulate a travel management plan for the Hamblin Valley Watershed. Designate suitable roads while preserving access. Rehabilitate unsuitable routes as guided by the completed transportation plan. These roads may require stabilization, closure or re-routing to prevent the further degradation of these roads and the watersheds. Efforts should be made to design and build sustainable routes where needed.
- Implement the recreation strategic plan as it relates to OHV management and other forms of recreation in the Hamblin Valley Watershed.

- Partner with ride and race vendors to design and deliver educational programs for OHV users.
- Select race routes that avoid weed infestations.
- Clean OHV's before and after authorized races.

Planning guidelines

Conforming to the Guidelines:

- For addressing/resolving local site-specific OHV issues/concerns, The Ely district does actively participate in and use collaborative planning groups consisting of local representative(s), affected/interested group(s) and agency(s).
- Lands being managed will be re-designated to open limited or closed to motorized travel in the next land use plan to better implement the travel management process.
- In the proposed land use plan social and economic effects of OHV use including special recreation permits is addressed.
- The Ely district is working to establish and maintain an inventory of existing routes and trails for planning purposes.
- The Ely district recreation plan does assess and plan for the current and future OHV demand.

Not conforming to the Guidelines:

- A new land use plan is now implemented and we need to implement our recreation plan to the extent needed to address the needs and concerns associated with OHV management in the Hamblin Valley watershed.

Recommendations:

- Provide opportunities for OHV recreation in a sustainable manner. OHV recreationists and the overall health of the watersheds would benefit from a network of signed and mapped roads, trails, and unloading areas that incorporate proper sustainable road and trail engineering practices. An overall transportation plan that includes signed and mapped roads for the area that provides for recreation needs while taking into account other resources will discourage the proliferation of unwanted roads and trails in the watershed.

Education guidelines

Conforming to the Guidelines:

- The Ely district does utilize high use areas (Duck Creek Basin) and special events (OHV races) to maximize the dissemination of responsible use education materials and concepts to the public.
- The Ely district encourages the private sector, as well as the public sector, to conduct responsible marketing of activities on public lands while avoiding the promotion of products, behaviors and services that are inconsistent with existing regulations and land use plans.
- The Ely district actively promotes/expand/disseminates materials from programs such as (but not limited to) "Tread Lightly!" and "Leave No Trace".
- Communication and environmental education plan(s) do exist. We do assess all situations where OHV use may require public information and education, as well as develop materials and programs appropriate to each situation.

Not conforming to the Guidelines:

- More action needs to be done to cooperatively develop/improve public outreach programs to promote trail etiquette, environmental ethics, and responsible-use stewardship ethic.
- Implementation of the communication, environmental and education plans need to be better employed.

Recommendations:

- Increase education on OHV safety and responsible riding in the community.
- Increase the promotion of federally approved public education programs such as Tread Lightly and Leave no Trace.
- Increase the utilization of public communication channels such as newspaper radio, internet, booths, etc.
- Increase education related to OHV use as a weed vector. Information should be readily available for the public.

List of Interdisciplinary Team Members

Nick Brunson	Fuel Management Specialist
Kalem Lenard	Recreation Specialist
Dave Jacobson	Wilderness
Craig Hoover	Range Management Specialist
Shirley Johnson	Range Management Specialist
Gary Medlyn	Projects Manager
Deb Koziol	Wildlife Biologist
Bonnie Million	Weeds Specialist
Ben Noyes	Wild Horse Specialist
Kari Harrison	Soil Specialist
Gina Jones	Ecologist
Julie Thompson	ENLC Plant Ecologist
Jennifer Brickey	ENLC Botanist
John Watt	ENLC Minerals compliance
Shane Trautner	ENLC Range Management Specialist

