BLM

ENVIRONMENTAL ASSESSMENT

Edwards Creek, Carson, and Porter Canyon Allotments Grazing Permit Renewal

DOI-BLM-NV-C010-2020-0024-EA

Department of the Interior
Bureau of Land Management
Carson City District
Stillwater Field Office
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Cost: BLM: $240,000

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1.0 INTRODUCTION

1.1 Project Overview

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental effects of renewing the livestock grazing permits for 10 years on the Edwards Creek, Carson and Porter Canyon Grazing Allotments along with changes in management and range and wildlife habitat improvement projects. A rangeland health assessment (RHA), rangeland health evaluation (RHE), and standard determination document (SDD) were completed to determine if the Resource Advisory Council (RAC) standards and guidelines were being met. This analysis informed the proposed action, alternatives, and analysis of potential impacts which may result from implementing the proposed action or an alternative.

This EA will allow the Authorizing Officer (AO) to determine whether implementing the proposed action or an alternative may cause significant impacts to the human environment. If the AO determines no significant impacts would occur, a Finding of No Significant Impact (FONSI) would be prepared, and a decision record (DR) would be issued. If significant impacts are likely to occur, or a FONSI cannot be reached, an environmental impact statement (EIS) would be prepared with a subsequent record of decision (ROD). This EA has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA) following the guidance provided in Bureau of Land Management (BLM) Handbook H-1790-1 (National Environmental Policy Act, Rel. 1-1710, January 2008), hereafter referred to as H-1790-1.

1.2 Identifying Project Information

Title: Edwards Creek, Carson, and Porter Canyon Allotments (ECPA) Grazing Permit Renewal
EA Number: DOI-BLM-NV-C010-2020-024
Type of project: Grazing Permit Renewal
Location of Proposed Action: Edwards Creek, Carson, and Porter Canyon Allotments
Name and Location of Preparing Office:

Bureau of Land Management
Carson City District
Stillwater Field Office
5665 Morgan Mill Road
Carson City, NV 89701

Authorization #: 2703029
Applicant Name: Smith Creek Ranch Company Limited (LTD)

This EA is tiered to the 1999 Desatoya Mountains Ecosystem Management Plan EA (EA #98044) (DMEMP) (BLM 1999) in accordance with the Council on Environmental Quality (CEQ) regulations, 40 Code of Federal Regulations (CFR) 1502.2, and incorporates by reference all the descriptions of the affected environment and impacts analyzed in the DMEMP and EA and subsequent FONSI and DR.

This EA also incorporates by reference Desatoya Mountains Habitat Resiliency, Health, and Restoration Project Environmental Assessment (DMHP) (DOI-BLM-NV-C010-2011-0513-EA) (BLM 2012b).

Incorporation by reference and tiering provide opportunities to reduce paperwork and redundant analysis in the NEPA process. When incorporating by reference, the author refers to

other available documents that cover similar issues, effects, and/or resources considered in the NEPA analysis that is being prepared. Incorporation by reference allows for brief summaries of relevant portions of other documents rather than repeating them.

Tiering is a form of incorporation by reference that refers to previous EAs or EISs (40 CFR 1508.28, 40 CFR 1502.20). Incorporation by reference is a necessary step in tiering, but tiering is not the same as incorporation by reference. Tiering allows for narrowing the scope of the subsequent analysis and focuses on issues that are ripe for decision-making, while incorporation by reference does not. Only EAs or EISs may be tiered to, whereas one may incorporate by reference from any type of document (BLM 2008b).

1.3 Grazing Allotment Background

The ECPAs are adjoining allotments that are located about 60 miles east of Fallon, Nevada, and 30 miles west-southwest of Austin, Nevada, along the Churchill and Lander County lines, and along the Desatoya Mountains. The Edwards Creek and Carson Allotments lie within the Carson City District Office (CCDO) within Churchill County. The Porter Canyon Allotment lies within the Battle Mountain District within Lander County. All allotments are administered by the Stillwater Field Office, CCDO. Together, the allotments encompass approximately 194,579 acres of public lands and 3,629 acres of private lands.

Elevations in the Edwards Creek Allotment range from 5,180 feet along US Hwy 50 in Edwards Creek Valley, to about 9,500 feet at a peak north of Desatoya Peak. Elevations in the Porter Canyon Allotment range from about 6,045 feet in Smith Creek Valley to 9,973 feet at Desatoya Peak. Both allotments overlap with the Desatoya Mountains Wilderness Study Area (WSA). About 13,000 acres of the WSA are on the Edwards Creek Allotment, and approximately 5,628 acres are within the Porter Canyon Allotment. Both allotments also overlap with the Desatoya Wild Horse Herd Management Area (HMA). About 85 percent of the Porter Canyon Allotment is within the HMA, and roughly nine percent of the Edwards Creek Allotment is within the HMA (Appendix L, Map 3).

1.3.1 Livestock Grazing

Refer to Section 4.2 in Appendices B1 and B2 for a detailed analysis of current and historical livestock grazing within the ECPA.

Table 1: Current Permitted Livestock Grazing

Allotment	Livestock Numbers	Season of Use	% Public Land	Type Use	Animal Unit Months (AUMs)
Edwards Creek	275*	12/1-11/30	100%	Active	3,309
Carson	16*	12/1-11/30	100%	Active	193
Porter Canyon	603*	12/1-11/30	100%	Active	7,256

*Grazing would be in accordance with the Desatoya Mountains Ecosystem Management Plan (DMEMP; BLM 1999).
AUM: Animal Unit Month

1.3.2 Rangeland Health Assessment Results

A RHA/RHE and SDD were completed for the ECPA using monitoring data collected through 2019 (Appendices B1, B2, C) using Proper Functioning Condition (PFC); Assessment, Inventory, and Monitoring (AIM); Interpreting Indicators of Rangeland Health (IIRH);

frequency and photo trend plot data; utilization; and actual use data. These data sources were used to determine whether rangeland health standards (RHS) are being met. Table 2, summarizes the results of the RHA/RHE; the full document can be found in Appendices B1 and B2.

The Sierra Front-Northwestern Great Basin Standards and Guidelines for Rangeland Health (Appendix M) which were developed pursuant to 43 CFR §4180.2 (b) and were approved by the Secretary of the Interior on February 12, 1997, are as follows:

1) Soils - Soil processes will be appropriate to soil types, climate and landform.
2) Riparian/Wetlands - Riparian/Wetland systems are in Proper Functioning Condition.
3) Water Quality - Water quality criteria in Nevada or California State Law shall be achieved or maintained.
4) Plant and Animal Habitat - Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.
5) Special Status Species Habitat - Habitat conditions meet the life cycle requirements of Special Status Species.

Table 2: Rangeland Health Results Summary

Rangeland Health Standard	Meets Standard	Does Not Meet Standard	Current livestock are the causal or contributing factor for not meeting (Yes or No)	Remarks (locations, etc.)
Soils		✔	Yes	While approximately 67% of plots had average values within reference range for soil and site stability, the IIRH* assessment results revealed departure in 62% of plots for hydrologic function, and departure in 73% for biotic integrity. In addition, 10% of AIM* plots did not meet the bare ground, litter cover, and canopy gap benchmarks. Documented wild horse and livestock use were determined to be the causal factors resulting in soils that had increased erosion and bare ground, decreased water infiltration, and a reduction in perennial vegetation.
Riparian and Wetlands		✔	Yes	Of the 19 springs and streams assessed for PFC*, 43% of stream miles were rated functioning at risk (FAR) with an upward, not apparent, or downward trend while 100% of spring acres assessed were rated as FAR with a not apparent or downward trend. Documented wild horse and livestock use were determined to be the causal factors resulting in streambank alteration, soil trampling, hummocking, and decreased wetland and riparian plant species.
Water Quality	✔		N/A	Qualitative water quality assessments were completed in conjunction with PFC*; the majority of streams and springs indicated water quality conditions were meeting Nevada State water quality standards. Upon site evaluations, no assessed water sources were reported to have poor water

Rangeland Health Standard	Meets Standard	Does Not Meet Standard	Current livestock are the causal or contributing factor for not meeting (Yes or No)	Remarks (locations, etc.)
				quality, or poor enough to have a negative effect on wetland or riparian vegetative growth or function.
Plant and Animal Habitat		✔	Yes	In addition to standards 1 and 2 not being met, various data sources assessed, including frequency, photo plot, and line, point, intercept (LPI) height and invasive species cover—revealed reductions in perennial grasses at most of the plots. In general, there is a shift from perennial grass dominance to a shrub and/or invasive species dominance site, departure from reference for biotic integrity, and PFC largely not being achieved for plant and animal habitat indicators. Additionally, a majority of plots did not meet the benchmarks set for mule deer and pronghorn preferred habitat.
Special Status Species Habitat		✔	Yes	In addition to standards 1 and 2 not being met, various data sources assessed, including frequency, photo plot, and LPI height and invasive species cover—revealed reductions in perennial grasses at most of the plots. In general, there is a shift from perennial grass dominance to a shrub and/or invasive species dominance site, departure from reference for biotic integrity, and PFC largely not being achieved for special status species habitat indicators. Additionally, a majority of plots did not meet the benchmarks set for desert bighorn sheep, greater sage-grouse (GRSG) and Lahontan Cutthroat Trout (LCT) preferred habitat.

*IIRH- Interpreting Indicators of Rangeland Health; AIM- Assessment, Inventory, and Monitoring; PFC- Proper Functioning Condition

The 2012 DMHP described habitat conditions within the allotments. Degraded habitat conditions, particularly in wet meadows, were described in the DMHP. It also documented that "riparian and upland objectives are not being met due to Pinyon Pine and Juniper (PJ) encroachment coupled with overpopulation of wild horses that have degraded wet meadows and sagebrush plant communities" (BLM 2012b).

These habitat conditions resulted in the DMHP, which is a Multi-Year, Multi-Discipline Integrated Landscape Project (≈32,700 acres of direct treatment within ≈230,000-acre project area) over a 10-year period. The Desatoya project area covers the same area analyzed in this EA for permit renewal. Goals and objectives of that project include:

- Enhance sagebrush and degraded wet meadow habitat for GRSG and other sagebrush dependent species
- Reduce fuel loads and catastrophic fire risk
- Enhance P/J woodland habitat for declining P/J dependent bird species and mule deer

- Protect or enhance riparian habitat that supports aspen, cottonwood, and diversity of bird and mammal species

Since the implementation of this project and coordination between the permittee, BLM, other agencies, and cooperators habitat conditions have been improving.

1.4 Purpose and Need for the Proposed Action

The purpose of the proposed action:

- Issue a ten-year grazing permit for the Edwards Creek (#03021), Carson (#03003), and Porter Canyon (#10013).
- Modify current grazing practices on the allotments by adjusting timing and levels of livestock use while incorporating flexibility so that progress can be made toward meeting rangeland health.
- Implement habitat protection and restoration projects within the allotments.

The need for the proposed action is:

- The existing ten-year term grazing permit expired on November 30, 2014 and was renewed with the same terms and conditions under FLPMA Section 402(c)(2) until allotment assessments were completed.
- The rangeland health assessments found that current livestock grazing management practices along with wild horse use have resulted in not meeting the fundamentals of rangeland health.
- Habitat protection and restoration projects are proposed to protect and restore riparian habitats and restore and expand greater sage-grouse (*Centrocercus urophasianus*) habitats within the allotments and Lahontan Cutthroat Trout (LCT) (*Oncorhynchus clarki henshawi*) habitat within Edwards Creek. Incorporating required GRSG and LCT management practices would be expected to improve rangeland health.

1.5 Decision to be Made

The BLM will decide whether or not to issue a grazing permit with modifications from the current permit and whether or not to implement the habitat protection and restoration proposals.

1.6 Land Use Plan Conformance Statement

Resource management planning regulations mandate that all actions approved or authorized by the BLM be reviewed for conformance with existing land use plans (43 CFR 1610.5-3; 516 Departmental Manual [DM] 11.5 [DOI 2020]). A Proposed Action and alternatives must be consistent with applicable land use plans and with the terms, conditions, and decisions of the approved plan (43 CFR 1601.0-5(b)). The Proposed Action and BLM alternatives are in conformance with the management decisions and objectives from the Carson City Field Office Resource Management Plan (CRMP) (BLM 2001) and the 2015 Nevada and Northeastern California Greater Sage-Grouse Approved Resource Management Plan Amendment (ARMPA) listed in Appendix D.

1.7 Relationships to Statutes, Regulations, Other Plans and Environmental Analyses

The Proposed Action and BLM Alternatives are consistent with Federal laws and regulations, plans, programs, and policies of affiliated Native American tribes, other Federal agencies, and State and local governments listed in Appendix E.

Other Environmental Analysis

- 1999 Desatoya Mountains Ecosystem Management Plan (EA #98044)
    - The Carson Allotment was previously the Carson Pasture of the Edwards Creek Allotment. The 1999 Desatoya Mountains Ecosystem Management Plan (DMEMP) states "…but is separated from the main portion of the allotment by the Desatoya mountains. This pasture is in Smith Creek valley and is not fenced separate from the Porter Canyon winter pasture. To avoid problems with unauthorized use this pasture will be changed to the Carson Allotment and grazing will be authorized in conjunction with the winter pasture of the Porter Canyon Allotment."
- Desatoya Mountains Habitat Resiliency, Health, and Restoration Project Environmental Assessment (DOI-BLM-NV-C010-2011-0513-EA), Finding of No Significant Impacts and Decision Records
    - A landscape-scale, multi-year, integrated habitat restoration and maintenance project on BLM lands within the Desatoya Mountain Range. The project area encompasses approximately 230,000 acres, which includes about 6% of the Clan Alpine grazing allotment (~23,400 acres) and about 99% of the Porter Canyon and Edwards Creek grazing allotments. Within the project area, up to approximately 32,705 acres of ground disturbing treatments would occur over a ten-year period including pinyon/juniper removal and thinning; wet meadow and spring rehabilitation/protection (includes fencing, pipelines, and troughs); rabbitbrush control using mowing followed by herbicide treatment and reseeding; and a site-specific fuels treatment utilizing prescribed fire, herbicide, and seeding.
- Carson City District Drought Management Environmental Assessment (DOI-BLM-NV-C000-2013-0001-EA)

    Describes several drought response actions that may be taken on grazing allotments managed by the CCDO during times of drought (BLM 2013a). All of the alternatives discussed in this EA are subject to those actions depending on the actual drought conditions assessed on the ECPA.

2.0 PROPOSED ACTION AND ALTERNATIVES

In order to meet the purpose and need of the proposed project in way that resolves any resources conflicts and issues, the BLM has developed the Proposed Action: Outcome Based Grazing Alternative (OBGA) and three alternatives for the renewal of the grazing permit. The OBGA was developed by the BLM and the permittee to allow for attainment of the RAC Standards and Guidelines (S&G) while allowing for flexibility in grazing management. The goal of OBGA is to emphasize conservation performance and ecological outcomes rather than strict prescriptive dates and processes. It will allow BLM managers and livestock operators the ability to make management decisions based on experience, knowledge of local conditions and

current years climate, and an established set of resource and operational objectives. Management will focus on achieving end results for the goal of balancing forage and habitat resources for livestock and wildlife.

Alternative 2 was developed to provide a more prescriptive alternative with less flexibility than the OBGA. The No Action Alternative would allow continuation of the current grazing system and is being brought forward for a detailed analysis to provide a baseline from which to compare the alternatives. The No Grazing Alternative is also used as a baseline for comparison with the other alternatives.

Table 3: Summary of Alternatives

	Proposed Action	**Alternative 2**	**No Action**	**No Grazing**
Cattle Numbers & Use Dates	894 C* early spring 894 C spring/early summer 894 C summer/fall 894 C winter	894 C spring 894 C summer 894 C fall 894C winter (numbers split between winter pastures)	894 C spring 894 C summer 894 C fall 894C winter	No cattle
AUMs*	10,733	10, 733	10,733	N/A
Pasture Rotation	Based on climatic conditions, plant phenology. Generally, change rotation every year.	Strict pasture rotation schedule, change rotation every year.	Spring and fall deferment with adaptive management	N/A
Pasture Move Trigger	Based on annual livestock indicators and short-term objectives	Based on rotation schedule	Moderate utilization (41-60%)	N/A
AUM Adjustments	Annually based on compliance and monitoring information	Annually based on compliance and monitoring information	None	N/A
Proposed Range Improvements	PJ* removal, GRSG* habitat seeding, spring improvements, willow plantings, noxious weed treatments, 21 RIs* designated for required maintenance	PJ removal, GRSG habitat seeding, spring improvements, willow plantings, noxious weed treatments, 21 RIs designated for required maintenance	None	None
VRM Designation	Establish Class III Interim VRM	Establish Class III Interim VRM	None	Establish Class III Interim VRM

*AUM- Animal Unit Months, C- cattle; PJ- Pinyon Pine & Juniper; GRSG- greater sage-grouse, RIs- range improvements

Management Common to All Alternatives

- Standard Terms and Conditions: located in Appendix G (these terms and conditions apply to all BLM livestock grazing permits).

Management Common to the Proposed Action, Alternative 2 and No Grazing

- Establish the project area as an interim Visual Resources Management (VRM) Class III.

2.1 Management Common to Proposed Action and Alternative 2

2.1.1 Mandatory Terms and Conditions

Table 4 below shows the proposed mandatory terms and conditions that would be on the permit for the two alternatives:

Table 4: Proposed Action and Alternative 2 Mandatory Terms and Conditions

Allotment	Livestock Numbers	Season of Use	% Public Land	Type Use	AUMs[1]
Edwards Creek	275*	3/1-2/28	100%	Active	3,300
Carson	16*	3/1-2/28	100%	Active	192
Porter Canyon	603*	3/1-2/28	100%	Active	7,236
Total	**894**				**10,728****

*Grazing would be done in accordance with the 2021 Edwards Creek, Carson, and Porter Canyon Grazing Permit Renewal and Decision Record.

**AUM numbers are different from the authorized 10,733 AUMs due to rounded numbers during AUM calculations.

[1]Animal Unit Months

2.1.2 Proposed New Improvements

The following is a list of the proposed new range improvements for the Carson, Edwards Creek and Porter Canyon allotments which are described in detail in Appendix I.

- Single Leaf Pinyon Pine and Juniper Tree Removal
- GRSG Habitat Improvement
- Upper Bassie Canyon Spring Improvement
- Bassie Canyon Spring and Meadow Improvement
- Upper Edwards Creek Temporary Gather Area
- Topia Creek Headwaters Improvement
- Billie Canyon Spring Exclosure Fence
- Pole Canyon Spring Exclosure Fence
- Porter Canyon Allotment Spring Developments
- Hardened Crossings and Bottomless Culverts
- Willow Plantings
- Noxious Weed Inventory, Treatment, and Monitoring

Proposed range improvements that are assigned maintenance responsibility to the permittee would be through a Cooperative Range Improvement Agreement. The permittee would be

responsible for annual inspection and maintenance of these assigned range improvements where inspection and maintenance would likely require several days of labor each year for the permittees or their employees to upkeep these improvements.