Maps

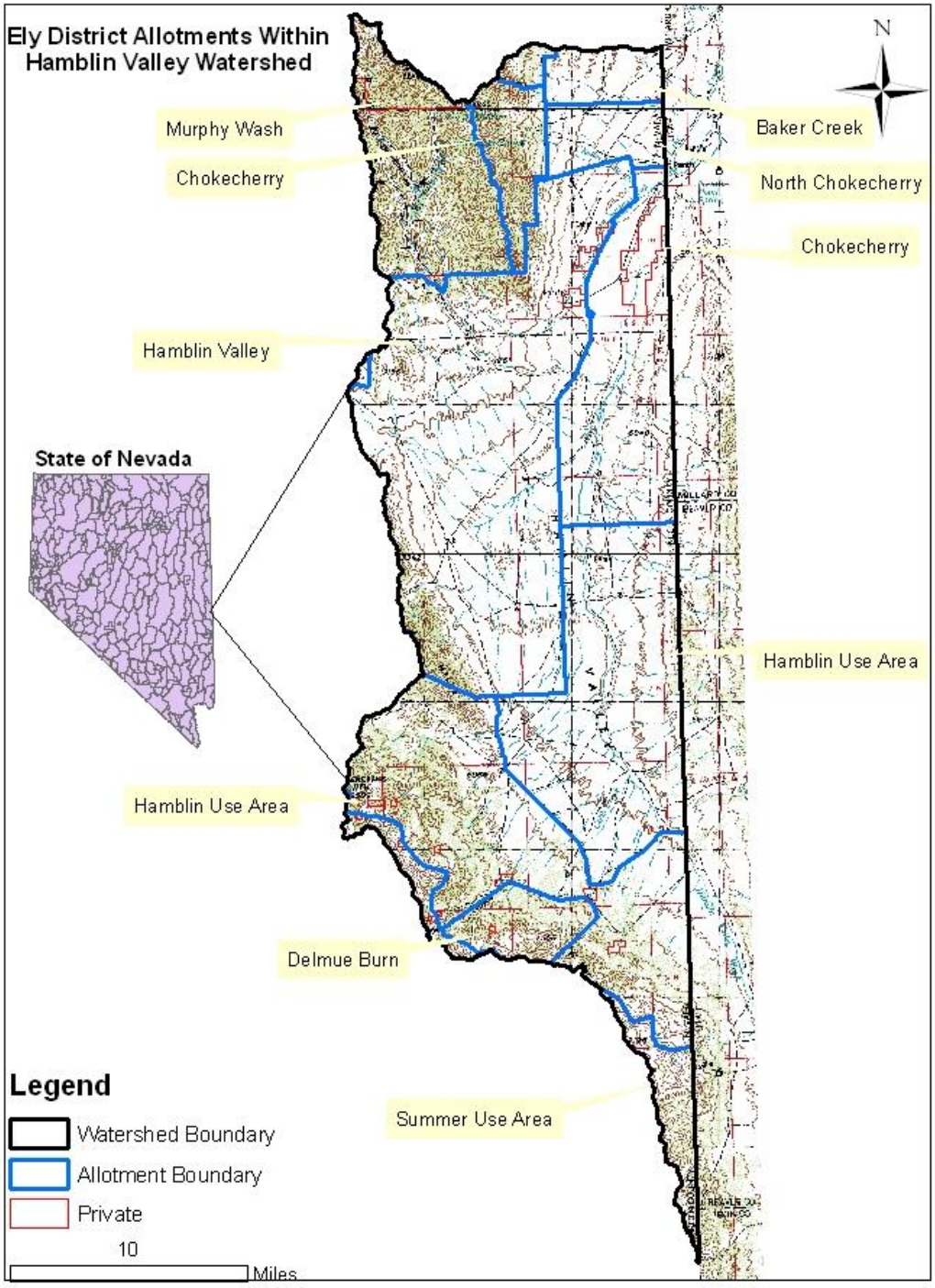
Map 1. Ely District Allotments within the Hamblin Valley Watershed

Map 2. Hamblin Valley Watershed Potential Major Vegetation Community Types as Defined by Soil Map Units

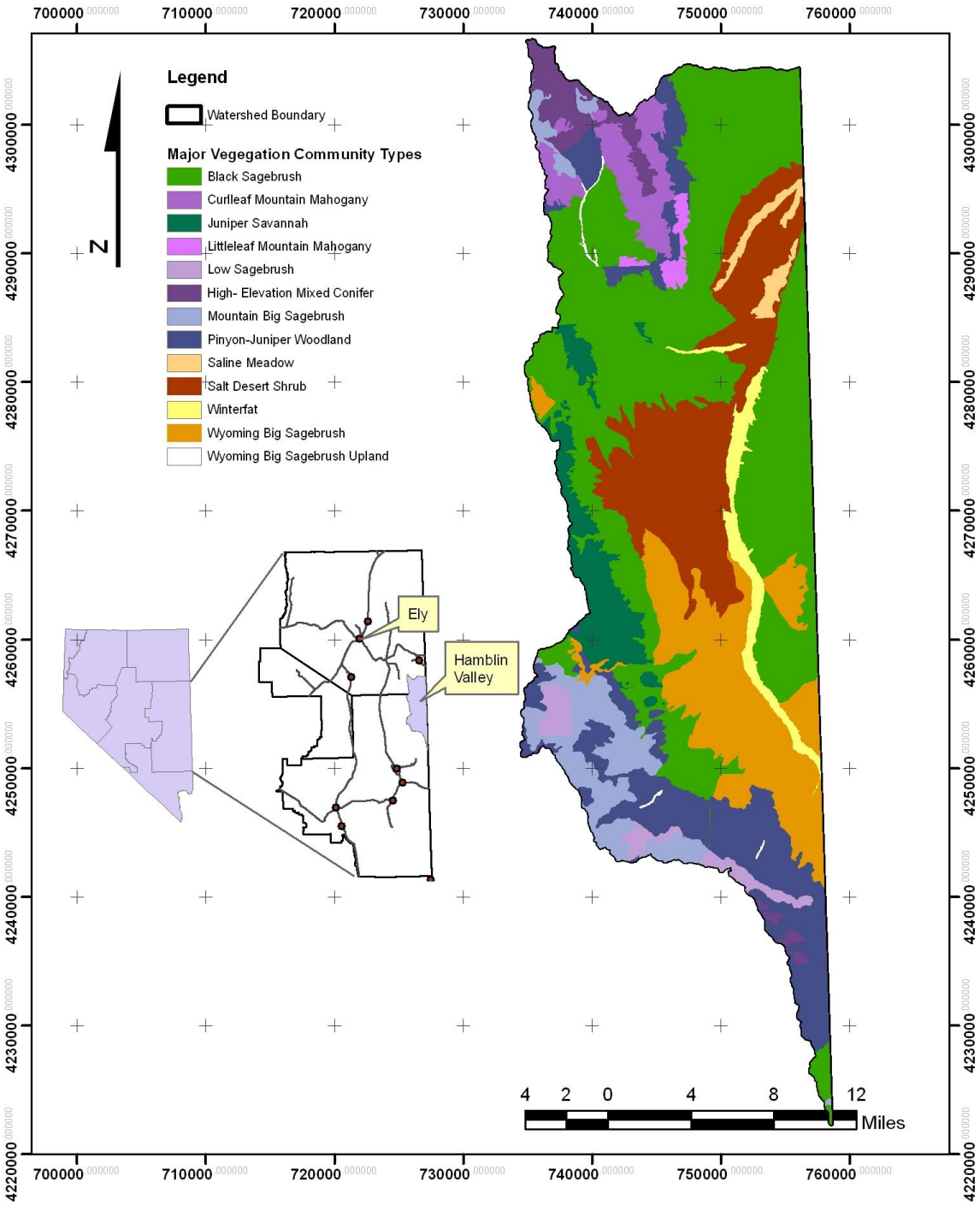
Map 3. Hamblin Valley Watershed Weed Inventory Map: Species and Land Management

Map 4. Hamblin Valley watershed road density.