2.1.3 Goals & Objectives

In addition to the proposed range improvements, the BLM would also require progress towards meeting the RAC Standards by meeting associated goals and objectives created for this permit renewal. Achievement of goals and objectives would allow for significant progress towards meeting all five RAC Standards under the Proposed Action, and Alternative 2. Adaptive and flexible management approaches aimed at achieving outlined goals and objectives are necessary for a successful outcome-based grazing management system. Outlining clear, specific objectives, timing of monitoring and management responses (Appendix O) and an associated monitoring plan (Appendix F) is imperative to determine whether management actions are meeting desired outcomes; and if not, modifying the management approaches to ensure objectives are met.

Goals and objectives were formulated using multiple resources including the RAC Standards, CRMP (BLM 2001), scientific research (Carter et al. 2017; National Resources Conservation Service [NRCS] 1997; Okin et al. 2009), established monitoring protocols and guides (Herrick et al. 2017; Nevada Administrative Code [NAC] 2018), technical references (BLM 2011, 2015b), and interdisciplinary team (IDT) review and input. Objectives may consist of a specific threshold or range, however, the flexibility primarily lies within the grazing management approach taken to achieve these objectives. In order to achieve objectives BLM recommends an active presence of a rider with cattle. The need for changes to grazing management may stem from the results of the monitoring data, due to climatic conditions, or other events (e.g., wildfires and flooding). The partnership between the BLM and permittee would enable the permittee to be proactive in choosing the management option best suited for their operation on a yearly basis consistent with the grazing permit and the data monitoring results.

Key monitoring sites would be selected to implement objectives (listed below) with data collection methods being described in Appendix F. Monitoring sites would be selected as representative areas for the allotments and include key springs, streams and established AIM, frequency and photo plots. Where appropriate, ecological site descriptions (ESDs) and state and transition models (STM) would be used to assess the effectiveness of management goals and objectives in meeting or making significant progress towards meeting a particular target. Evaluation timelines would be based on an individual objective and would occur on an annual, short-term (1-3 years) or long-term (4+ years) basis. All goals and objectives would conform to GRSG ARMPA (Appendix D) standards and guidelines when evaluating GRSG habitat management areas (Appendix D). If it is determined the monitoring sites, objectives or data collection methods are not sufficient to determine progress towards achieving standards, additional monitoring objectives, data collection methods and/or adaptive management techniques would be implemented to ensure significant progress is being made to meet goals.

Terrestrial:

Goal – Reduce occurrence of annual grass understory in upland areas.

Objective: When annual grasses reach 200 to 300 lb./ac and/or an understory that is dominated by cheatgrass is observed, utilize management actions for fuel reduction.

Goal – Maintain or improve upland native plant communities on stable soils with vigorous, diverse, self-sustaining native grasses, shrubs and forbs, based on ecological site potential, in order to make significant progress towards achieving Standards 1, 4, and 5.

Objective: When winterfat greens up and/or utilization of 21 to 40 percent occurs, implement adaptive management actions for winterfat habitat protection.

Objective: Maintain and/or improve current or baseline ecological states at key monitoring sites.

Goal – Manage livestock grazing on public lands to promote healthy, sustainable rangeland ecosystems.

Objective: Limit utilization of key upland species[1] to moderate grazing levels (41 to 60 percent) or less.

Objective: Maintain or increase relative frequency of key grass species[2] based on site potential.

Goal – Maintain wild horse levels to promote healthy and sustainable upland areas and to help ensure that OBGA can function as intended.

Objective: Manage wild horse populations in accordance within designated AMLs.

Special Status Species Habitat:

Goal – Conserve and improve terrestrial ecosystem components upon which GRSG Desatoya populations depend on to maintain and/or increase population abundance and distribution.

Objective: Maintain single leaf pinyon and juniper cover at less than 3 percent within 0.6 miles of leks (ARMPA 2015).

Objective: Perennial grass and forb cover should trend towards greater than 15 percent cover (ARMPA Table 2-2 2015), or based on ecological site potential.

Objective: Sagebrush cover should trend towards greater than 10 to 25 percent cover based on seasonal habitat type needs (ARMPA 2015, Table 2-2), or based on ecological site potential.

Goal – Ensure livestock grazing management allows the allotments to make progress toward achieving habitat objectives for special status species.

Objective: Limit utilization levels of key woody and herbaceous species[1,3] to less than 35 percent (ARMPA 2015).

Goal – Preserve natural ecosystem processes which create and maintain special status plant habitat over time.

Objective: Maintain a 50-foot protective buffer around Reese River Phacelia populations to protect fragile soils from trampling due to livestock congregation and/or impacts from range improvement project construction.

Riparian and Wetland Areas:

Goal – Improve hydrologic and vegetative function of riparian and wetland areas to achieve PFC and facilitate meeting Standards 2, 4 and 5.

Objective: Limit streambank or soil alteration to 25 to 40 percent, dependent upon stream potential and resiliency.

Objective: Maintain streambank stability and cover to greater than 50 percent of sampled riparian areas.

Objective: Limit bare ground to less than 30 percent of sampled wetland areas.

Objective: Improve rating and/or trend of all key springs and streams towards meeting PFC unless outside the control of livestock management.

Goal – Increase number and composition diversity of riparian and wetland plant species on springs and streambanks, consistent with ecological sites as applicable.

Objective: At 5 feet grazed height and below, limit key woody species[3] use to less than 41 to 60 percent of the current year's leaders in the sampled riparian and wetland areas.

Objective: At 5 feet grazed height and below, utilization on aspen (*Populus tremuloides*) would be less than 50 percent of the stand.

Objective: Achieve an average height class of greater than 1.0 to 2.0 meters on key woody species[3] within the sampled riparian and wetland areas, as determined by site potential.

Objective: Achieve a proportional diversity of seedling, young, and mature aspen (*Populus tremuloides*) age classes in aspen stands.

Goal – Maintain water quality of riparian and wetland areas consistent with Nevada Water Quality Standards.

Goal – Eradicate and/or reduce the occurrence of noxious and invasive weed species in riparian and wetland areas.

Objective: Treat approximately 10 percent of noxious and invasive weed populations yearly.

Special Status Species Habitat:

Goal – Maintain and/or improve hydrologic and vegetative function of the perennial portion of Edwards Creek to achieve LCT habitat parameters, enhance aquatic habitat, and increase populations.

Objective: Limit streambank alteration (MIM) no greater than 15 percent (Cowley, 2002, LCT PBO).

Objective: Maintain streambank stability and cover at greater than 75 percent of the entire sampled riparian reach.

Objective: Limit utilization of key streambank riparian species[4] to less than 30 percent, based on ecological site potential.

Objective: Maintain a minimum stubble height of 10-15 centimeters (4-6 inches) for herbaceous riparian vegetation, based on ecological site potential.

Objective: Achieve a woody species average height class of greater than 1.0 to 2.0 meters, based on site potential.

Objective: Achieve a Habitat Condition Index (HCI) rating greater than 60 percent.

Goal – Conserve and improve riparian areas that GRSG Desatoya populations depend on to maintain or increase population abundance and distribution.

Objective: Limit utilization levels of less than 35 percent on key woody and herbaceous species (ARMPA 2015).

Objective: Maintain a minimum stubble height of 4 to 6 inches (ARMPA 2015, LG 5) for herbaceous riparian vegetation, based on ecological site potential.

Objective: Remove all single leaf pinyon and juniper within 500 feet of springs, riparian areas, and associated aspen stands.

[1]Key upland species may include: Winterfat (*Krascheninnikovia lanata*), Indian ricegrass (*Achnatherum hymenoides*), bottlebrush squirreltail (*Elymus elymoides*), bud sagebrush (budsage; *Picrothamnus desertorum*), shadscale (*Atriplex confertifolia*), Thurber's needlegrass (*Achnatherum thurberianum*), Webber needlegrass (*Achnatherum webberi*), bluebunch wheatgrass (*Pseudoregneria spicata*), fourwing saltbush (*Atriplex canescens*), needle and thread (*Hesperostipa comata*).

[2]Key grass species may include: Indian ricegrass (*Achnatherum hymenoides*), bottlebrush squirreltail (*Elymus elymoides*), Idaho fescue (*Festuca idahoensis*), Thurber's needlegrass (*Achnatherum thurberianum*), Webber needlegrass (*Achnatherum webberi*), bluebunch wheatgrass (*Pseudoregneria spicata*), needle and thread (*Hesperostipa comata*).

[3]Key woody species may include: Yellow willow (*Salix lutea*), Geyer willow (*Salix geyeriana*), whiplash willow (*Salix lucida var. caudata),* wild rose (*Rosa woodsii*), chokecherry (*Prunus virginiana*), aspen (*Populus tremuloides*).

[4]Key streambank riparian species may include Nebraska sedge (*Carex nebrascensis*).

2.2 Proposed Action: Outcome Based Grazing Alternative (OBGA)

Under the Proposed Action, a new ten-year term grazing permit would be issued to Smith Creek Ranch Company LTD that would continue the current authorized use of 10,733 AUMs on the ECPA. The season of use for each pasture would be adjusted to a seasonal/deferred grazing system. Actual Use billing would continue to be authorized. Accurate records must be

kept, and an Actual Use Grazing Report would be submitted within 15 days after the authorized use is completed for the grazing season.

Livestock grazing management would be designed to provide periodic growing season rest or deferment for key forage species while allowing for the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions, such as drought or above average precipitation years, to better ensure that management is economically sustainable for the ranch while also providing for healthy rangelands and high-quality wildlife habitat. The allotments are located in and around the Desatoya Mountains Ecosystem where climatic conditions can vary greatly from year to year. This variation results in key forage species entering vegetative states at different times each year, which is why livestock grazing would be seasonally scheduled rather than based on specific dates. Livestock use dates for each pasture would be determined on an annual basis and would be based on monitoring data and objectives, current climatic conditions, and the expected vegetative stages of key forage species. Livestock numbers may also vary annually under the use of adaptive management and flexibility, however total permitted AUMs would not exceed 10,733 during the grazing year. Prior to authorizing grazing each year, an annual operating meeting would occur between the BLM and permittee to determine proper livestock grazing management for the following grazing season to best meet objectives. Section 2.1.1 explains the potential grazing systems that may be used on the allotment. Included in those systems are potential responses to drought, very wet years, and wildfires, and what livestock management may occur in response to those climatic conditions.

2.2.1 Potential Grazing Systems

2.2.1.1 Potential grazing systems given an average year of precipitation

The following tables provides examples of how the cattle would be managed during years of average precipitation[1]. The permittee may use Rotation 1 one year and then switch to Rotation 2 the following year. Following the tables there is further explanation of each grazing season and the effect cattle may have on the vegetation during those times. Map 11 in Appendix L shows the different use areas.

Table 1: Potential Grazing Schedule Given Average Year of Precipitation: Rotation 1

Rotation 1			
Pasture	**Number of Cows**	**Grazing Season**	**AUMs[1]**
Edwards Creek Foothills	894	Early Spring	1,564
Edwards Creek Summer	894	Spring/Early Summer	2,682
Porter Canyon Summer	894	Late Summer/Fall	782
Porter Canyon Foothills	894	Fall	782
ECPA Winter*	894	Winter	4,923
		Total	**10,733**

[1]Animal Unit Months

Table 2: Potential Grazing Schedule Given Average Year of Precipitation: Rotation 2

Rotation 2			

[1] From 1989-2019, the average annual precipitation within the Edwards Creek Allotment was 11 inches (range of 7 to 20 inches) per year, while the average in the Porter Canyon Allotment was from 9 inches (range of 6 to 16). See appendices B1 and B2 of the EA (rangeland health assessments) for further detail.

Pasture	Number of Cows	Grazing Season	AUMs[1]
Porter Canyon Foothills	894	Early Spring	1,564
Porter Canyon Summer	894	Spring/Early Summer	2,682
Edwards Creek Summer	894	Late Summer/Fall	782
Edwards Creek Foothills	894	Fall	782
ECPA Winter*	894	Winter	4,923
		Total	**10,733**

*ECPA: Edwards Creek Porter Canyon Allotments: Cattle are typically split between winter use areas—around February each year, cattle are typically grouped according to the side of the mountain to which they are going.
[1]Animal Unit Months

Below describes each grazing season and how/when the cattle would graze during those seasons and within each pasture:

Early Spring Grazing Season - (approximately March 1 to April 30). Grazing during this time of season provides the plants an opportunity to recover after utilization of early plant growth. By removing livestock before all spring and summer precipitation occurs, the plants would be able to store carbohydrates, set seed, and maintain their vigor. This "Early Spring" timing can be used every year with little effect on the plant. The most critical period for defoliation by livestock is during the reproductive period due to the plants high demand for photosynthetic products and its opportunity for regrowth is often low. Grazing during the early growth stages would allow for regrowth of the leaves and stemmy tissues as long as grazing is reduced. (Holechek et al. 2004).

The dates of March 1 to April 30 are a guideline for the "Early Spring" timing. Early use must take place before grass plants are in the boot stage. There must also be enough soil moisture to provide for regrowth after grazing. Flexibility in the early season would allow for use prior to March 1 but generally not after April 30 and would depend on weather conditions.

Spring/Early Summer Grazing Season – (approximately May 1 to July 15). Grazing during this time of season allows for grazing during the critical growth period of most plants. Carbohydrate reserves are utilized when the plant grows or regrows because the green parts of the plants are removed by a grazing animal (Holechek et al. 2004). The pastures currently under this use period would generally be utilized during a different season the following year so as not to repeat graze during the same time every year.

Summer/Fall Grazing Season – (approximately July 1 to October 31). Grazing during this season would not begin until after most plants have reached seed ripe and have stored adequate carbohydrate reserves (Holechek et al. 2004). This timing would assist in meeting resource objectives by providing all plants an opportunity to complete their life cycles and produce the maximum amount of cover and forage.

Winter Grazing Season – (approximately Oct 15 to March 15). Grazing during this season would occur when most plant species are dormant. Most plants would have completed their life cycles and stored maximum carbohydrates for the next growing season with the exception of winterfat (*Krascheninnikovia lanata*) (Holechek et al. 2004). There are small populations of winterfat in the Porter Canyon winter pasture and a larger population in the Edwards Creek winter pasture. The winterfat in these locations does not complete its life cycle until about

mid-October to mid-November. Grazing in the winterfat populations would need to be minimized during that time until it completes its life cycle.

These dates are an approximation based on general plant phenology. Year-to-year variation would occur based on climatological phenology.

2.2.1.1.1 Upper Edwards Creek Gather Area

The Upper Edwards Creek Gather Area would be managed as a short duration gathering pasture (Appendix L, Map 4) to facilitate clean gathers and moves between the Edwards Creek summer use area and the Porter Canyon summer use area. This large riparian pasture (total 630 acres) would be closed to wild horses and only occasionally authorized to be grazed by cattle as follows: up to 310 AUMs (894 cattle for 12-14 days) allowed for the duration of the cattle being moved through the gathering area. Typically, when the permittee gathers cattle into the pasture, groups could range anywhere from 20 to 200 cattle at a time. The larger groups (100 to 200 cattle) gathered would likely be at the beginning stage of use in this temporary pasture and only stay overnight to settle before being moved to the next pasture use area of the current rotation scheduled for that grazing season. As larger herds are easier to gather initially, smaller herds (5 to 20 cattle at a time) would be gathered and placed in the temporary pasture until all the remaining cattle are removed from the previous pasture use area. Once the last herd group is gathered, the cattle would be moved to the next pasture use area of the current rotation scheduled for that grazing season. Overall, there could be up to a maximum of 10 groups of cattle gathered within this temporary riparian pasture. The first several groups could average approximately 100 to 200 cattle with each group staying overnight, while the last several groups could average approximately 5 to 20 cattle that may stay up to a week in the temporary pasture until all remaining small groups are gathered. The temporary riparian pasture could typically see use from approximately two weeks up to a month, depending on the size and number of groups are herded. During the time that cattle utilize the pasture, the permittee and BLM will monitor the use and AUMs and ensure that once indicators/thresholds are reached, cattle would be moved to a new use area. If indicators/thresholds are exceeded two years in a row during this use time, BLM and permittee may implement other livestock management actions described below, which includes using salts/supplements to prevent cows from loafing in the riparian areas. Maintenance of the spring development would provide off-site water outside of the riparian pasture and encourage cattle to use other areas outside of the Edwards Creek gathering pasture.

2.2.1.2 Other potential grazing management actions

Below describe some management tools the permittee may use during dry years and wet years:

Dry Years[2]

Once the winterfat comes out of dormancy and begins spring growth (“green up”) in the winter pastures, cattle would be moved through Porter Canyon into the Edwards Creek

[2] The average annual precipitation in the Edwards Creek and Porter Canyon allotments is 11 inches and 9 inches, respectively. Precipitation levels vary with topography and the range for Edwards Creek is 7 to 20 inches, while the range for Porter Canyon is 6 to 16 inches. Drought is defined as 75% of the average precipitation, so a dry year in this location would be 8.25 inches and 6.75 inches, respectively.

Foothills because the Edwards Creek valley generally dries earlier in the year than the Smith Creek Valley. Cattle would follow the growth of the vegetation, which would vary depending on the year's weather conditions, to move into the higher elevations of Edwards Creek Foothills. Once annual livestock indicators/thresholds are reached (Appendix F) in Upper Topia and Upper Edwards creeks, cattle would be moved into the Porter Canyon Summer use area. Porter Canyon Summer use would be determined based on grazing pressure and the annual livestock indicators/thresholds on the riparian areas. The permittee would then begin to herd cattle into the Porter Canyon Foothills and then to the winter ground.

Depending on current monitoring data and the climatic conditions, the permittee would either 1) use all permitted AUMs but stay in the upper elevations for shorter periods of time, or 2) use fewer AUMs and stay in the upper elevations for a longer period of time.

Wet Years[3]

During the wetter years, the biggest focus will be the fuel loading of annual grasses. When the annual grasses reach a certain threshold (Appendix E), the permittee may utilize targeted grazing in typically the winter pastures on the allotment (Map 5). Utilizing this approach allows the permittee to increase rest in areas of concern (i.e., areas that may have had increased use previously, riparian areas, or areas with reduced dominant perennial grasses based on the ESDs) and focus use on the more resilient sites (i.e., sites that are within a stable state with predicted assemblages of dominant plant species based on the ESDs). The Porter Canyon Foothills would be avoided during the wet years so as to prevent grazing of toxic low larkspur (*Delphinium nelsonii*), which causes cattle mortality.