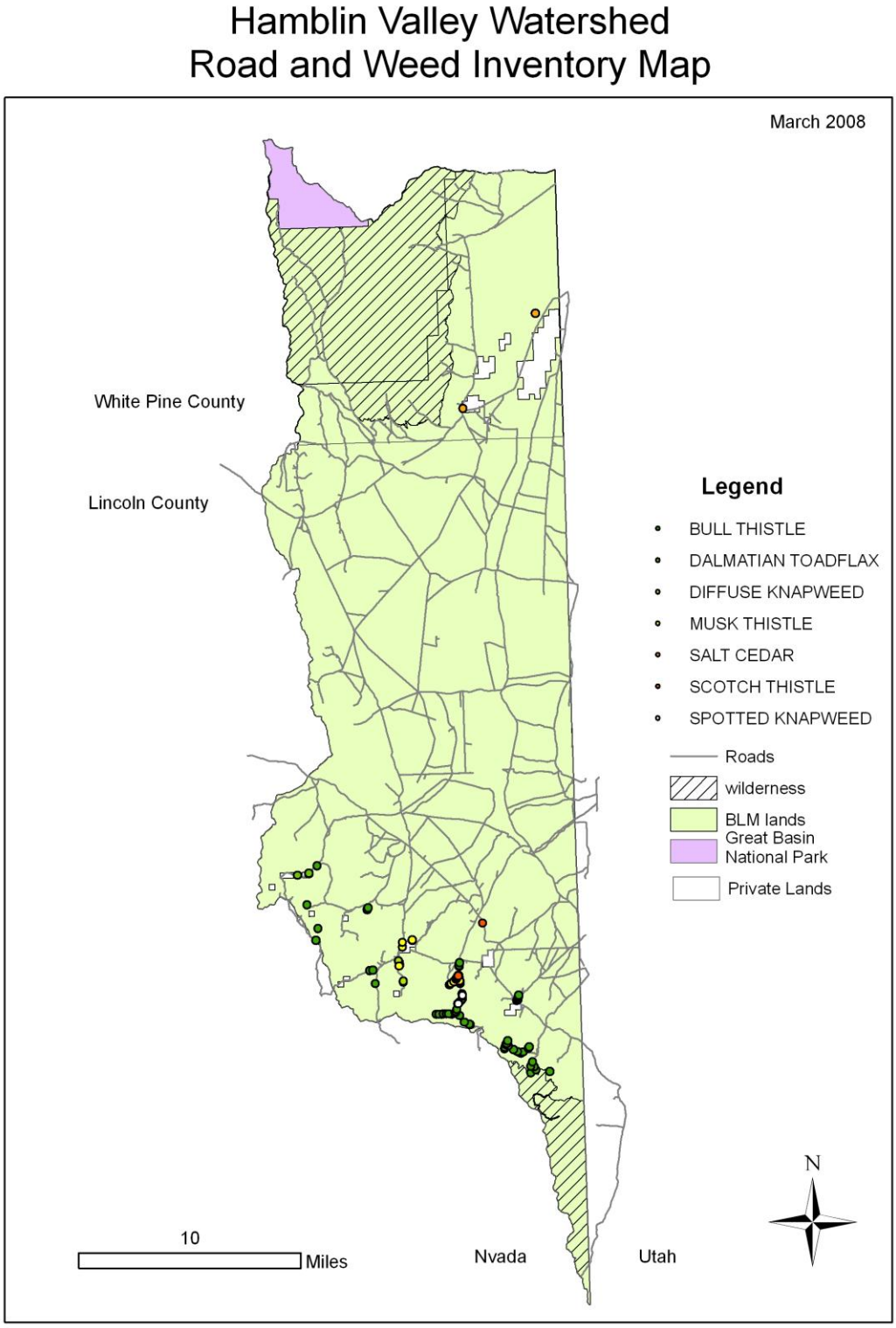
Map 1. Ely District Allotments within the Hamblin Valley Watershed