2.2.1.3 Livestock Management Actions

The following is a list of actions that the permittee may use to manage livestock as appropriate to meet the annual livestock indicator/thresholds and monitoring objectives (Section 2.1.3 & Appendix O) and responses the permittee may use if a wildfire were to occur on the allotments.

If monitoring determines that the indicators/thresholds are exceeded within a pasture/use area during the current season of use then either AUMS, and/or duration of grazing within the pasture/use area will be reduced the following grazing season or seasons until the pasture/use areas shows improvement of the impacts defined by the monitoring. This reduction and/or implementation of actions as found under this section would occur and be discussed during the meeting for which the annual operating plan would be completed. The reduction would be based on compliance and monitoring results and the amount exceeded over the thresholds from the prior year.

1) Herding – Actively moving livestock to keep them in an area or move them away from an area.
2) Salt/Supplement – Using salt/supplement to concentrate cattle use in a specific area, encouraging livestock away from other areas within pastures.

[3] Years in which the annual precipitation exceeds the long-term averages in each allotment. The range of average precipitation in the Edwards Creek Allotment is 7 to 20 inches (11 inches averaged across all topography) and the range in the Porter Canyon Allotment is 6 to 16 inches (9 inches averaged across all topography).

3) Temporary Fencing – Placing temporary fencing around either treatment areas and areas that need to be rested (e.g. winterfat areas).
4) Controlling water – Turning on and off wells/pipelines, temporarily fencing water.
5) Stocking rate – Increase/decrease the number of livestock in a pasture and/or area.
6) Timing – Grazing would be based on plant phenology within permit dates.
7) Intensity – Depending on the objective, the intensity (utilization levels) may be specified or livestock may be moved based on the condition of the animals.
8) Duration – The amount of time livestock are grazing within a pasture or area.
9) Rest – Resting a pasture/area, providing alternative feed (pasture or hay) to livestock on private land in place of those pastures being rested.

2.2.2 Existing Range Improvements

Appendix H contains a list of existing range improvements in the complex, their current condition, and the assigned maintenance responsibility based on available documentation. The ability to achieve the Standards for Rangeland Health depends, in part, on fully operational range improvements, which are necessary to control livestock movements in accordance with the current years grazing management plan. The grazing permittee is responsible for maintenance of all range improvements that are under either a Range Improvement Permit (RIP) or Cooperative Agreement as provided under 43 CFR 4120.3-1(c) and 43 CFR 4130.3-2. Grazing use may be suspended by the AO if Range Improvement(s) are found to be not in good working order.

Currently, there are many existing improvements in need of repair. BLM has identified 21 range improvements that provide off-site water to assist with keeping cattle out of the riparian/wetland areas (Table 9 and 10). There would be 100 AUMs (about 8 cows a year) attached to each water source, resulting in an initial reduction of 2,100 AUMs (175 cows a year). As each water source is repaired to functioning condition, 100 AUMs would be released back to the following year's annual use. During the annual operating meeting BLM and permittee would prioritize and identify the maintenance of those improvements for that grazing year.

2.2.3 Other Terms and Conditions

- A mandatory Annual Operating Meeting between BLM and permittee will occur each grazing year. This meeting would include:
    a. Discuss the previous year's livestock management and monitoring results.
    b. Developing the plan for the current year's grazing season and monitoring.
    c. Discussing and prioritizing needed maintenance on existing range improvements and implementation of any new improvements and ensure that wildlife escape ramps are installed in all troughs.
- A Cooperative Monitoring Agreement would be signed between the permittee and the BLM.
- Grazing Management would be in accordance with the 2021 Edwards Creek, Carson, and Porter Canyon Grazing Permit Renewal and Decision Record.
- The permittee shall ensure that livestock do not congregate within four miles of active GRSG leks from March 1 to June 30. Active lek locations will be provided to the permittee by BLM staff upon permit issuance and any updated information would be

provided annually. In addition, Management Decisions from the GRSG ARMPA in Appendix D will be adhered to by the BLM and the permittee.

- Salt, supplements, waters, and/or herding would be used to move livestock around the allotment and reduce livestock concentration at riparian areas, particularly during the summer months. Salts and supplements shall be placed at least one mile from riparian areas, springs, and meadows. Salt would not be placed in known historic properties or in areas where sensitive plant species are known to occur.
- Maintenance of range improvements is required and shall be in accordance with all approved cooperative agreements and range improvement permits. Maintenance shall be completed prior to livestock turnout in a pasture or use area scheduled for livestock use. Maintenance activities shall be restricted to the footprint (previously disturbed area) of the project as it existed when initially constructed. The BLM shall be given 48 hours advance notice of any maintenance work that would involve heavy equipment.
- No livestock grazing is authorized in any exclosure(s) without prior written authorization by the authorized officer for a grazing prescription to meet specific resource objectives.
- WSAs were identified per direction provided in the 1976 FLPMA. FLPMA provides direction to the BLM for management of WSAs "so as not to impair the suitability of such areas for preservation as wilderness" (BLM 2012a). All proposed actions would follow management as directed in the BLM Manual 6330 "Management of BLM Wilderness Study Areas" (BLM 2012a).
- Vegetation restoration in the WSA per BLM Manual 6330 (BLM 2012a) will meet the non-impairment standard and Project Design Features (Appendix J).
- Livestock grazing and proposed range improvements in the WSA per BLM Manual 6330 (BLM 2012a) will meet the non-impairment standard and Project Design Features (Appendix J).
    - Within the WSA, future access to range improvements for installation, maintenance, and removal would be via existing primitive routes that are open to motorized travel and/or using non-motorized travel such as by foot or using pack animals.
    - Materials that may need to be flown in by helicopter sling-loading materials into the project site onto an already disturbed area or existing primitive route. Only as necessary, if the helicopter were to land, it would land in an already disturbed area or on an existing primitive route. All installation, maintenance and removal actions would meet the non-impairment standards.
- Potential noise in the project area, specifically in the WSA, would be negligible and short-term.
- Within WSAs, the use of mechanical or motorized transport is restricted to those primitive routes that were identified and documented as ways at the time of FLPMA.
- By accepting this grazing permit, the permittee agrees that the authorized officer or his representatives and contractors shall have the right of ingress and egress over private lands controlled by the permittee for the purpose of achieving the management objectives and orderly administration of public rangelands under this grazing permit.

2.3 Alternative 2: Prescriptive Rotation

2.3.1 Grazing System

Proposed New Improvements and Goals and Objectives are the same as those described in the Proposed Action. Under this alternative, a new ten-year term grazing permit would be issued to Smith Creek Ranch Company LTD that would continue the current authorized use of 10,733 AUMs on the ECPA. Actual Use billing would continue to be authorized. Accurate records must be kept, and an Actual Use Grazing Report would be submitted within 15 days after the authorized use is completed for the grazing season.

This alternative was created to give a more prescriptive approach to livestock management on the three allotments. This alternative would employ herd management techniques to move cattle throughout the use areas, rotate its grazing schedule every other year, and reduce AUMs initially based on 21 non-functioning existing range improvements that would are needed to provide off-site water and reduce grazing pressure on riparian/wetland areas. These off-site water sources are also essential to improving habitat conditions in GRSG and LCT habitat.

This alternative would be different from the OBGA due to the strict dates and locations for movement of livestock. There would be a small window of flexibility (typically 10-14 days) to move cattle between use areas. Movement would not be based on climatic conditions or phenology of plants, but instead based on the dates listed in Tables 7 and 8. The goals and objectives would remain the same, though, and the permittee and BLM would need to coordinate the proper management responses once those annual livestock indicators are reached in a use area. Section 2.3.2 discusses the types of management actions the permittee may utilize in order to ensure they are not exceeding those thresholds. Herd management would be required to ensure cattle are not remaining too long within riparian/wetland and winterfat areas. Providing those off-site water sources is imperative to keeping cattle out of the riparian wetland areas.

The following tables show how the cattle would be managed during each rotation. Following the tables there is further explanation of each rotation (Appendix L, Maps 12a, 12b).

Table 3: Year 1 Rotation

Pasture/Use Area	Livestock Numbers	Dates	AUMs[1]
1) Edwards Creek Winter*	300	10/1 - 3/15 (move to Porter Canyon Winter, then on 4/1 to Smith Creek Foothills)	1,638
2) Edwards Creek Foothills	894	8/15-9/1	500
3) Edwards Creek Mountains (Summer)	894	7/15-8/15	911
4) Smith Creek Mountain (a) Haypress, Pole, Milkhouse Creek areas (b) Upper Smith Creek, Billie Canyon	894	a) 5/15-6/15 b) 6/15-7/15	911 882
5) Smith Creek Foothills	894	4/1- 5/15	1,294

Pasture/Use Area	Livestock Numbers	Dates	AUMs[1]
		9/15-9/30	470
6) Smith Creek Winter*	594	10/1- 4/1	3,554
7) Porter Canyon and Stoker	894	9/1-9/15	293

*Wells and pipelines turned off no later than 3/15. [1]Animal Unit Months

Table 4: Year 2 Rotation

Pasture/Use Area	Livestock Numbers	Dates	AUMs[1]
1) Edwards Creek Winter*	300 594	10/1-2/28 3/1-3/15	1,489 273
2) Edwards Creek Foothills	594	3/15-5/1	464
3) Edwards Creek Mountains (Summer)	300 (from Porter Canyon) 594 (Edwards Creek Foothill)	5/15-6/15 5/1-6/15	306 879
4) Smith Creek Mountain a) Haypress, Pole, Milkhouse Creek areas (b) Upper Smith Creek, Billie Canyon	 894 894	 8/1-9/15 6/15-8/1	 1,352 1,381
5) Smith Creek Foothills	300 894	3/15-3/31 9/15-10/1	168 470
6) Smith Creek Winter	594 300	10/1-2/28 3/1-3/15 (move the other 294 to Edwards creek winter)	2,949 138
7) Porter Canyon and Stoker	300	4/1-5/15	434

*Wells and pipelines turned off no later than 3/15. [1]Animal Unit Months

Year 1: Smith Creek Early Use

After cattle winter in the Edwards Creek and Smith Creek winter pastures, 894 cattle would begin to move into Smith Creek Foothills on 4/1. The cattle would be in the foothills from 4/1-5/15. On 5/15 cattle would move to the Smith Creek Mountain area, specifically the Upper Smith Creek and Billie Canyon use areas. On 6/15 cattle would move to the Haypress, Pole Canyon, and Milkhouse Creek use areas. On 7/15 cattle would move to the Edwards Creek Mountains use area. On 8/15 cattle would move to the Edwards Creek Foothills where 300 cattle would be split off and moved into the Edwards Creek Winter use area on 9/1. The other 594 cattle would move into the Porter Canyon use area and be pushed through there to the Porter Canyon Foothills until 10/1. On 10/1 the cattle would move to the Porter Canyon Winter use area. Then begins the Year 2 rotation.

Year 2: Edwards Creek Early Use

Year 2 would begin with 300 cattle in Edwards Creek Winter from 10/1-2/28 and 294 cattle in Smith Creek Winter from 10/1-2/28. On 3/1, 294 cattle would be moved from Smith Creek

Winter to Edwards Creek Winter and combined with the 300 cattle already present. On 3/15 the now combined 594 would move into Edwards Creek Foothills until 5/1, when they would be moved to Edwards Creek Mountains. The remaining 300 cattle in the Smith Creek Winter use area would move into Smith Creek Foothills on 3/15, then into Porter Canyon on 4/1. These cattle would be moved through Porter Canyon and combined with the other 594 head in the Edwards Creek Mountains use area on 5/15. The now 894 head would stay in Edwards Creek Mountains until 6/15, then move into Smith Creek Mountain, including the upper Smith Creek and Billie Canyon use areas, until 8/1. On 8/1 cattle would be moved into the Haypress, Pole Canyon, and Milkhouse Creek use areas until 9/15. Cattle would then move into Smith Creek Foothills and then into Smith Creek Winter on 10/1, where 300 head would be split and pushed back to the Edwards Creek Winter area until 3/15. Then those cattle would be moved back into Smith Creek Winter to set up for the Year 1 rotation again.

Rotations between use areas would have a 7- to 14-day window in between to allow the permittee to move all the cattle within a reasonable timeframe.

Targeted/Prescribed grazing

Section 2.1.3 discusses a targeted grazing objective. If this targeted grazing objective is reached in the area identified in Appendix L, Map 5 or other areas, then BLM and the permittee would coordinate a proper management response to try and reduce the invasive annual grass cover. For example, if the previous year's winter was a wet winter, then the cheatgrass cover would likely exceed the threshold in the objective. The permittee would then typically focus the following winter's grazing in the winter pastures on the allotment (Appendix L, Map 5). Utilizing this approach allows the permittee to increase rest in areas of concern and focus more use on the more resilient sites.

Temporary gathering/holding pastures

To facilitate movement of cattle between the use areas, as well as branding, weaning, and calving, there are seven (7) holding/gathering pastures throughout the two allotments (Appendix L, Maps 12a and 12b), which are largely riparian pastures. They would be used short-term to facilitate movement between use areas, during which there would be an average of approximately 100 to 200 cattle per group, each group remaining overnight. The last several groups to pass through these pastures could average approximately 5 to 20 cattle each and may stay up to a week in the temporary pastures until all remaining cattle are gathered. Below is a list of these temporary holding pastures:

1) Lower Edwards Creek: Mostly on private land and between Edwards Creek Winter and Edwards Creek Foothills.

2) Upper Edwards Creek Gathering Pasture: Currently proposed and Section 2.2.1.1.1 explains how this would be used.

3) Upper Smith Creek: Inside Smith Creek Mountains (a).

4) Smith Creek Proper: Between Smith Creek Mountains (a) and (b) use areas.

5) Dalton Canyon: This would only be used every other year in the fall during the Year 2 rotation. Once a 60-70% utilization level is reached, cattle must be removed from inside the exclosure.

6) Porter Canyon: On private land in the Porter Canyon use area.

7) Smith Creek Ranch headquarters: Used for branding, weaning, and calving.

2.3.2 Livestock Management Actions

The following is a list of actions that the permittee may use to manage livestock as appropriate to meet the annual livestock indicator/thresholds and monitoring objectives (Section 2.1.3 & Appendix O) and responses the permittee may use if a wildfire were to occur on the allotments.

If monitoring determines that the indicators/thresholds are exceeded within a pasture/use area during the current season of use then either AUMS , and/or duration of grazing within the pasture/use area will be reduced the following grazing season or seasons until the pasture/use areas shows improvement of the impacts defined by the monitoring. This reduction and/or implementation of actions as found under this section would occur and be discussed during the meeting for which the annual operating plan would be completed. The reduction would be based on compliance and monitoring results and the amount exceeded over the thresholds from the prior year.

1) Herding – actively moving livestock to keep them in an area or move them away from an area.
2) Salt/Supplement – using salt/supplement to concentrate cattle use in a specific area, encouraging livestock away from other areas within pastures.
3) Temporary Fencing – placing temporary fencing around either treatment areas and/or areas that need to be rested (e.g., winterfat areas)
4) Controlling water – turning on and off wells/pipelines, temporarily fencing water.
5) Stocking rate – increase/decrease the number of livestock in a pasture and/or area.
6) Timing – grazing would be based on plant phenology within permit dates.
7) Intensity – depending on the objective the intensity (utilization levels) may be specified or livestock may be moved based on the condition of the animals.
8) Duration – the amount of time livestock are grazing within a pasture or area.
9) Rest – resting a pasture/area, providing additional rest, alternative feed (pasture or hay) for those pastures being rested.

2.3.3 Other Terms and Conditions

- Grazing Management would be in accordance with the 2021 Edwards Creek, Carson, and Porter Canyon Grazing Permit Renewal and Decision Record.
- The permittee shall ensure that livestock do not congregate within four miles of active GRSG leks from March 1 to June 30. Active lek locations will be provided to the permittee by BLM staff upon permit issuance and any updated information would be provided annually. In addition, Management Decisions from the GRSG ARMPA in Appendix D would be adhered to by the BLM and the permittee.

- Salt, supplements, waters, and/or herding would be used to move livestock around the allotment and reduce livestock concentration at riparian areas, particularly during the summer months. Salts and supplements shall be placed at least one mile from riparian areas, springs, and meadows. Salt would not be placed in known historic properties or in areas where sensitive plant species are known to occur.
- Maintenance of range improvements is required and shall be in accordance with all approved cooperative agreements and range improvement permits. Maintenance shall be completed prior to livestock turnout in a pasture or use area scheduled for livestock use. Maintenance activities shall be restricted to the footprint (previously disturbed area) of the project as it existed when initially constructed. The BLM shall be given 48 hours advance notice of any maintenance work that would involve heavy equipment.
- No livestock grazing is authorized in any exclosure(s) without prior written authorization by the authorized officer for a grazing prescription to meet specific resource objectives.
- WSAs were identified per direction provided in the 1976 FLPMA. FLPMA provides direction to the BLM for management of WSAs "so as not to impair the suitability of such areas for preservation as wilderness" (BLM 2012a). All proposed actions would follow management as directed in the BLM Manual 6330 "Management of BLM Wilderness Study Areas" (BLM 2012a).

Vegetation restoration in the WSA per BLM Manual 6330 (8, iii, B, II, Pg. 1-34, BLM 2012a) will meet the non-impairment standard and Project Design Features (Appendix J).

Livestock grazing and proposed range improvements in the WSA per BLM Manual 6330 (8, iii, B, II, Pg. 1-34, BLM 2012a) will meet the non-impairment standard and Project Design Features (Appendix J).

    - Within the WSA, future access to range improvements for installation, maintenance, and removal would be via existing primitive routes that are open to motorized travel and/or using non-motorized travel such as by foot or using pack animals.
    - Materials that may need to be flown in by helicopter sling-loading materials into the project site onto an already disturbed area or existing primitive route. Only as necessary, if the helicopter were to land, it would land in an already disturbed area or on an existing primitive route. All installation, maintenance and removal actions would meet the non-impairment standards.
- Potential noise in the project area, specifically in the WSA, would be negligible and short-term.
- Within WSAs, the use of mechanical or motorized transport is restricted to those primitive routes that were identified and documented as ways at the time of FLPMA.
- By accepting this grazing permit, the permittee agrees that the authorized officer or his representatives and contractors shall have the right of ingress and egress over lands controlled by the permittee for the purpose of achieving the management objectives and orderly administration of public rangelands under this grazing permit.

2.3.4 Existing Range Improvements

Appendix H contains a list of existing range improvements in the complex, their current condition, and the assigned maintenance responsibility based on available documentation. The ability to achieve the Standards for Rangeland Health depends, in part, on fully operational range improvements, which are necessary to control livestock movements in accordance with the current years grazing management plan. The grazing permittee is responsible for maintenance of all range improvements that are under either a Range Improvement Permit (RIP) or Cooperative Agreement as provided under 43 CFR 4120.3-1(c) and 43 CFR 4130.3-2. Grazing use may be suspended by the AO if Range Improvement(s) are found to be not in good working order and/or in an aesthetic state prior to turnout.

Currently, there are many existing improvements in need of repair. BLM has identified 21 range improvements that provide off-site water to assist with keeping cattle out of the riparian/wetland areas. It is essential for these improvements to be functioning in order to improve habitat conditions for GRSG, LCT, and other wildlife, and to make progress towards meeting the Goals and Objectives as described in Section 2.1.3. There would be 100 AUMs (about 8 cows a year) attached to each water source, resulting in an initial reduction of 2,100 AUMs (175 cows a year). As each water source is repaired to functioning condition, 100 AUMs would be released back to the following year's annual use.

Table 5: Non-Functioning Range Improvements

Edwards Creek	
Name	**Pasture/Use Area**
Horse Canyon	Edwards Creek Winter
Cedar Canyon Spring Trough	Edwards Creek Mountain
Edwards Creek Spring #1 (Headwaters)	Edwards Creek Mountain/Upper Edwards Creek
Edwards Creek Spring #2	Edwards Creek Mountain/Upper Edwards Creek
Unnamed upper Edwards Creek aspen exclosure	Edwards Creek Mountain/Upper Edwards Creek
Topia Canyon Spring and Troughs	Edwards Creek Mountain/ Topia Creek area
Topia Exclosure	Edwards Creek Mountain/ Topia Creek area
UK-TR7 (at Topia Exclosure)	Edwards Creek Mountain/ Topia Creek area
UK-TR8 (at Topia Exclosure)	Edwards Creek Mountain/ Topia Creek area

Table 6: Non-Functioning Range Improvements

Porter Canyon	
Name	**Pasture/Use Area**
Billie Canyon Spring	Smith Creek Mountain (b)
Billie Spring Upper Wet Meadow	Smith Creek Mountain (b)
Pole Canyon Spring	Smith Creek Mountain (a)/ Pole Canyon area
Porter Canyon Spring	Porter Canyon-Stoker
Unnamed Porter Canyon troughs	Porter Canyon-Stoker
UK-TR2	Smith Creek Mountain (a)/ Haypress Creek area
UK-TR3	Smith Creek Mountain (a)/ Haypress Creek area
UK-TR4	Smith Creek Mountain (a)/ Haypress Creek area
UK-TR6	Smith Creek Mountain (b)/ Milkhouse Creek area
UK-TR14	Smith Creek Mountain (a)/ Haypress Creek area
Upper Smith Creek	Smith Creek Mountain (b)

2.4 Alternative 3: No Action Alternative (Current Management)

In accordance with Chapter VI, Section 6.6.2 of H-1790-1, this EA evaluates the No Action Alternative. The objective of the No Action Alternative is to describe the environmental consequences that may result if the Proposed Action or the other alternatives are not implemented. The No Action Alternative forms the baseline from which the impacts of the Proposed Action and alternatives can be measured. This alternative (current management) is also the baseline used for completion of the RHAs, which concluded that the current situation resulted in not meeting RAC standards.

Under the No Action Alternative (Current Management), permitted grazing would be reauthorized in a new 10-year permit in accordance with the DMEMP and all current permit conditions. Other terms and conditions listed below would also apply.

Table 7: No Action Alternative Mandatory Terms and Conditions

Allotment	Livestock Numbers	Season of Use	% Public Land	Type Use	AUMs*
Edwards Creek	275	12/1-11/30	100%	Active	3,309
Carson	16	12/1-11/30	100%	Active	193
Porter Canyon	603	12/1-11/30	100%	Active	7,256
Total	**894**				**10,758**

*Animal Unit Months

The following is taken (including Table 9) from the DMEMP, which describes the current management of the allotments.

The livestock management strategy would allow up to Moderate (41-60%) utilization on the uplands. In the riparian areas, manage grazing as to provide 2-4 inches or more of herbaceous stubble by the end of the grazing season and manage cattle so that recruitment of aspen, willow, and chokecherry is occurring.

An adaptive management approach would be taken with these two allotments. All dates are approximate. Livestock moves would be timed to meet utilization objectives and would vary from the above schedule based on forage production, weather, livestock behavior, and progress towards objectives. Annual evaluations of the grazing system would be conducted, and adjustments may be made to meet vegetation objectives.

Table 8: 1999 DMEMP Livestock Grazing Schedule

Years 1 and 2			
Pasture/Use Area	**Numbers**	**Date**	**AUMs[1]**
Edwards Cr. Foothills	894 C*	4/16 - 5/31	1341
Edwards Summer (includes Bassie and Porter)	894 C	6/1 - 7/31	1788
Porter Cyn Summer	894 C	8/1 -10/31	2682
Porter Cyn and Edwards Cr. Winter	894 C	11/1 - 4/15	4922

Total			**10,733**
Years 3 and 4			
Pasture/Use Area	**Numbers**	**Date**	**AUMs**
Porter Cyn Foothills	894 C	4/16 - 5/31	1341
Porter Cyn. Summer	894 C	6/1 – 7/31	1788
Edwards Cr. Summer (includes Bassie and Porter Cyn)	894 C	8/1 -10/31	2682
Porter Cyn and Edwards Cr. Winter	894 C	1 1/1 - 4/15	4922
Total			**10,733**

*Cattle [1]Animal Unit Months

Livestock movements from the different pasture zones are described in the DMEMP. "The grazing system provides two periods of deferment. Spring deferment would provide plants an opportunity to build plant vigor and encourage seedling establishment in both the riparian and upland areas. Plants would receive deferment until seed set. Fall deferment would allow regrowth in riparian areas to provide adequate stubble height to catch sediment to build banks and in upland areas to provide residual vegetation. Woody species are most likely to be grazed during August and September. With successive years of fall deferment, this would encourage recruitment of woody species by allowing young plants to extend the growing point above the browse height of cattle" (BLM 1999).

2.4.1 Other Terms and Conditions

- Grazing will be done in accordance with the Desatoya Mountains Ecosystem Management Plan, July 1999.
- Pursuant to 43 CFR 4130.3-2(h), the permittee or lessee shall provide reasonable administrative access across private and leased lands to the Bureau of Land Management for the orderly management and protection of public lands.
- Grazing management shall be authorized in a manner that will make progress towards meeting the standards as set forth by the Sierra Front Northwestern Great Basin Resource Advisory Council, 1997.
- Pursuant to 43 CFR 10.4(g), you must notify the AO, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for 30 days or until notified to proceed by the AO.
- Salt and/or supplements will be placed at least 1/4 mile from live waters (springs/streams) and outside of associated riparian areas, permanent livestock watering facilities, wet or dry meadows, and aspen stands. Salt and/or supplements should not be placed in known historic properties.
- It is your responsibility to maintain all assigned range improvements in good working order and an aesthetic state.

2.5 Alternative 4: No Grazing Alternative

Under the no Grazing Alternative, grazing would not be authorized on public lands within the allotment for a term of 10 years. The 10,733 AUMs of permitted use would be placed in non-use and no grazing permits would be offered or authorized for a ten-year period. Upon expiration of the 10-year period, livestock grazing would be re-evaluated for approval of applications for grazing permits.

2.6 Alternatives Considered but Eliminated from Analysis

Some alternatives that were considered but eliminated from analysis were to have no summer grazing, reduce AUMs by 40% during the growing season, and reduce AUMs initially until monitoring objectives are met and also provide growing season rest in each of the summer pastures every other year. These alternatives were eliminated due to the infeasibility of the alternatives to the ranch and their livestock operation. Reducing use during the summer would either require the permittee to sell cattle during that time or place the livestock at their headquarters. The headquarters to Smith Creek Ranch is a primary brood rearing habitat for GRSG and the ranch has a Candidate Conservation Agreement based around the meadow at their headquarters. Habitat conditions around this meadow would likely degrade if the ranch had to place their cattle there during the summer if AUMs are reduced during that time or if no summer grazing was allowed in the summer pastures within the allotments. Requiring growing season rest in the Summer pastures every other year would not benefit the Edwards Creek summer pasture. This use area is a smaller area when compared to the Porter Canyon Summer pasture. Cattle would be concentrated in the Edwards Creek and Topia Creek watersheds during the critical growing season and the damage this concentration would have would not be offset by just one growing season of non-use.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, & CUMULATIVE IMPACTS

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action and alternatives and the anticipated environmental consequences. Per the CEQ regulations found at 40 CFR 1508.8, “effects” and “impacts” are synonymous in this EA. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.

This chapter also identifies cumulative effects. The CEQ formally defines cumulative impacts as follows:

> “…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

For the purposes of this EA, the cumulative impacts are the sum of all past, present (including proposed actions), and reasonably foreseeable future actions (RFFAs) resulting primarily from authorized activities and public uses. The purpose of the cumulative analysis in this EA is to

evaluate the significance of the Proposed Action and Alternatives' contributions to the cumulative environment.

3.1 Scoping and Issue Identification

Internal Scoping

- In 2018, the SFO IDT team conducted internal scoping and the field trips listed below in 2018 and 2019. Updated data was gathered in the 2019/2020 to complete the RHAs (Appendices B1, B2). Appendix C, the SDD, discusses the contributing factors towards failing the 4 of 5 Standards for Rangeland Health.

External Scoping

- Results Oriented Grazing for Ecological Resilience (ROGER), a rancher-led cooperative group formed in 2016, went on a tour of the Porter Canyon Allotment with the BLM on July 9-10, 2019. Items viewed and discussed included the Desatoya Land Health Project, GRSG research and monitoring in the Desatoyas, Haypress Meadow monitoring and restoration, and plant phenology. Smith Creek, tree removal, and treatments in and around Dalton Meadow were also viewed and discussed.
- On August 27, 2018, the Nevada Department of Wildlife (NDOW), U.S. Fish and Wildlife Service (USFWS), and BLM went on a field trip to view and discuss the proposed Edwards Creek projects designed to better protect LCT. The NDOW and USFWS supported the proposal to install a "Riparian Pasture" fence around the upper Edwards Creek watershed and removing old exclosures that were not being maintained. The group supported treating PJ removal within the Edwards Creek watershed, near springs, and in important GRSG use areas. The group also supported invasive thistle removal within the Edwards Creek Watershed and NDOW recommended spring enhancement projects in the Topia Creek Area.
- The BLM initiated consultation for the project with the Fallon-Paiute Shoshone Tribe and the Yomba Shoshone Tribe in October 2014, introducing the tribes to the proposed actions and requesting information about any concerns regarding resources of religious and cultural significance. In 2016, both tribes were provided with a copy of the Class III cultural resources inventory report prepared for the project. Additionally, in 2016, both Tribes were invited to be Signatories to a Programmatic Agreement prepared to define the BLM's responsibilities for the undertaking in accordance with the National Historic Preservation Act. In 2018, the BLM notified both tribes of its intention of terminating the PA and instead following the guidance for grazing permit renewals in Appendix D of the 2014 *Protocol* (BLM 2014a). In July 2020, the BLM sent certified letters to both tribes with information about changes and updates to the proposed undertaking. To date, the BLM has received no concerns from either tribe regarding the proposed permit renewal; however, consultation with the tribes is ongoing and would continue throughout the life of the permit.

3.2 General Setting

The ECPA are adjoining allotments that are located approximately 60 miles east of Fallon, Nevada and 30 miles west-southwest of Austin, Nevada along the county lines of Churchill and Lander Counties and along the Desatoya Mountains (Appendix L, Maps 1 and 2). The Edwards Creek and Carson Allotments lie within the CCDO within Churchill County,

Nevada. The Porter Canyon Allotment lies within the Battle Mountain District within Lander County, Nevada. All are administered by the Stillwater Field Office, CCDO. Together the Allotments encompass approximately 194,579 acres of public lands and 3,629 acres of private lands. Elevations on the Edwards Creek Allotment range from 5,180 feet along US Hwy 50 in Edwards Creek Valley to approximately 9,500 feet at a peak north of Desatoya Peak. Elevations on the Porter Canyon Allotment range from approximately 6,045 feet in Smith Creek Valley to 9,973 feet at Desatoya Peak. The Desatoya Mountains WSA occurs on both allotments. Approximately 13,000 acres of the WSA are in the Edwards Creek Allotment, and approximately 5,628 acres are within the Porter Canyon Allotment. The Desatoya Wild Horse HMA also occurs on both allotments. About 85 percent of the Porter Canyon Allotment is within the HMA. Roughly nine percent of the Edwards Creek Allotment is within the HMA (Appendix L, Map 3). See Section 4.0, of the RHAs (Appendices B1, B2) for more information on the affected environment for the ECPA.

3.3 Supplemental Authorities

Supplemental Authorities that are subject to requirements specified in statute, regulation, or executive order must be considered in all BLM documents (BLM 2008b, Appendix 1). Table 11 lists the Critical Elements and their status as well as rationale to determine whether a Critical Element would be affected by the Proposed Action and alternatives.

In addition to the Critical Elements listed under Supplemental Authorities, the BLM considers other important resources and resource uses that occur on public lands in which impacts may occur from implementation of the Proposed Action or alternatives.

The affected environment and environmental impacts are described for all resources/resource uses, including Critical Elements, which are potentially affected by the Proposed Action or alternatives. Those resources listed below that received a ‘not present’ determination (not present in the area impacted by the proposed or alternative actions) or a ‘no’ on ‘May be Affected’ determination (present, but not affected to a degree that detailed analysis is required) will not be discussed beyond this point. Only those resources receiving a Present and May be Affected determination (present and may be impacted to some degree) will be analyzed in affected environment and environmental impacts section(s). The elimination of non-relevant issues follows CEQ regulations, as stated in 40 CFR 1500.4.

Table 13: Supplemental Authorities and Other Relevant Resources Brought Forward for Analysis

Critical Elements			
Present Yes/No	**May be Affected Yes/No**	**Resource**	**Rationale for Determination**
Yes	No	Air Quality *(The Clean Air Act of 1955, as amended)*	The proposed action and alternatives would result in an insignificant amount of emissions which could directly or indirectly impact air quality, and therefore is too small to analyze and can be assumed to have no potential for any significant impacts. Cumulative impacts resulting from the proposed action and alternatives would be too small to quantify relative to other sources of impacts to air quality. Therefore, this resource will not be carried forward for analysis in this EA.
No	No	Areas of Critical Environmental Concern (ACEC) *(Federal Land Policy and Management Act of 1976)*	No ACECs present within the allotments; no ACECs would be affected.
Yes	No	Cultural Resources *(National Historic Preservation Act of 1966, as amended)*	Historic properties would be avoided.V.D.2 of the *State Protocol Agreement between The Bureau of Land Management, Nevada and The Nevada State Historic Preservation officer for Implementing the National Historic Preservation Act* (Protocol; Revised December 22, 2014). The BLM will follow the procedures outlined for grazing permit renewals in Appendix D of the *Protocol*.
Yes	Possible disproporti onate adverse impacts.	Environmental Justice *(Executive Order 12898)*	Possible; refer to Appendix N.
Yes	No	Farmlands (Prime & Unique) *(Surface Mining Control and Reclamation Act of 1977)*	The proposed action and alternatives would not significantly impact soils as to irreversibly convert prime or unique farmlands (directly or indirectly) to nonagricultural use. Farmlands within the allotments would require additional amendments before being considered fertile soils for agricultural use. Cumulative impacts resulting from the proposed action and alternatives would be too small to quantify relative to other sources of impacts to farmlands. Therefore, this resource will not be carried forward for analysis in this EA.
No	No	Floodplains *(Executive Order 11988)*	There are no mapped 100-year floodplains within the allotments.
Yes	Yes	General Wildlife	Carried forward for analysis in Section 3.5.5.

Critical Elements			
Present Yes/No	**May be Affected Yes/No**	**Resource**	**Rationale for Determination**
Yes	No	Native American Religious Concerns *(Executive Order 13007)*	Areas of religious and cultural significance to Native American tribes would be avoided. The BLM initiated consultation with the Fallon Paiute-Shoshone Tribe and the Yomba Shoshone Tribe for this undertaking in 2014; consultation is ongoing and would continue throughout the life of the permit.
Yes	Yes	Noxious Weeds *(Federal Noxious Weed Act of 1974, as amended) NRS 555.005*	Grazing disturbances can impact noxious species, to be carried forward for analysis in Section 3.5.4.
Yes	Yes	Riparian Zones/Wetlands *(Executive Order 11990)*	Carried forward for analysis in Section 3.5.3.
Yes	Yes	Threatened, Endangered, or Candidate Plant and Animal Species *(Endangered Species Act of 1973, as amended)*	Carried forward for analysis in Section 3.5.6.
Yes	No	Water Quality, surface/ground	Based on qualitative surveys during PFC assessments, water quality conditions are achieving Nevada state water quality standards. The proposed action and alternatives would likely result in the same or improved water quality conditions as described in the RHAs (Appendices B1 and B2). Cumulative impacts resulting from the proposed action and alternatives would be the same as those described under Wetlands/Riparian Zones. Therefore, this resource will not be carried forward for analysis in this EA.
Yes	No	Wastes (hazardous or solid) *(Resource Conservation and Recovery Act of 1976, and Comprehensive Environmental Response, Compensation, and Liability Act of 1980)*	Any hazardous materials and/or solid wastes generated would be transported, used, stored, and disposed of following all local, State, and federal regulations.
No	No	Wild and Scenic Rivers *(Wild and Scenic Rivers Act of 1968, as amended)*	There are no designated/eligible/suitable wild and scenic rivers within the lands managed by the Stillwater Field Office.
Yes	Yes	Wilderness/Wilderness Study Areas *(Federal Land Policy and Management Act of 1976 and Wilderness Act of 1964)*	WSAs carried forward for analysis in Section 3.5.10. There are no designated Wilderness areas within the Project Area.

Other Relevant Resources/Concerns			
Present Yes/No	**May be Affected Yes/No**	**Resource**	**Rationale for Determination**
Yes	No	Fuels / Fire Management	The fire management responsibility for the allotments is shared by both the Carson City and the Battle Mountain Districts. The area to be analyzed includes portions of five fire management units (FMU). Goals and objectives for the Churchill Basin FMU and the Churchill Ranges FMU are identified in the Carson City District Fire Management Plan. Goals and objectives for the Paradise/Ione FMU, Smith Creek Valley FMU, and Carico Lake FMU are identified in the Battle Mountain District Fire Management Plan.
No	No	Forestry	Pinyon Pine and Juniper are addressed in the Riparian, Vegetation, and General Wildlife Sections.
Yes	No	Geology / Mineral Resources / Energy Production	No impact on minerals.
Yes	No	Global Climate/Greenhouse Gas Emissions	This proposed action would result in an insignificant amount of greenhouse gas emissions, and therefore be too small to analyze. There would be no direct or indirect impacts to global climate or greenhouse gases. Cumulative impacts resulting from the project would be too small to quantify relative to other sources of greenhouse gas emissions.
Yes	No	Lands / Access / Rights-of-Way (ROW)	There are several ROW authorizations within the allotments, but grazing should have no impact on them or any other land use authorizations in future.
Yes	No	Lands with Wilderness Characteristics (LWC)	There are three LWC units within the allotments, but they are designated as managed commensurate with other resources.
Yes	Yes	Livestock Grazing *(Taylor Grazing Act of 1934, National Environmental Policy Act of 1969 Endangered Species Act of 1973, Federal Land Policy and Management Act of 1976, and the Public Rangelands Improvement Act of 1978)*	Carried forward for analysis in Section 3.5.12.
Yes	Yes	Migratory Birds *(E.O. 13186)*	Carried forward for analysis in Section 3.5.8.
Yes	Yes	Invasive, Non-native weed species	Carried forward for analysis in Section 3.5.4.