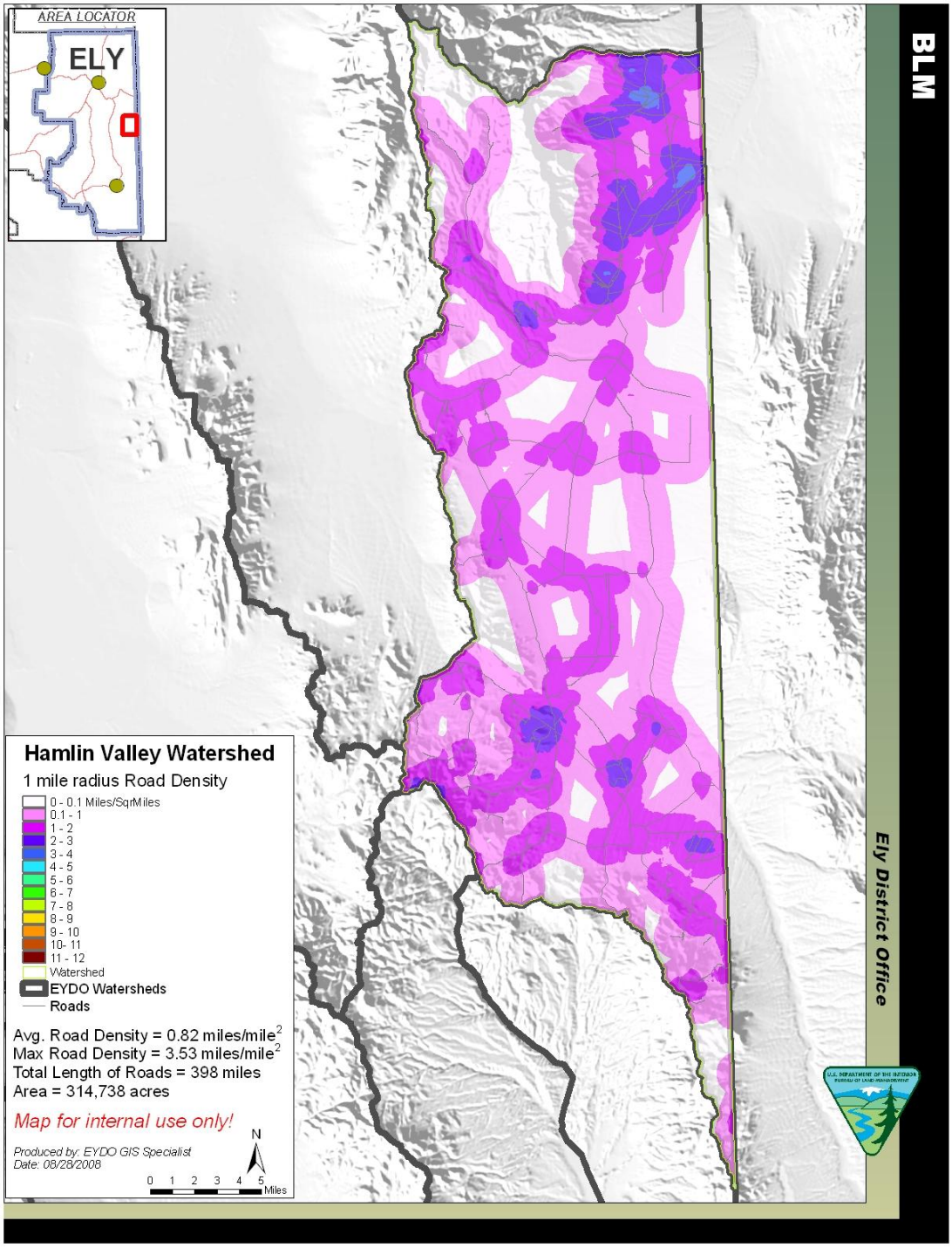
Map 2. Hamblin Valley Watershed Potential Major Vegetation Community Types as Definedby Soil Survey Data



Map 3. Hamblin Valley Watershed Weed Inventory Map: Species and Land Management



Map 4. Hamblin Valley watershed road density.



Appendix A

Livestock conformance to guidelines data and narratives for Standards.