Other Relevant Resources/Concerns			
Present Yes/No	**May be Affected Yes/No**	**Resource**	**Rationale for Determination**
Yes	No	Paleontology *(Paleontological Resources Protection Act P.L. 111-011, HR 146)*	Sensitivity for significant paleontological resources (e.g., vertebrate fossils) is low within the allotment boundaries.
Yes	Yes	Rangeland Health Standards and Guidelines *(43 CFR 4180)*	Refer to Appendix M.
Yes	No	Recreation	No direct or indirect impacts on dispersed or developed recreation or Special Recreation Permits.
Yes	Yes	Sensitive Species Plants/Animals BLM Manual 6840	Carried forward for analysis in Section 3.5.7.
Yes	Yes	Socioeconomics	Carried forward for analysis in Section 3.5.13.
Yes	Yes	Soils	Carried forward for analysis in Section 3.5.1.
Yes	No	Trails and Travel Management	Grazing management would not have an impact on travel management or routes.
Yes	Yes	Vegetation	Carried forward for analysis in Section 3.5.2.
Yes	Yes	Visual Resource Management (VRM) *(FLPMA 1976, NEPA 1969)*	Carried forward for analysis in Section 3.5.11.
Yes	No	Water Resources	The proposed action and alternatives would not result in impacts to groundwater resources. There would be no change in groundwater use from wells, and there are no additional wells proposed. Therefore direct, indirect, and cumulative impacts of groundwater resources are not anticipated, and this resource will not be carried forward for analysis. Potential surface water resource impacts are analyzed under Riparian Zones/Wetlands, Section 3.5.3.
Yes	Yes	Wild Horses and Burros (WH&B) *(Wild and Free Roaming Horses and Burros Act of 1971, as amended)*	No burros in the Project Area, Wild Horses are Carried forward for analysis in Section 3.5.9.

3.4 Reserved

3.5 Resources Considered for Analysis

The following resources are or may be present on the allotments and may be affected by the Proposed Action or Alternatives.

3.5.1 Soils

3.5.1.1 Affected Environment

The majority of the ECPA is located within the order III NRCS Soil Surveys of Lander County, Nevada, South Part (NV768) and Churchill County Area, Nevada, Parts of Churchill and Lyon Counties (NV770), which provide detailed soil map units and soil types that occur across the allotments. Soil map units are made up of one or more soil series with each being correlated to a corresponding ecological site for a given area. Soil resources in the ECPA occur predominantly on mountains, hills, piedmont slopes, valley floors, and playas, and are comprised of various parent material, with mixed and volcanic rocks being the dominant source material. Slopes typically range from 0 to 15 percent on playas and valley floors, and from 15 to 50 percent on hills and mountainous areas. Soils are commonly well drained with surface textures being loams, although there are a wide variety of textures represented across the allotment. Rock fragments of soil profiles range from little to no rock fragments, to gravelly through very stony soils. Soils range in depth from very shallow to very deep. Accumulations of silica, carbonates, silt, or clay sometimes exist within soil profiles.

RHAs were conducted at 52 randomly selected sites and AIM/LMF plots across the ECPA with results detailed in the Edwards Creek and Porter Canyon RHAs and Evaluation (Appendix B1 and B2). The assessments revealed 33 percent of the total plots had departed from reference state for soil and site stability; 62 percent of plots had departed from reference for hydrologic function, and 73 percent of plots departed from reference for biotic integrity. Of the soil surfaces assessed, soil compaction, wind and water erosional features were identified at one third of the sites, typically characterized by the presence of rills, large litter movement, water flow patterns, and soil movement. Over half to three quarters of the assessed sites also had reported loss of deep-rooted perennial grasses in interspaces, increased bare ground, and reduced infiltration and water storage capacity that has resulted in a shift to a more shrub dominated state. At most sites, removal of vegetation was noted as being due to increased utilization by wild horses and cattle, mainly observed as loss of perennial forbs and deep-rooted grasses within shrub interspaces. Perennial forbs and grasses are important in stabilizing the soil surface and preventing increased soil loss by wind erosion and water runoff.

Overall, the primary drivers of soils not meeting the RAC standard are: (1) an increase in soil loss by wind and water erosion, (2) an increase in soil compaction and bare ground which has reduced water infiltration, (3) reduction in diversity and vigor of plant communities, with a lack of recruitment of key species, and (4) basal and canopy cover that is not appropriate for site potential within all areas of the allotment. Furthermore, soil conditions of some areas of the allotments are at additional risk due to reduced vegetative diversity, deficiency, or lack of key grass species and (in many areas) a grass/shrub imbalance.

3.5.1.2 Environmental Consequences to Soils

3.5.1.2.1 Proposed Action: Outcome-based Grazing Alternative

Under the Proposed Action, 10,733 AUMs would be authorized and a flexible seasonal and/or deferred use grazing system would be implemented (Section 2.2, and Tables 5 and 6). Seasonal timing and/or rotation within use areas would be adjusted based on grazing pressure, annual livestock indicators/thresholds, and short- and long-term objectives. In addition, a

monitoring plan (Appendix F) with associated management actions (Appendix O) would be implemented to achieve goals and objectives designed to improve soil processes and function. If goals and objectives are not being met as determined by an exceedance of annual livestock indicators/thresholds, implementation of livestock management actions (Section 2.1.3) would occur and there would be a reduction in AUMs the following year, thus allowing for improvement of rangeland and soil standards. Furthermore, an initial reduction of 2,100 AUMs would occur based on improvement of 21 non-functioning existing range improvements. As these existing range improvements become functional, associated AUMs may be increased.

Goals include reduction of annual grass understory and maintaining or improving native plant communities in uplands and riparian areas (Section 2.1.3). This should allow key grasses and shrubs to regain vigor and productivity over time, provided wild horse levels are kept at or below AML and extreme drought conditions do not persist. However, during periods of drought cattle would follow the growth of vegetation. Dependent upon current monitoring data and climatic conditions, cattle may be in upper elevations for a shorter duration or fewer AUMs would be used (Section 2.2.1.2). With compliance to the grazing schedule and achievement of objectives, plant communities should show improved diversity and recruitment of key species over time. Basal and canopy cover should improve, which would restore and/or maintain soil/site stability and hydrologic function of soils throughout the allotments. Alternating yearlong rest of the summer pastures would increase the potential for recovery and enhancement of plant communities in those areas and therefore further improve soil processes and function.

Flexibility under this grazing schedule would allow for utilization of use areas during different times of the year. Plant communities would not be grazed repeatedly (within a two-year period) during critical growth phases, allowing plants to complete life cycle stages. This would improve vigor, reproduction, and resiliency in vegetation more than what is observed under current grazing management. As plant communities improve, soil processes and function would follow suit. Plant root growth would decrease soil compaction, improve infiltration rates, and increase water holding capacity of soils. Surface water runoff and wind/water erosion would decrease as well. As plant communities improve, this would lead to an increase in surface litter as basal/canopy cover becomes appropriate for soil and ecological type, thus further reducing soil erosion and improving hydrologic function. Overall, this alternative would improve soil conditions over current management and move towards achieving RAC Standards 1, 2, 4, and 5.

3.5.1.2.2 Alternative 2: Prescriptive Rotation

Under Alternative 2, 10,733 AUMs would be authorized under a prescriptive grazing system (Section 2.3). Livestock rotation within use areas would occur on set dates (Tables 7, 8) and initial AUMs would be reduced based on improvement of 21 non-functioning existing range improvements. This alternative would be required to meet goals and objectives (Section 2.1.3) based on annual livestock indicators/thresholds, and short- and long-term objectives (Appendix O) also described in the Proposed Action. If goals and objectives are not being met as a result of the monitoring plan (Appendix F), management actions would occur as appropriate to meet annual livestock indicators and thresholds (Section 2.3.2). Management actions may include reduction of AUMs if indicators/thresholds are exceeded or not

progressing towards achievement. AUMs may also be reduced if agreed upon improvements are not repaired and maintained, further ensuring the improvement to soil function, especially around riparian areas.

Potential impacts under this alternative would be similar to those under the Proposed Action, however, timing would not be flexible and would adhere to dates with movement between use areas within a 2-week window. Although there would be no flexibility in dates, the livestock management actions, targeted grazing, and meeting monitoring objectives would still improve soil conditions over what is seen under current management.

Impacts to temporary gathering and holding areas (Section 2.3) would be similar to those described in the Proposed Action as well; impacts in reference to the upper Edwards Creek gather area would be the same as those described in the Proposed Action (Section 3.5.3.2.1). Dalton Canyon would likely have soil impacts resulting from soil compaction and erosion, however the brief use and one-year rest from grazing would allow for healthy removal of overgrowth and allow for enhanced riparian vegetation recovery which would improve soils over time.

Overall, impacts under current management, as described in the RHAs (Appendices B1 and B2), would be reduced, and overall soil processes and function would improve similar to the Proposed Action. However, because Alternative 2 does not allow for flexibility in season of use or deferred grazing, impacts to soil resources may be more than those of the Proposed Action due to the lack of flexible grazing management. If impacts occur in a particular pasture or during a specific season, the prescriptive grazing approach would not allow management the flexibility to move livestock to another use area or adjust/reduce AUMs appropriately to avoid or minimize impacts.

3.5.1.2.3 Alternative 3: No Action Alternative (Current Management)

Current management, as directed by the DMEMP, is comprised of year-round grazing with authorization of 894 cattle (10,733 AUMs) from December 1st to November 30th. During various years of the ten-year permit, the permittee has voluntarily reduced AUMs, yet this reduced stocking rate has not allowed for improved vegetative diversity and vigor of plant communities throughout the allotments. Basal canopy cover remains inappropriate for site potential and as a result soil stability, hydrologic function, and biotic integrity have declined. Congregated use in sensitive areas has increased grazing pressure on vegetation and soils, leading to increased soil impacts at these areas. The most notable impacts to soils within the allotments result from a decline in hydrologic function and biotic integrity of ecological communities. The decline in biotic integrity is attributed to the change of functional/structural groups, abundance of invasive plants, and low vigor of perennial vegetation and reduced recruitment due to the heavy utilization observed at some sites. The deep-rooted perennial grasses have decreased significantly and the sites with departure ratings have shifted to a shrub/invasive annual dominated state from a perennial grass/shrub state. The loss of functional/structural groups, and low vigor and reproduction rates of perennial grasses seen under current management would likely lead to further loss of soil stability and function, as well as increase the susceptibility of soils to wind erosion, water erosion, and compaction. The loss of perennial vegetation would also result in increased bare ground and surface runoff.

In addition to livestock grazing, excessive wild horse use and variable drought conditions have also been contributing factors to soil decline. Heavy use areas (> 60%) are still present in unprotected areas across the allotments, and moderate use levels (41-60%) described in the DMEMP have not allowed for sufficient vigor and seed production of key forage plants, particularly during periods of drought. Under current management, there are no range improvements proposed which includes the removal of PJ trees, therefore further encroachment would occur and continue to alter ecological communities and reduce soil functions. Under the No Action Alternative soil/site stability, hydrologic function, and biotic integrity would likely continue to decline as described in the ECPA's RHAs (Appendices B1, B2).

3.5.1.2.4 Alternative 4: No Grazing Alternative

Under the No Grazing Alternative, soils would not be impacted from livestock use or other grazing practices. As a result of no livestock grazing on the allotments, utilization of vegetation may decrease in some areas, allowing restoration of deep-rooted perennial grasses which would increase water infiltration and stabilize soil surfaces. Plant vigor may increase which could allow for an increase in litter and organic matter content within the surface horizon to improve soil processes over time. Improvement would be most evident at congregation sites where grazing pressure from cattle is currently highest. Soil recovery is generally a slow process and is dependent on the amount of vegetation that livestock grazing has previously impacted, however positive impacts would occur at a faster rate in heavy use areas that would no longer be grazed, allowing perennial vegetation to recover at these sites. Potentially, an increase in annual crop would boost substrate available for soil functional processes. The response from livestock removal would be highest where grasses and forbs thrive and is dependent upon perennial vegetation recovery. Soil compaction and erosional loss to surface soil structure due to livestock trampling and over grazing would also be reduced. Removal of livestock would reduce bare soil exposure and allow for more vegetative recovery to reduce soil loss from wind and water erosion. Benefits to soils from no grazing use would generally be highest where groundcover slowly re-establishes at livestock grazing congregation areas.

The No Grazing Alternative would not eliminate all impacts to soils however, since impacts would still occur across the allotment, especially in susceptible areas as a result of wild horse use. Impacts resulting from wild horse use would persist, particularly if the wild horse herd continues to exceed AML. As a result, wild horses may congregate in additional areas where livestock previously usedgrazed, causing soil impacts (increased soil compaction and erosion, and loss of stabilizing perennial vegetation) in the short and long term. This alternative would also not implement rangeland improvements such as protection of vegetation from targeted grazing of annual species (such as cheatgrass) or PJ removal which would restore native vegetation and improve soil and site stability, hydrologic function, and biotic integrity. Therefore, this alternative may reduce some soil impacts in overgrazed areas but would not improve overall soil health throughout the allotments in comparison to other alternatives.

3.5.1.2.5 Impacts of Constructing Range Improvements

Proposed Action:

Proposed range improvement projects were identified as integral components of the Proposed Action Alternative due to soil standards not being met for the allotments. Proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements over the 10-year term permit, including up to 2,400 acres of PJ removal projects, up to 10,000 acres of seeding projects, multiple spring exclosure protection projects and developments, willow planting projects, several hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition to the newly proposed improvements described above, the 21 existing range improvements that are currently non-functioning would also be scheduled to be repaired to functioning condition, as described in Section 2.3.4.

During maintenance and construction of new and existing range improvements, soils would be disturbed directly around the area of maintenance or construction. However, Project Design Features (PDFs) would ensure impacts would be minimized. The minimal direct impact to soils from new range improvements would not outweigh the positive benefits that the projects would provide. Proposed maintenance of existing improvements would cause minimal impacts to soils as these activities would occur predominantly where sites were previously disturbed. Specific projects are described in Appendix I and Project Design Features are described in Appendix J. Many impacts are also analyzed in Section 3.12 of the DMHP (BLM 2012b).

The use of equipment during PJ tree removal could cause some localized soil compaction which would increase overland flow/runoff and soil loss. However, removed trees would be scattered along the soil surface, reducing the occurrence of surface erosion. Over time, perennial grasses would recruit and fill in shrub interspaces, resulting in reduced compaction and improved infiltration. This would allow for increased vegetation vigor and reproduction, and thus result in overall improvement of soil function.

Seeding by broadcast or drill mechanisms would result in minor to no soil disturbance. In cases where seeding uses a vehicle, UTV, or tractor, some soil compaction and loss would occur, mainly in areas of increased slope. Willow planting would include soil disturbance by use of small hand equipment with only small areas of direct impacts to the soil surface. Soil would be removed and loosened to dig a hole, however, it would be replaced with the planting of each willow. Some slight soil loss is expected until willow plants are established. This could increase surface erosion but is not expected to be in large quantities or sufficient to inhibit soil function.

Noxious weed treatments are described in Section 3.5.3.2.5 Wetlands and Riparian Areas.

The installation of fencing would cause temporary localized disturbance to soil during installation and where materials are staged. Cattle and wild horses may walk along the perimeter of fences which may cause some trailing resulting in reduction of protective vegetation and an increase in soil compaction directly where the trailing forms along the fence line. The amount of potential impacts from trailing would be negligible in comparison to the overall size of the allotment, and the positive benefits the fencing would provide to these areas would outweigh the small amounts of disturbance. Installation of other range improvements (pipeline, troughs, hardened road crossings, bottomless culverts, gates, and cattleguards) would result in similar impacts to fence installation.

Alternative 2: Prescriptive Rotation

Potential impacts to new range improvements would be the same as described under the Proposed Action (Section 3.5.1.2.5). Impacts resulting from maintenance and improvement of the 21 existing range improvements (Appendix H) would be similar to those described under the Proposed Action, however, would likely be of less overall impact to soils as maintenance would occur in previously disturbed areas. Slight soil compaction, erosion, and possible vegetation removal is likely expected but would improve over time as vegetation reestablishes. However, PDFs would be implemented to ensure impacts are reduced.

3.5.2 Vegetation

3.5.2.1 Affected Environment

Based on NRCS soils information, major plant communities on the allotments include desert salt scrub (23%), low sagebrush (3%), big sagebrush (55%), pinyon/juniper (16%), and desert playas (3%). Within the higher elevation sagebrush and pinyon/juniper communities and along the streams and canyons are pockets of aspen and conifers.

In the lower portions of Edwards Creek and Smith Creek Valleys, most of the plant communities are a variety of salt desert scrub vegetation. Communities include shadscale (*Atriplex confertifolia*) / bud sagebrush (*Artemisia spinescens*), shadscale / greasewood (*Sarcobatus vermiculatus*), and winterfat (*Krascheninnikovia lanata*) / Indian ricegrass (*Achnatherum hymenoides*) and others. Key grass species are deficient or lacking throughout these communities. Invasive cheatgrass (*Bromus tectorum*) occurs throughout.

Fingering into the salt desert scrub communities are populations of Wyoming big sagebrush (*Artemisia tridenta wyomingensis*) and low sagebrush (*Artemisia arbuscula*). Although these latter two communities mix into the salt desert scrub somewhat, they generally lie above the salt desert scrub zone and finger into the woodland zone. Grasses associated with these communities include Indian ricegrass, basin wild rye (*Leymus cinereus*), squirreltail (*Elymus elymoides*), pine and Sandberg's bluegrass (*Poa scabrella* and *Poa secunda*), and needle-and-thread grass (*Hesperostipa comata*).

Sagebrush communities extend into the higher elevations and are generally comprised of mountain big sagebrush (*Artemisia tridenta vaseyana*), black sagebrush (*Artemisia nova*) and low sagebrush communities. Included in these are scattered snow pockets which support groves of quaking aspen (*Populus tremuloides*), common chokecherry (*Prunus virginiana*) and mountain snowberry (*Symphoricarpos oreophilus*). Scattered patches of mountain mahogany (*Cercocarpus ledifoius*) occupy some ridgelines at higher elevations. Grasses associated with these communities include Idaho fescue (*Festuca idahoensis*), needlegrass (*Achnatherum sp*.), basin wild rye, mountain brome (*Bromus marginatus*), and bluegrass species.

Pinyon pine (*Pinus monophylla*) and Utah Juniper (*Juniperus osteosperma*) communities generally dominate the steeper slopes of the Desatoya Mountains and are expanding into adjacent sagebrush communities. These communities have an understory of big sagebrush, bitterbrush (*Purshia tridentata*), Idaho fescue (*Festuca idahoensis*) or in some places, little to no understory.

Invasive plants common on the allotments include cheatgrass (*Bromus tectorum*) and halogeton (*Halogeton glomeratus*). Water hemlock (*Cicuta douglasii*) has been observed along Edwards Creek and Milkhouse Creek. Both bull thistle (*Cirsium vulgare*) and whitetop (*Cardaria draba*) occur in patches along Edwards Creek.

Section 3.5 of the RHAs (Appendices B1, B2) further describes the plant community types and ESDs and Section 2.2 in the RHAs describes the completed monitoring on the allotments as well.

3.5.2.2 Environmental Consequences to Vegetation

3.5.2.2.1 Proposed Action: Outcome-based Grazing Alternative

Livestock use dates for each pasture would be determined on an annual basis and would be based on monitoring data and objectives, current climatic conditions, and the expected vegetative stages of key forage species. Livestock numbers may also vary annually under the use of adaptive management and flexibility, however total permitted AUMs would not exceed 10,733 during the grazing year. This alternative would allow the permittee more flexibility in response to annual climatic conditions and livestock management would be based upon the phenology of the key forage species each year. This alternative incorporates responses to abnormally wet and dry years and allows the permittee to adjust the use periods, rotation and cattle numbers based on those climatic conditions. A monitoring plan (Appendix F) would be implemented to achieve goals and objectives designed to improve riparian and upland vegetation. If goals and objectives are not being met as a result of monitoring, adjustments in timing, duration, and/or frequency of use would occur to ensure progress is being made towards achieving those goals and objectives.

Implementation of objectives and corresponding management actions (Appendix O) would allow for flexibility in the timing and duration of grazing within use areas and ensure cattle are removed from areas once triggers are hit. This would allow for key perennial grasses and shrubs to regain vigor and productivity over time, provided wild horse levels are maintained at or below AML. Studies in riparian and wetland areas have shown that moderate to light grazing during the late summer or early fall has improved riparian vegetation (Holechek et al. 2004). Additionally, Swanson et al. (2015) state that riparian area grazing management can succeed if it enables control of and variation in duration and timing, periods of grazing and recovery, livestock distribution and intensity of use. Thus, allowing the permittee the opportunity to adapt their livestock management to that current year's resource conditions would allow for the flexibility that Swanson et al. (2015) state would be successful for riparian area management. Successful management of riparian areas is managing the forage within those areas and allowing it enough time to recover after grazing or allowing the vegetation to complete its lifecycle before grazing. If implemented correctly, these management actions would allow for improvement of riparian and upland plant vigor, diversity, age class and reproduction resulting in improved plant community composition and biotic integrity throughout those ecological sites that would respond to change in livestock management.

In the Smith Creek and Edwards Creek Valleys, the perennial grass component has been lost for the most part in the Wyoming Sagebrush and Salt-Desert shrub communities. A change in livestock management would not result in the return of those species, instead a seeding would need to be implemented to bring back the perennial bunchgrasses appropriate to those

ecological sites. The main species of concern in those lower valleys would be winterfat, and removing cattle from those areas once it greens up and/or utilization of 21 to 40 percent occurs would reduce the damage cattle grazing would have on the winter fat. Maintaining wild horses at or below AML is also crucial for the winterfat populations to remain stable or improve.

Authorizing the permit under OBGA would increase rangeland management flexibility to maintain and improve rangeland health through collaboration and cooperation with the permittee. Under OBGA, the permittee would have more flexibility to apply knowledge, experience, and stewardship to livestock grazing management across the allotments and more quickly adapt to climatic and phenology responses to meet resource objectives. Improved livestock grazing management flexibility would result in improved rangeland conditions as the goals and objectives are achieved.

3.5.2.2.2 Alternative 2: Prescriptive Rotation

This alternative was created to give a more prescriptive approach to livestock management on the three allotments and create a rotational deferred grazing system. This alternative would employ herd management techniques to move cattle throughout the use areas, rotate its grazing schedule every other year, and reduce AUMs initially based on 21 non-functioning existing range improvements that are needed to provide off-site water and reduce grazing pressure on riparian/wetland areas. These off-site water sources are also essential to improving habitat conditions in GRSG and LCT habitat. The proposed improvements and goals and objectives would remain the same for this alternative as the OBGA.

Adjusting, the rotation to every other year allows the spring/summer pastures to be grazed early one year then late the next year. This would allow the vegetation to grow and set seed every other year before any grazing pressure. This rotational deferred grazing system would give key forage plants an opportunity to maintain and gain vigor, store carbohydrates and set seed when compared to continuous year-round grazing which results in the same areas being grazed at the same time of year every year (Burkhardt and Sanders, 2012; Holechek et al. 2004). According to Hormay and Talbot (1961), a major cause of range deterioration is selective close grazing of plants and range areas in similar yearly patterns of use, and an effective way to control this selective grazing by livestock and counter its harmful effects is to rest these areas from grazing at appropriate intervals. The expected outcome of the rest-rotation grazing strategy on the plant communities with the potential to respond to a change in livestock management within the ECPA would be the following: (1) greater vigor and density of established plants, (2) greater seed production, (3) larger cover percentages for desirable species, (4) increased species composition, and (5) more seedlings of desirable species. This would lead to improved rangeland health and an increase in desirable plant communities. The effect on the plant communities in the Smith Creek and Edwards Creek valleys would be similar to the OBGA since the objective and the trigger to move cattle away from the winterfat would be the same. Additionally, this alternative requires the wells to be shut off in the valleys on March 15th and moves cattle into the foothills earlier. However, this alternative does not afford the permittee the flexibility to adjust the timing, duration, and intensity of grazing. This lack of flexibility may result in the permittee not being able to adjust and adapt to changes in climatic conditions and may result in use areas being grazed too early or overutilized when constricted to strict dates.

Impacts to the temporary gathering and holding pastures would be short-term as these areas would only be utilized as a temporary holding area and would be used short-term by livestock. These gather areas would essentially act as a large riparian protection fence, excluding cattle from use for approximately 11 months out of each year; wild horses would not have access to this area. This management action would provide a large benefit to improving riparian and wetland vegetation by reducing the grazing pressure and allowing most plants to achieve seed ripe and have stored adequate carbohydrate reserves to reproduce and become more resilient to short term grazing. The brief use of these areas would receive may benefit the systems by allowing removal of overgrowth and decedent riparian vegetation.

Dalton Meadows would only be grazed every other year in the fall. During the spring use rotation the gates would not be opened, and cattle would bypass the fenced meadows. Grazing this area every other year in the fall to a 60-70% utilization would remove that overgrowth and decedent riparian vegetation and improve the overall health of the meadow and GRSG habitat.

Overall, Alternative 2 would improve resource conditions but would not allow the flexibility as the OBGA would. The permittee would not have flexibility to apply knowledge, experience, and stewardship to livestock grazing management across the allotments and more quickly adapt to climatic and phenology responses to meet resource objectives. This alternative would be better than Alternative 3 due to the change in use dates within the pastures, the alternating-year rotation, and utilizing the goals and objectives to trigger movements of cattle. This alternative would require intensive management and herding but this would be beneficial to resource conditions as cattle would likely not overutilize key forage species. Habitat conditions for LCT and GRSG would likely improve.

3.5.2.2.3 Alternative 3: No Action Alternative (Current Management)

Under this alternative, management would continue as directed by the DMEMP. This DMEMP has not specified certain annual livestock indicators and goals objectives. Without these it is difficult to ensure that once these indicators are reached, cattle would be moved to a new use area. Additionally, the DMEMP has the cattle on a two-year rotation with no flexibility built into the season of use. In combination with the lack of annual indicators and current rotation schedule, areas of the allotments have not had improved vegetative diversity and vigor of plant communities. Cattle are remaining in certain use areas too long and heavy utilization has been observed in advance of pasture rotation dates. In particular, the vegetation in the riparian and wetland areas and in winterfat communities is receiving heavy utilization, especially in the Edwards Creek and Topia Creek areas and down in the valleys. Wild horses are contributing to the winterfat use in the Edwards Creek and Smith Creek valleys. Without set utilization levels and browse and streambank alteration triggers, cattle are remaining in these areas too long.

With the two-year rotation schedule, heavily utilized areas are not given the amount of time needed to recover. For most plant species in arid areas, one or more years of rest would not compensate for one year of severe defoliation during the growing season (Holechek et al. 2004). The DMEMP also does not account for drought and wet year responses and does not give the permittee those tools to adapt their livestock management to changes in climatic conditions.

No proposed projects would be constructed. GRSG and LCT habitat improvement would not move forward. Development of range improvements could be completed only after being analyzed in an additional site-specific environmental analysis at a later date. Existing improvements could be repaired at some future date under this Alternative. Under this alternative it would be more difficult to meet the Standards for Rangeland Health and/or GRSG objectives (Appendix D).

3.5.2.2.4 Alternative 4: No Grazing Alternative

Under this alternative, impact to vegetation would no longer occur from livestock grazing. Impacts resulting from wild horse use would persist, particularly if the wild horse herd exceeds AML. Over time, if wild horse numbers do not exceed AML, key grasses and forbs should increase and the Biotic Integrity of plant communities would be improved and maintained. Reseeding of areas within the salt desert scrub communities and many of the lower elevation sagebrush communities would be needed to restore the Biotic Integrity in those areas. No new range improvements would be implemented. GRSG and LCT habitat improvement would not occur. PJ encroachment would continue in those areas causing declines in the Biotic Integrity of those plant communities.

3.5.2.2.5 Impacts of Constructing Range Improvements

Proposed Action:

The construction of new range improvements includes PJ tree removal around springs and streams, willow plantings, noxious weed treatments, multiple spring and stream exclosure fencing and developments, and seeding projects to improve GRSG habitat. Specific projects are described in Appendix I and Project Design Features are described in Appendix J. Impacts of PJ removal and spring developments are also analyzed in Section 3.7 of the DMHP EA, BLM 2012b.

The proposed spring improvements would exclude livestock from riparian areas and associated vegetation around the springs on approximately 229 acres, which is about 0.12% of the allotment. The Edwards Creek Gathering Pasture is approximately 630 acres and about .3% of the allotment. These riparian zones are some of the most important areas of the range for wildlife and water quality. Excluding livestock from these riparian areas would allow for riparian-wetland vegetation to recover and reestablish in areas where vegetation was previously removed due to heavy grazing throughout the year. Once long-term monitoring objectives (Section 2.1.3) are achieved in these riparian areas (with the exception of the Edwards Creek Gathering Pasture), cattle may be allowed to graze within them on a prescriptive basis to assist in reducing thatch and maintain species diversity. Direct impacts during construction would be minimized by following the PDFs (Appendix I). There would be short-term disturbance to the riparian vegetation during installation of the spring box and pipeline but such disturbance would be temporary and limited to a small area, and vegetation would be expected to recover quickly following construction of the exclosure and exclusion of livestock.

Willow planting would involve use of small hand equipment resulting in only small areas of direct impacts to the soil surface. Soil would be removed and loosened to dig a hole, however, it would be replaced with the planting of each willow. Once willows become established, they would improve the overall function of the riparian and wetland areas by stabilizing

streambanks and soil surfaces, increasing infiltration, and reducing potential impacts caused by cattle and wild horses such as trampling.

Noxious weed treatments would occur in riparian zones and associated terrestrial areas to control noxious weed infestations that inhibit native upland and riparian communities' growth and occurrence. Reducing the presence of noxious weed would improve those plant communities and increase native plants. These treatments would also improve overall resources conditions and assist in making progress towards meeting Rangeland Health.

Successful GRSG habitat improvement projects in Edwards Creek Valley and Smith Creek Valley would result in increased perennial grass and forb densities in those treatment areas. Successful reseeding projects would improve vegetative diversity along with basal and canopy cover, which would improve the Biotic Integrity within the treated areas.

PJ removal along streams and springs should improve desirable herbaceous and woody riparian vegetation conditions within treated areas. Downed trees and scattered slash would provide protected areas for desirable perennial herbaceous vegetation to propagate. This would improve the health, vigor, recruitment, and production of perennial grasses, forbs, and shrubs.

Proposed maintenance of existing range improvements under the Proposed Action and Alternative 2 would increase water source availability away from the riparian wetland areas. This would improve distribution of livestock and wild horses throughout the allotment and assist in improving overall rangeland health.

Alternative 2: Impacts would the same as described in the Proposed Action.

3.5.3 Riparian Zones/Wetlands

3.5.3.1 Affected Environment

Riparian and wetland areas are the transition zones between aquatic systems and adjacent uplands, and reflect vegetative, hydrologic, geomorphic and soil characteristics that indicate water availability at or near the ground surface. The ECPA has approximately 187 riparian and wetland sites on both public and private lands. The permittee is the owner of some private parcels within the allotment and holds water rights to those water sources on these properties. Riparian (lotic) areas are characterized by actively moving water and represent six streams in the ECPA, of which are considered perennial or intermittent. Wetland (lentic) areas generally encompass springs and wet meadows, being characterized by relatively still water and the presence of saturated soil for extended periods of time and represent approximately 181 lentic systems in the ECPA; all lentic areas are considered perennial or seasonal springs or seeps.

Key drainages on the Edwards Creek Allotment include Bassie Canyon, Cedar Creek, Edwards Creek, Horse Canyon, and Topia Creek. Key drainages on the Porter Canyon Allotment include Billie Canyon, Dalton Canyon, Haypress Creek, Long Canyon, Milkhouse Creek, Pole Creek, Porter Canyon, and Smith Creek. Smith and Edwards Creeks are designated by NDOW as fishable streams. Excessive grazing and trampling by wild horses and cattle at springs, wet meadows, and along riparian areas has been a recognized problem for decades. There have been coordinated efforts by the BLM, Smith Creek Ranch, Inc., NDOW, and other agencies and organizations to improve riparian and wetland and spring

conditions on both allotments. The Edwards Creek Riparian Restoration Project, located on Smith Creek Ranch, Inc. private land, is a key example of this coordinated effort to restore stream conditions along approximately 2.3 miles of Edwards Creek. The DMHP also proposed numerous projects for riparian and wetland protection and restoration, including the construction of wet meadow and riparian exclosures in various locations along Dalton Canyon, Edwards Creek, Haypress Meadows, Horse Canyon, Smith Creek and Topia Creek to protect these areas from excessive wild horse and cattle use.

The standard evaluation and assessments revealed that the standard for Wetlands and Riparian Areas was not being met. There has been progress in meeting the standard in some areas, but overall grazing use and hoof action by wild horses and cattle continue to affect unprotected areas. Riparian and wetland areas, associated PFC assessments, and observed impacts are described in detail in the RHAs (Appendices B1, B2) and summarized in the SDD (Appendix C). A total of 19 PFC assessments (14 lotic and 5 lentic assessments) were completed on riparian and wetland sites visited to determine riparian and wetland function, condition, and available and suitable water for livestock, wild horse, and wildlife use. Of the 14 completed lotic assessments, eight achieved proper functioning condition and six were rated as functioning at risk with an upward, not apparent, or downward trend. Of the completed lentic assessments, all five were rated as functioning at risk with a not apparent or downward trend. During the assessments, sites that did not meet the RAC standard because they did not have the necessary geomorphology (sinuosity, width/depth ratio, and gradient); functional hydrologic cycle; or adequate riparian-wetland vegetation to stabilize soils and dissipate high flow energy. Many of the assessments reported signs of wild horse and cattle use with observed streambank alteration (bank shearing or sloughing), soil trampling and hummocking, increased bare ground and soil compaction, decreased riparian-wetland vegetation (obligate and facultative species), and encroachment of upland vegetation.

3.5.3.2 Environmental Consequences to Riparian Zones/Wetlands

3.5.3.2.1 Proposed Action: Outcome-based Grazing Alternative

Under the Proposed Action, 10,733 AUMs would be authorized and a flexible seasonal and/or deferred use grazing system would be implemented (Section 2.2; Tables 5, 6). Seasonal timing and/or rotation within use areas would be adjusted based on grazing pressure, annual livestock indicators/thresholds, and short- and long-term objectives (Appendix O). In addition, a monitoring plan (Appendix F) would be implemented to achieve goals and objectives designed to improve wetland and riparian processes and function. If goals and objectives are not being met as determined by an exceedance of annual livestock indicators/thresholds, implementation of livestock management actions (Section 2.1.3) would occur and there would be a reduction in AUMs the following year, thus allowing for improvement of riparian and wetland standards. Furthermore, an initial reduction of 2,100 AUMs would occur based on improvement of 21 non-functioning existing range improvements. As these existing range improvements become functional, associated AUMs may be increased.

Riparian goals include improving spring and stream function to achieve PFC, increasing the number and diversity of riparian plant species, and maintaining water quality (Section 2.1.3). This should allow key riparian species to regain vigor and increase reproduction and recruitment of both herbaceous and woody species, thus allowing for soil stabilization along streambanks and within spring meadow systems. With compliance to the grazing schedule and

achievement of monitoring objectives, springs and streams should show improved diversity and recruitment of key riparian species, decreased streambank and soil alteration, reduced soil compaction and increased infiltration, and improvement of trampled areas. Alternating yearlong rest of the summer pastures would increase the potential for recovery and enhancement of riparian plant communities and therefore further wetland and riparian processes and function over time.

Implementation of objectives and corresponding management actions would allow for flexibility in the timing and duration of grazing within use areas and ensure cattle are removed from areas once triggers are hit. This includes removal of cattle within 3 to 7 days once monitoring objectives are met for streambank/soil alteration and grazed height of key woody riparian species (Appendix O). Management actions would allow for improvement of riparian plant vigor, diversity, age class and reproduction, therefore resulting in improvement of hydrologic function such as reduction of streambank trampling, hoof action impacts (hummocking and soil compaction), channelization, and alteration of stream width/depth ration and sinuosity.