Table A.1. Hamblin Valley livestock use and objectives summary

Allotment Name and Number	Permittee	Season of Use	Kind of Livestock	Total AUMs	Active AUMS	Suspen-ded AUMs	Allotment Acres within watershed	Livestock Actual Use (6Yr. Average)	Key Area	Key Area Actual Use	Utilization Objective ***	Grazing Use Levels in Watershed overall*
Wilson Creek (Delmue Burn) #01201	Mark Delmue (lazy D Livestock)	5/01-6/30 9/01-10/31	Cattle	1306	1306	0	9,100	561	no		Moderate	Light
Wilson Creek (Miller Use Area) #01201	Frank Delmue	4/16-6/30 10/01-10/31	Cattle	717	717	0	85,657	317	no		Moderate	Light
Wilson Creek (Hamblin Use Area) #01201 **	Frank Delmue	11/01-4/15 11/01-4/30	Cattle Sheep	2633 2076	2633 2076	0	51,155	C-2342 S-0	WC-06 WC-07	Slight Slight	Moderate	Slight
Hamblin Valley #00133 **	Ray Okelberry	11/02-5/31 11/01-5/31	Cattle Sheep	8268	8177	91	106,372	S-2,055 C-2,848	HV-23 HV-24 HV-27	Light Light Light	Moderate	Light
Chokecherry #10131	Ray Okelberry	10/16 - 06/05	Cattle	3367	3327	40	34,991	C-1,530	C-09 C-11 C-12	Heavy Slight Slight	Moderate	Moderate
N. Chokecherry #20134	Dean Carter	10/15 - 05/15	Cattle	770	770	0	8,713	C-623	NC 15 NC 16	Light Light	Moderate	Light

* Utilization mapping was done away from the key areas that incorporated different terrain and different vegetative communities.

** Even though the Hamblin pasture of Wilson Creek and Hamblin Valley allotment are dual use grazing areas the season of use for both sheep and cattle are for the same period of use each year as listed on the grazing permitl; which made it very difficult to distinquish the grazing patterns between the two different kinds of livestock. Over the past three years the Hamblin Pasture of Wilson Creek has not had any sheep use.

*** The key forage plant method was used to determine the amount of grazing that was done by all livestock and wildlife.

Table A.2. Hamblin Valley livestock management conformance to guidelines for Mohave-Southern Great Basin RAC Standards and state-wide OHV guidelines for Hamblin Valley Watershed by Allotment

Allotment name and number	Does Current Allotment Management Conform to Guidelines by Standard or Guideline?					Resource Concerns (including discernible cause of resource concern)
	1. Soils	**2.** Ecosystem components	**3.** Habitat & Biota	**4.** WH&B	**5.** OHV	
ChokeCherry #10131	Yes	Yes	Yes	N/A	N/A	The southeast end of the allotment has been abused in the past as well as probably the present. There is Cheatgrass present throughout the allotment, and the SE end is about 90% invasive/noxious species. The extreme drought conditions are the main factor in the resource condition. The only part of this allotment that is overgrazed is also in the SE end and has winterfat that is grazed at 68 percent.
North Chokecherry #20134	Yes	Yes	Yes	N/A	N/A	Cheatgrass is abundant throughout allotment, doesn't quite meet criteria for appropriate native species, due to drought and overuse
Delmue Burn (Wilson Creek) #01201	Yes	Yes	Yes	Yes	N/A	
Hamblin Valley #00133	Yes	Yes	Yes	Yes	N/A	This is the only allotment in the watershed that currently has dual use from cattle and sheep. ENLC visited the allotment this year and noticed that sheep mostly use the winterfat/indian ricegrass sited to the north and the cattle use the southern half of the allotment. Currently the the three water haul sites to the south of the wells are helping to distribute to the livestock well. Blue grama towards the southern half of the allotment is currently receiving the heaviest use.

Hamblin (Wilson Creek) #01201	Yes	Yes	Yes	Yes	N/A	Cheatgrass, Globemallow, and Rabbitbrush present throughout allotment which are all signs of historical overuse. The main riparian area in the allotment is Cobb Creek and is receiving and is main cattle gathering place. While the uplands in the allotment are receiving light use greater effort should be made to distribute cattle more uniformly.
Miller use area (Wilson Cree) #01201	Yes	Yes	Yes	Yes	N/A	The burn area has revegetated by a lot of cheagrass, rabbitbrush, and yellow mustard. The AGCR that is there appears to have some type of fungus.