The upper Edwards Creek gather area (Appendix L, Map 4) would also aid in improving the headwaters and upper portions of Edwards Creek. This area would be managed as a temporary short duration use area to facilitate gathers between the summer use areas of ECPA (Section 2.2.1.1.1). Livestock use would likely occur in July, for approximately 12 to 14 days, but not to exceed one month. The gather area would essentially act as a large riparian protection fence, excluding cattle from use for approximately 11 months out of each year; wild horses would not have access to this area. This management action would provide a large benefit to improving stream function including reduction of streambank trampling, bank shear, soil compaction, erosion, bare ground, and increased stabilizing riparian herbaceous and woody vegetation, and improving sinuosity and stream morphology. The exclusion of grazing during spring and early summer would allow riparian vegetation to not be utilized during the critical growing season, when most plants have reached the seed ripe stage and have stored adequate carbohydrate reserves to reproduce and become more resilient to short term grazing. There would likely be some direct impacts including trampling, soil compaction, and grazing of riparian vegetation while cattle are within the gather area, however these impacts would be negligible in comparison to the overall benefit the gather area would provide. Over time, the headwaters and upper portion of Edwards Creek would improve as livestock and wild horse use would be heavily decreased.

Overall, impacts under current management, as described in the RHAs (Appendices B1, B2), would reduce, and overall wetland/riparian processes and function would improve. This alternative would improve wetlands and riparian areas and move towards achieving RAC Standard 1, 2, 4, and 5.

3.5.3.2.2 Alternative 2: Prescriptive Rotation

Under Alternative 2, 10,733 AUMs would be authorized under a prescriptive grazing system (Section 2.3). Livestock rotation within use areas would occur on set dates (Table 7 and 8) and initial AUMs would be reduced based on the condition of 21 non-functioning existing range improvements requiring repair. This alternative would be required to meet goals and objectives (Section 2.1.3) based on annual livestock indicators/thresholds, and short- and long-

term indicators (Appendices F and O) as described in the Proposed Action. If goals and objectives are not being met as a result of the monitoring plan, management actions would occur as appropriate to meet annual livestock indicators and thresholds (Section 2.2.1.3). Management actions may include reduction of AUMs if indicators/thresholds are exceeded or not progressing towards achievement. Potential impacts under this alternative would be similar to those under the Proposed Action, however, timing would not be flexible. Although there would be no flexibility in dates, the livestock management actions, targeted grazing, and meeting monitoring objectives would still improve wetland and riparian conditions over what is seen under current management.

Impacts to temporary gathering and holding areas (Section 2.3) would be similar to those described in the Proposed Action; impacts in reference to the upper Edwards Creek gather area would be the same as those described in the Proposed Action (Section 3.5.3.2.1). Dalton Canyon would likely have impacts resulting from trampling, however the brief use and one-year rest from grazing would allow for healthy removal of overgrowth and allow for enhanced riparian vegetation recovery.

Overall, impacts under current management, as described in the RHAs (Appendices B1 and B2), would reduce, and overall wetland/riparian processes and function would improve similarly to what would be expected with the Proposed Action. However, because Alternative 2 does not allow for flexibility in season of use or deferred grazing, impacts to wetlands and riparian resources may be more than those of the Proposed Action due to the lack of flexible grazing management. If wetland/riparian impacts occur in a particular pasture or during a specific season, the prescriptive grazing approach would not allow management the flexibility to move livestock to another use area or adjust/reduce AUMs appropriately to avoid or minimize those impacts.

3.5.3.2.3 Alternative 3: No Action Alternative (Current Management)

Current management, as directed by the DMEMP, is comprised of year-round grazing with authorization of 894 cattle (10,733 AUMs) from December 1st to November 30th. During various years of the ten-year permit, the permittee has voluntarily reduced AUMs, yet this reduced stocking rate has not allowed for overall functioning condition improvement of wetlands and riparian areas throughout the allotments. Congregated use at most springs and streams has led to decline in hydrologic, geomorphologic, and/or vegetative function from significant impacts caused by livestock grazing and wild horse use. During PFC assessments, many springs and streams exhibited streambank alteration (bank shearing or sloughing), soil trampling and hummocking, and decreased wetland plant species. Detailed impacts are described in the ECPA's RHAs (Appendices B1, B2).

The most impacts observed within the allotments are at unprotected springs and streams, or those areas where existing protection fencing was in disrepair, and includes many areas along Bassie Spring and Meadow, Billie Creek, Edwards Creek, Pole Canyon Creek, and Topia Creek. Trampling and grazing of springs and streams would likely continue under this alternative and result in further channelization and incision, soil loss due to erosion from increased surface runoff, as well as a loss of soil saturation from compaction. Streambank shear, with moderate to extreme hummocking, and loss of stabilizing wetland-riparian vegetation would also continue. Under current management, the 2-inch to 4-inch stubble

height at the end of the summer grazing season has also not been consistently achieved and has not shown to be adequate to allow for recovery of riparian vegetation.

In addition, this alternative does not propose addition improvements to enhance wetlands or riparian areas and therefore heavy grazing use and trampling by livestock and wild horses would continue in unprotected areas. The removal of PJ trees along wetland and riparian corridors would not occur, and encroachment into sensitive springs and streams would further reduce hydrologic and vegetative function. Protection fencing and other enhancement projects (such as culvert and road crossings) would also not be implemented. Some of the most significant impacts by livestock occur in unprotected streambanks, headwaters, and springs, therefore these areas would likely continue to degrade from current conditions, including the inability to restore native herbaceous and woody riparian vegetation.

3.5.3.2.4 Alternative 4: No Grazing Alternative

Under the No Grazing Alternative, wetland and riparian areas would not be impacted from livestock use or other grazing practices. As a result of no livestock grazing on the allotments, utilization of wetland and riparian vegetation may decrease along stream reaches and spring areas, allowing restoration of vegetation which would increase water infiltration and stabilize soil surfaces. Plant vigor and reproduction may increase, which could allow for revegetation of bare ground along stream and spring banks and improve functioning condition over time. Trampling and streambank alteration, leading to hummocking, soil compaction and erosion, would not occur as a result of livestock congregation at wetland and riparian areas. Therefore, improvement would be most evident at congregation sites and along unprotected springs and streambanks where grazing pressure from cattle is currently highest. Spring and streambank recovery would be dependent on the amount of vegetation and soil alteration that livestock grazing has previously impacted, however positive impacts would occur at a faster rate in heavy use areas that would no longer be grazed, allowing vegetation to recover at these sites and stabilize riparian surfaces. Soil compaction and erosional loss (including incision and downcutting) due to livestock trampling and over grazing would also be reduced. Removal of livestock would reduce bare soil exposure from trampling and hummocking, allowing for increased vegetative recovery and reduction runoff and surface erosion.

The No Grazing Alternative would not eliminate all impacts to wetlands and riparian areas however, since impacts would still occur at springs and streams, especially in unprotected areas as a result of wild horse use. Impacts resulting from wild horse use would persist, particularly if the wild horse herd continues to exceed AML. As a result, wild horses would continue to degrade springs and stream systems by grazing vegetation and trampling streambanks, leading to increased erosion, soil loss, and surface/bank alteration. Wild horse use would likely increase and cause further degradation to spring and streams.

This alternative would not implement improvements such as maintenance or construction of riparian protection fencing, developments and other spring/stream enhancement projects proposed in the other alternatives. Riparian protection fencing and spring developments are important to eliminate grazing impacts from wild horses such as vegetation removal, trampling and soil loss. Riparian enhancement projects such as proposed PJ removal along springs and streams would not occur, which would impact functioning condition by decreasing subsurface water and decrease wetland-riparian vegetation vigor and reproduction as the PJ

outcompetes other vegetation for nutrients and water resources. This would likely result in persistent PJ encroachment into these wetlands and riparian areas leading to continued reduction in native herbaceous and woody riparian species. It may also be more feasible to remove existing improvements if they cannot be consistently maintained which would lead to further spring and stream impairment.

Lastly, targeted grazing management on wet meadows and streams can promote healthy riparian vegetation that contributes to sustainable levels of aboveground biomass, root growth, and root strength. Livestock can contribute to the maintenance of vegetation by defoliating dormant or dead growth, thus increasing green matter which is critical in maintain channel stability and allow for maintenance of proper spring and stream functioning condition (BLM 2006). Wet meadow grazing management has been important to maintain the health of wet meadows located in Dalton and Haypress canyons. Under this alternative, there would be no meadow management in Dalton or Haypress meadows, which require targeted grazing to maintain vegetation function. Riparian-wetland species may overgrow which inhibits new growth and decreases vegetative diversity, composition, and age class, ultimately affecting PFC. Therefore, this alternative may reduce some wetland and riparian area impacts in overgrazed areas but would not improve overall spring and stream health throughout the allotments in comparison to other alternatives.

3.5.3.2.5 Impacts of Constructing Range Improvements

Proposed Action:

Proposed range improvement projects were identified as integral components of the Proposed Action Alternative due to wetland and riparian standards not being met for the allotments. Proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements over the 10-year term permit, including up to 2,400 acres of PJ removal projects, up to 10,000 acres of seeding projects, multiple spring exclosure protection projects and developments, willow planting projects, several hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition to the newly proposed improvements described above, the 21 existing range improvements that are currently non-functioning would also be scheduled to be repaired to functioning condition, as described in Section 2.3.4.

During maintenance and construction of new and existing range improvements, soils would be disturbed directly around the area of maintenance or construction. However, PDFs would ensure impacts to riparian-wetland soils would be minimized. The minimal direct impact to riparian-wetland areas from installation and maintenance of structures would not outweigh the positive benefits that the functioning improvements would provide. Proposed maintenance of existing improvements would cause minimal impacts to soils as these activities would occur predominantly where sites were previously disturbed. Specific projects are described in Appendix I, and Project Design Features are described in Appendix J. Many impacts are also analyzed in Section 3.11 of the DMHP (BLM 2012b).

The removal of encroaching PJ trees would occur within 500 feet of springs and streams by either lop-and-scatter or mastication. The use of heavy equipment could cause some localized soil compaction which would increase overland flow/runoff and could increase sedimentation to downslope water sources. However, removed trees would be scattered, and in some cases

used as protective brush-barrier fencing, which would reduce the occurrence of surface erosion. Overtime, as PJ trees are removed, native vegetation would recruit and fill in shrub interspaces, resulting in reduced compaction and improved infiltration. This would allow for increased subsurface flow to wetlands and riparian areas, increased riparian vegetation vigor, and increased reproduction, thus resulting in overall improvement of spring and stream function.

Willow planting would involve use of small hand equipment resulting in only small areas of direct impacts to the soil surface. Soil would be removed and loosened to dig a hole; however, it would be replaced with the planting of each willow. Some slight soil loss is expected until willow plants are established. This could increase surface erosion and sedimentation to open waters but is not expected to be in large quantities or sufficient enough to inhibit spring and stream function. Once willows are established, they would provide benefits by stabilizing streambanks and soil surfaces, increasing infiltration, and reducing potential impacts caused by cattle and wild horses such as trampling.

Noxious weed treatments would occur in riparian zones and associated terrestrial areas to control noxious weed infestations that inhibit native riparian community growth and occurrence. The use of backpack hand-sprayers would allow for minimal impacts as treatments would be specific to individual plants. Impacts to water would be minimal as only an aqueous approved herbicide would be used. Associated terrestrial treatments would involve the use of a skid mounted UTV handheld sprayer. This would likely result in some minor and localized soil compaction and some vegetation loss directly where the tires of the UTV track, however this impact would be negligible in comparison to the benefit of week treatments. Any minor soil compaction and erosion would be reduced over time as native vegetation restores in wetlands, riparian areas, and associated terrestrial sites.

The installation of exclosure fencing would cause temporary localized disturbance to surface soil during installation and where materials are staged. Impacts to water sources during exclosure fence installation are expected to be minimal because proposed fencing would be installed with a buffered distance between the fence line and the spring. Cattle and wild horses may walk along the perimeter of exclosures to try to access the riparian-wetland vegetation within the exclosure fence. This behavior may cause some trailing resulting in reduction of protective vegetation and an increase in soil compaction directly where the trailing forms along the fence line. In turn, this could potentially increase some localized sediment load into the riparian area, and have an indirect impact to water quality, which could affect riparian-wetland vegetative growth. However, the amount of potential impacts from trailing would be negligible in comparison to the overall size of the allotment, and the positive benefits the pasture and exclosure fencing would provide to these areas would outweigh the small amounts of disturbance. Exclosure fencing would improve overall riparian-wetland function as direct impacts from livestock and wild horse use (such as grazing and trampling) would be reduced, allowing for revegetation of bare ground and increased stabilization of springs and streams over time. As soil stability increases, water holding capacity would improve and likely allow for riparian area expansion and improvement of hydrologic function. Spring improvements would still allow wildlife access though, which could have minimal impacts from walking through water sources, however reducing livestock and wild horse use from selected springs would improve riparian function of those sites.

Other riparian projects include installation of pipeline, troughs, hardened road crossings, bottomless culverts, gates, and cattleguards. Similarly, to construction of exclosure fencing, temporary soil disturbance would occur as well as some temporary alteration to flow during installation. The overall benefit to constructing these improvements would be excluding cattle and wild horses from sensitive springs and stream reaches while still allowing adequate flow, water availability outside of exclosures, and recreation travel to occur. The temporary impacts of soil compaction and erosion would improve over time as these areas revegetate and hydrologic function improves.

Proposed maintenance of the 21 existing range improvements described in Section 2.2.2 would cause minimal impacts to riparian and wetland areas as these activities would occur predominantly where sites were previously disturbed. As these improvements become functional, riparian and wetland areas across the ECPA would likely improve in functioning condition as more water becomes available across the allotments to aid in livestock and wild horse disbursement.

Alternative 2: Prescriptive Rotation

Potential impacts to new range improvements would be the same as described under the Proposed Action (Section 3.5.1.2.5). Impacts resulting from maintenance and improvement of the 21 existing range improvements (Appendix H) would be similar to those described for new RIPs construction but would likely be of less overall impact to wetlands and riparian areas as maintenance would occur in previously disturbed sites. Slight soil compaction, erosion, and possible vegetation removal is likely expected but would improve over time as vegetation reestablishes. However, PDFs would be implemented to ensure impacts are reduced. The overall benefit of achieving working RIPs would outweigh the temporary and minor disturbance incurred during maintenance of existing spring and stream improvements.

3.5.4 Invasive, Non-native Species and Noxious Weeds

3.5.4.1 Affected Environment

Invasive species are defined by Executive Order 13112 as “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health”. Alien refers to a species that did not evolve in the environment in which it is found or in other words, non-native. This includes plants, animals, and microorganisms. A noxious weed species, as defined by Nevada Department of Agriculture (NDA) is “any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate” (NRS 555.005). Noxious weed species can decrease property values, increase costs of running businesses such as livestock production, poison livestock and other animals and lead to a loss of grazing lands for both livestock and native animals.

Controlling noxious weed spread is tantamount to achieving rangeland health standards. NDA has categorized each noxious species as A, B or C with Category A weeds requiring the most rapid and aggressive responses. Cheatgrass (*Bromus tectorum*) is an introduced, early emerging annual grass native to southern Europe, northern Africa, and southwestern Asia. Although not listed as a Nevada designated noxious weed, cheatgrass is nuisance species responsible for many devastating economic and ecological problems ubiquitous to the Great Basin. It was introduced into the United States in the late 1800s and has since spread to all 50

states. It is widely distributed across the western United States. Cheatgrass is an aggressive invader of sagebrush, pinyon-juniper, ponderosa pine, mountain brush, and other rangeland and forest communities. Its ability to rapidly grow and reproduce before most native grasses makes it especially troublesome on range, croplands, and pastures. Cheatgrass can alter the natural fire pattern in areas where its population has become dense and dominant. After wildfire, cheatgrass thrives and can out-compete native herbaceous plants and shrubby seedlings. The presence of cheatgrass, with its awned seed, can diminish recreational opportunities, reduce available forage, degrade wildlife diversity and habitat, and decrease land values (Skinner et al. 2012).

Cheatgrass is scattered throughout most of the plant communities in relatively low densities, but higher densities occur within the Intermountain Cold Desert Shrub and adjacent sagebrush communities. At some monitoring locations, it is the dominant or co-dominant grass species.

Halogeton (*Halogeton glomeratus*), "is a poisonous weed introduced from Eurasia into the United States early in the 20th century. Since that time, it has spread to cover millions of acres in the western valleys. It is highly toxic to both sheep and cattle. It has caused the death of countless sheep in the Intermountain West and Great Basin" (Tilley et al. 2008). It is well adapted to the soils and climate associated with winterfat communities and can replace winterfat on degraded sites. Restoration of winterfat on areas invaded by halogeton is rare (Kitchen et.al. 2001). Observations of halogeton were made in September 2013 at several locations on the Edwards Creek Allotment. Infestations were greatest in proximity to livestock concentration areas (i.e., water developments).

Saltcedar (*Tamarix spp.*) is a deciduous tree (or shrub) that grows to 6 to 26 feet tall. Saltcedar has a deep taproot and extensive lateral rhizomes allowing them to spread profusely upon contact with water. In addition, a mature saltcedar plant can produce up to 600,000 seeds annually. It has become established throughout most of the U.S. along streams, rivers, springs, lakes and ponds. Its rapid growth and reproductive capability, high water consumption, and deposition of salt accumulated in its leaves allow it to aggressively replace willows, cottonwoods, and other native riparian vegetation. It is a high priority invasive species because of the negative effects it has on native riparian ecosystems (Barranco 2001). In Nevada, it is classified as a Category C noxious weed. There is a documented infestation in Bassie Canyon on the Edwards Creek Allotment (BLM 2012b).

Other invasive plants noted in the DMEMP included Water hemlock (*Circuta douglasii*), a category C noxious weed, Bull thistle (*Cirsium vulgare*) and Whitetop (*Cardaria draba*), a category C noxious weed, along Edwards and Topia creeks, and water hemlock along lower Milkhouse Creek (BLM 1999). The current status of this Whitetop infestation is estimated at 300-400 acres. For these other infestations the population size and extent are unknown. At least fifteen populations of whitetop (aka hoary cress) have been identified on the Edwards Creek allotment. Most are along Edwards Creek. Whitetop is an aggressive perennial forb that can form dense monocultures and is commonly found on disturbed, alkaline soils with moderate moisture conditions. Infestations can spread rapidly and dramatically decrease rangeland health. Invasion is exacerbated by heavy grazing. Livestock grazing during seed production can spread infestations. Perennial pepperweed (*Lepidium latifolium*), another

Category C noxious weed, which is similar to Whitetop, has also been identified along Edwards Creek and at Corral Spring on the Porter Canyon allotment.

Several of these infestations are targets of the CCDO's current invasive species management plan. This weed management would continue under mechanisms outside of this EA and regardless of the changes in grazing that are implemented. Active management towards eradication or containment is necessary to achieve goals in district and field office level weeds program but is also affected by good decision making in regards to grazing, and other disturbances that affect the spread and establishment of noxious weed species. Currently, most noxious weed work in these allotments has been directed at the Topia and Edwards creek Whitetop infestations, which was a request of the current permittee.

3.5.4.2 Environmental Consequences to Invasive, Non-native Species and Noxious Weeds

3.5.4.2.1 Proposed Action: Outcome-based Grazing Alternative

Under the prescribed deferred/rest rotation and with allowable use levels for early summer grazing set at 40% and overall allowable use set at 50%, key perennial grasses and shrubs should be able to regain vigor and productivity over time, provided wild horse levels are kept at or below AML and extreme drought conditions do not persist. It is likely that adaptive management would be applied to adjust cattle numbers and duration of use to meet stated goals and objectives. With achievement of prescribed allowable use levels, key grass and forb species should increase and help reduce the spread and concentration of invasive cheatgrass and halogeton. Properly employing adaptive management with intensive grazing use on localized cheatgrass areas during the early spring, or late fall, when cheatgrass is most palatable to livestock, could help reduce its presence.

3.5.4.2.2 Alternative 2: Prescriptive Rotation

With the prescribed deferred/rest rotation system, and allowable use levels generally set at 40 percent, key perennial grasses should be able to regain vigor and productivity, provided wild horse levels are kept at or below AML and extreme drought conditions do not persist. This level of use would allow for greater seed production and dispersal for key forage plants. Over time, key grass and forb species should increase and help reduce the spread and concentration of invasive cheatgrass and halogeton. Properly employing adaptive management with intensive grazing use on localized cheatgrass areas during the early spring, or late fall, when cheatgrass is most palatable to livestock, could help reduce its presence.

3.5.4.2.3 Alternative 3: No Action Alternative (Current Management)

Current management, as directed by the DMEMP has not allowed for improved vegetative diversity and vigor of plant communities throughout the allotments and conditions remain for invasive plants to take hold and propagate. Current management would likely result in an increase in cheatgrass and halogeton presence and concentrations. Continued heavy use in Bassie Canyon would make it easier for the saltcedar population to expand. Continued heavy use along Edwards and Milkhouse Creeks would allow for expansion of invasive species populations in those areas.

3.5.4.2.4 Alternative 4: No Grazing Alternative

Under this alternative, impacts relating to invasive plants would no longer occur from livestock grazing. Impacts resulting from wild horse use would continue, particularly if the

wild horse herd continues to exceed AML. Over time, some key grasses and forbs should increase, which should help reduce the spread and concentration of invasive cheatgrass and halogeton. Other perennial species, such as Indian Ricegrass, which do best under moderate grazing allowing for seed production every third or fourth season, would likely remain static in vigor or even become decadent under this alternative (NRCS Idaho 2006) Adaptive management practices using intensive livestock grazing would not be available to control or reduce the cheatgrass invasion. Removing livestock would substantially reduce the grazing use on riparian areas, which may help limit the expansion of invasive plants along those areas.

3.5.4.2.5 Impacts of Constructing Range Improvements

Proposed Action: Under the proposed action we could expect a beneficial impact on noxious and invasive weed populations. Although disturbances related to construction and maintenance of range improvements can initially create new infestations, the best management practices in the current Resource Management Plan minimize this impact. When these improvements are completed and functioning to manage livestock appropriately, they result in less disturbance and therefore lessen the severity of new noxious weed infestations. This is a result of sound grazing management which is achieved through prudent use of infrastructure including fencing, watering facilities, and cattleguards. Furthermore, the treatments of the noxious weed species identified will establish control with an eventual aim at eradication from the grazing allotments. From this achievement, a more proactive response of early detection and rapid response could be implemented.

Alternative 2: Under Alternative 2, a beneficial impact on noxious and invasive weed populations could also be expected, as the most important effect of range improvements is their function in influencing the locations and timing of cattle presence. Although disturbances related to construction and maintenance of range improvements can initially create new infestations, the best management practices in the CCDO's current Resource Management Plan minimize this impact. These practices include washing equipment, utilizing weed free materials, and limiting disturbances when possible. When these improvements are completed and functioning to manage livestock appropriately, they result in less disturbance and therefore lessen the severity of new noxious weed infestations. This is a result of sound grazing management which is achieved through prudent use of infrastructure including fencing, watering facilities and cattleguards. Furthermore, the treatments of the noxious weed species identified will establish control with an eventual aim at eradication from the grazing allotments. From this achievement, a more proactive response of early detection and rapid response could be implemented.

3.5.5 General Wildlife

3.5.5.1 Affected Environment

NDOW's Wildlife Action Plan (WAPT 2013) identifies 22 key habitat types within Nevada. The predominant key habitat types found within the allotments include Sagebrush (≈ 61%), Lower Montane Woodlands & Chaparral (≈ 27%). and Intermountain Cold Desert Shrub (≈ 9%). Other key habitats are sparsely distributed in small acreages throughout the allotments and include: aspen woodlands, intermountain coniferous forests and woodlands, grasslands and meadows, intermountain rivers and streams, lakes and reservoirs, marshes, springs and springbrooks, barren landscapes, cliffs and canyon, and desert playas and ephemeral pools. The allotments support and are adjacent to lands that support wildlife characteristic of the

Great Basin. Biological diversity varies according to topography, plant community, proximity to water, soil type, and season. Wildlife species in the general area include mammals, birds, fish, reptiles, amphibians, and invertebrates. Because intensive plant and animal surveys have not been completed, abundance and distribution of most wildlife species can only be inferred from available habitat. For a comprehensive discussion of potential wildlife species that may be present within the allotments, refer to CRMP (2001).

Sagebrush - Roughly 61% of the allotments are within this key habitat, which consist of three ecological systems:

- Great Basin Xeric Mixed Sagebrush Shrubland – approximately 20%
- Inter-Mountain Basins Big Sagebrush Shrubland – approximately 69%
- Inter-Mountain Basins Montane Sagebrush Steppe – approximately 11%

The Great Basin Xeric Mixed Sagebrush Shrubland is proximal and often mixed in with the lower elevation Intermountain Cold Desert Shrub. The Inter-Mountain Basins Big Sagebrush Shrubland generally occurs at the mid elevations. The Inter-Mountain Basins Montane Sagebrush Steppe largely occurs at higher elevations.

Vegetative composition in sagebrush habitats can be highly variable depending on rainfall, elevation, and slope aspect. Sagebrush species may include basin big sagebrush, mountain big sagebrush, Wyoming big sagebrush, low sagebrush, and black sagebrush. Other plant species may include bitterbrush, snowberry, rabbitbrush, snakeweed, winterfat, spiny hopsage, bluebunch wheatgrass, bluegrass, needle-and-thread, Idaho fescue, Indian ricegrass, Great Basin wildrye, Indian paintbrush, lupine, buckwheat, globemallow, and penstemon. A wide range of wildlife species are associated with this habitat. Quality sagebrush habitat is critical for species such as pronghorn antelope (*Antilocapra americana*), and mule deer (*Odocoileus hemionus).*

Lower Montane Woodlands & Chaparral - Approximately 27% of the allotments are within this key habitat type. Approximately 97% is comprised of Great Basin PJ Woodlands which occurs along the slopes of the Desatoya Mountains. This habitat consists of a mix of single-leaf pinyon and Utah juniper. Understory species are mixed and variable and include mountain mahogany, big sagebrush, low and black sagebrush, littleleaf mountain mahogany, cliffrose along with a variety of bunch grasses such as bluebunch wheatgrass and Thurber's needlegrass. Various wildlife species are associated with this habitat type. The chaparral communities are crucial mule deer habitat. Mature PJ habitats can provide foraging habitat for Cassin's finch (*Haemorhous cassinii)*.

Intermountain Cold Desert Shrub - According to the SW ReGAP (USGS NGAP 2004) data, approximately nine percent of the allotments are within this key habitat. Most of it is comprised of Inter-Mountain Basins Mixed Salt Desert Scrub. The soils in this habitat type tend to be loose and sandy or gravelly and easily excavated by denning or burrowing animals. Many species use both cold desert scrub and sagebrush habitats for various life requirements such as foraging and nesting. Ricegrass, and shadscale seeds are important food sources for many wildlife species. General wildlife species associated with this habitat type include kit fox (*Vulpes macrotis*) and black-throated sparrow (*Amphispiza bilineata*).

Grasslands & Meadows - This key habitat type makes up less than one percent of the allotments and is typically associated with springs and riparian areas at higher elevations. These meadows provide important habitat for a wide variety of wildlife including mule deer (*Odocoileus hemionus*), prairie falcon (*Falco mexicanus*, and rufous hummingbird (*Selasphorus rufus*). Several exclosures have been constructed in the allotments to protect critical meadow habitat areas for a variety of important wildlife species.

Intermountain Rivers and Streams and Springs and Springbrooks - These key habitats make up less than one percent of the allotments, but provide crucial habitat for a wide range of wildlife from big game to raptors and songbirds. Edwards Creek supports non-native rainbow trout (*Oncorhynchus mykiss*), non-native brook trout (*Salvelinus fontinalis*) and non-native brown trout (*Salmo trutta*). Smith Creek supports rainbow, brook and brown trout. Current severe drought conditions have reduced flows and affected fish habitat. Numerous springs occur on the allotments and some are developed as livestock watering facilities for livestock. In addition to their critical importance to aquatic species, they also are important for terrestrial wildlife. Several springs in the allotments have also been protected with exclosures.

Intermountain Coniferous Forests and Woodlands - This key habitat type comprises less than one percent of the allotments and is generally located in the far western portions near the Desatoya Mountains divide. Associated wildlife species include the sharp shinned hawk (*Accipiter striatus*) and mule deer (*Odocoileus hemionus*). This habitat is generally minimally affected by livestock grazing.

Aspen Woodland - Scattered snow pockets and springs in the upper elevations support small groves of quaking aspen. Aspen stands are also found along the upper reaches of Milkhouse Creek, Smith Creek, Edwards Creek and other small patches within the allotments. Surveys of these aspen groves were conducted in 2000 and again in 2007 to assess their condition. The 2007 readings showed an increase in woody vegetation. Grazing/browsing use by cattle and wild horses remains a concern along with human disturbance from camping and wood cutting. Numerous wildlife species are associated with these isolated habitats and include montane shrew (*Sorex monticolus*) and mule deer (*Odocoileus hemionus*).

Cliffs and Canyons - This key habitat comprises less than one percent of the allotments and is scattered throughout the mountainous areas. Cliff habitats are used for nesting, roosting or denning, protection from predators, and foraging by a variety of species. The associated crevices and talus slopes are also important features, especially for bats. Cliff ledges are used by falcons and other raptors for nesting. This habitat is not directly affected by livestock grazing due to topography.

Desert Playas & Ephemeral Pools - There are approximately 2,998 acres of this habitat on the allotments. When sufficiently watered, playas can produce lush growth of emergent and submergent vegetation along with massive volumes of aquatic invertebrates, which attracts a variety of waterfowl, shorebirds and small water birds when conditions are suitable. Various amphibians and invertebrates are also likely to be associated with these playas. Information relating to livestock use of this habitat type is not available.

Big Game Species

Mule Deer - Year-round and crucial summer are identified on the allotments for mule deer (RHA Appendix A; Map 7). The combined habitats total approximately 83,838 acres but abundance and distribution are limited by water availability. Mule deer habitat is essentially confined to the mountainous areas and the foothills of the Desatoya Mountains and is typically associated with PJ woodland and big sagebrush shrubland. Habitat for mule deer consists of good sources of forage, hiding and thermal cover, and healthy riparian areas for sources of water. A large portion of mule deer habitat overlaps the Desatoya HMA for wild horses. Nevada's mule deer populations have been stable to declining the past several years. Between 2012-2014, much of Nevada experienced severe to extreme drought conditions, which negatively affected mule deer populations across the state. Recent declines in mule deer populations in Nevada can be attributed to numerous factors including degradation or loss of habitat (Wasley 2004). An essential component to high quality mule deer habitat consists of healthy riparian areas because proper functioning riparian systems can provide high quality forage, protection from predators and thermal cover (Carson and Peek 1987).

Pronghorn Antelope - There are approximately 130,241 acres of year-round and agricultural pronghorn habitat on the allotments, predominantly located within low elevation sagebrush communities and Intermountain Cold Desert Shrub communities (Appendix B2, Map 8). Loss and degradation of pronghorn habitat has been an on-going concern throughout Nevada since the early 1900s. Historic over grazing by domestic livestock and wild horses has contributed to this decline. Wildfires, overgrazing and other land disturbances have resulted in the conversion of millions of acres of native habitat into stands of cheatgrass and other undesirable annuals (Tsukamoto 2003). Freestanding water is very important for pronghorn during the hot summer months or during drought. Drought and climatic conditions affect populations in the short term, but generally, the statewide population of pronghorn is increasing. Increased moisture experienced during late winter and early spring 2019 resulted in excellent range conditions for the pronghorn herd.

In general, monitoring data results for the allotments show declining occurrence or absence of perennial grass species and a transition to shrub and invasive grass or forb dominated states. The vegetation communities have transitioned from reference state to less desirable shrub and annual plant communities, showing a reduction in understory perennial grasses and forbs and an increase in annual invasive species. Because upland habitat values have changed to a less desirable vegetation state, these allotments are failing to provide adequate habitat conditions for wildlife since many of the key grasses and shrubs valuable to a variety of wildlife species for foraging, nesting, and protection from predators are decreasing across the allotments. Increasing PJ encroachment into sagebrush communities has been shown to result in the decline of shrubs and herbaceous vegetation (Burkhardt and Tisdale 1969). This increase in PJ density and distribution has often resulted in negative impacts to soil resources, plant community structure and composition, forage availability, water and nutrient cycles, and wildlife habitat (Miller et al. 2000, 2005). Springs rated functioning at risk lack adequate riparian vegetation composition, contained hummocking and bank shearing and trampling from wild horses and cattle, and indicated year-round grazing pressure. These effects make riparian areas inefficient in being able to provide the structure and function to support functioning wildlife and plant habitat, which are essential habitat for wildlife species. Extreme drought and wild horse use have exacerbated these conditions. Additional information on RHS

for general wildlife species and habitat conditions can be found in the ECPA RHAs Appendices B1 and B2, Section 5.4.

3.5.5.2 Environmental Consequences to General Wildlife

3.5.5.2.1 Proposed Action: Outcome-based Grazing Alternative

The Proposed Action OBG Alternative as described in Section 2.2, would continue the current authorized use of 10,733 AUMs on the allotments and would be adjusted to a seasonal/deferred grazing system. Livestock grazing management would be designed to provide periodic growing season rest or deferment for key forage species while allowing for the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions. Livestock use dates and numbers for each pasture would be determined on an annual basis and would be based on monitoring data and objectives, current climatic conditions and the expected vegetative stages of key forage species. This Alternative would allow for grazing management which would require meeting the annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix O, including a reduction in AUMs the following year if the indicators/thresholds are exceeded. This Alternative would adhere to Terms and Conditions outlined in Section 2.2.3 and Appendix G.

General wildlife habitat, including mule deer and pronghorn habitat conditions and trends are discussed in detail in the Appendices B1 and B2 of the RHA, Section 5.4, and based on the evaluation, found the allotments not to be achieving RHS for animal habitat that are necessary for healthy, productive and diverse habitat. The Proposed Action would impact approximately 194,579 acres of public lands, including 83,838 acres of year-round and crucial summer mule deer habitat and approximately 130,241 acres of year-round and agricultural pronghorn habitat on the allotments. Vegetation changes created by livestock can influence wildlife through factors such as food quality and quantity. Disturbance and/or displacement may occur to some wildlife species from livestock grazing. Wildlife populations are closely linked to the condition of upland and riparian vegetation, which provide hiding and thermal cover, nesting structure, foraging and fawning areas, quality food and water sources for a variety of wildlife species. Riparian areas are critically important habitats for many wildlife species and generally have higher diversity compared to uplands and other habitat types (Ohmart 1996). Grazing impacts would be most pronounced during dry periods when cattle are more likely to target riparian areas for shade, water and forage.

The flexibility built into a seasonal/deferred grazing system in Table 5 and 6 should allow for the biotic integrity of plant communities within key wildlife habitats throughout the allotments to improve over time. This would be achieved based on meeting monitoring goals and objectives as described in Section 2.1.3 and following the Monitoring Plan in Appendix F for adherence to pasture move triggers when monitoring shows livestock grazing has reached thresholds for indicators and objectives. The Proposed Action OBG Alternative should allow for recovery of riparian vegetation at springs and stream banks, reduce sedimentation inputs to surface water, and allow for improvements in upland habitat conditions for wildlife. The prescribed allowable use levels and pasture rotation system would help to diminish the direct competition for forage and water with big game species and retain cover and forage for other wildlife species. To assist in achieving standards for these wildlife habitats, proposed range improvements as described in Section 2.1.1 and Appendix I, include several additional

improvements, including PJ removal, seeding projects, multiple spring protection projects, willow plantings, hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range improvements within the allotments that are not functioning would be scheduled to repaired to functioning condition to help disperse livestock use. These range improvements would aid in protections and habitat improvements as well as improving availability of water and thereby reducing livestock pressure and competition at key water sources for wildlife species. Reducing impacts to riparian habitats by eliminating loafing and concentration of livestock in riparian areas and wet meadows would allow these areas to improve and make progress towards achieving PFC. This is provided that wild horse numbers are maintained at or below the AML and relief in drought conditions. Overall, RHS for animal habitats, including revegetation and improved function of upland and riparian habitat and improved water quality would be expected under this Alternative.

3.5.5.2.2 Alternative 2: Prescriptive Rotation

Under Alternative 2 as described under Section 2.3, livestock grazing would continue the current authorized use of 10,733 AUMs on the allotments but would have strict use area and movement dates. This alternative would rotate the grazing schedule every other year and reduce AUMs initially based on 21 non-functioning existing range improvements in Section 2.4 that are needed to provide off-site water and reduce grazing pressure on riparian/meadow areas. There would be AUMs attached to each water source, which results in an initial reduction of 2,100 AUMs. However, as each water source is repaired to functioning condition, AUMs would be released back to the following years annual use. This alternative would be different from the OBGA due to the strict dates and locations for movement of livestock. This Alternative would also allow for grazing management which would require meeting the same annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix O. This Alternative would adhere to Terms and Conditions outlined in Section 2.3.1 and Appendix G. Impacts to wildlife under Alternative 2 would be similar to the Proposed Action Alternative, although impacts may be lessened initially with the repair of key range improvements and reduction of AUMs until water sources are functioning on the allotments. However, this Alternative would not provide the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions or plant phenology, which would be more suitable for achieving desired habitat conditions.

3.5.5.2.3 Alternative 3: No Action Alternative (Current Management)

Under the No Action Alternative as described under Section 2.4, current livestock management as permitted by the DMEMP has not allowed for improvement in habitat conditions for general wildlife. Various areas of the allotments show a decline in habitat conditions for most wildlife species. This is particularly evident within the Intermountain Cold Desert Shrub and lower elevation Sagebrush habitats, as well as riparian areas. Excessive wild horse use and extreme drought conditions have been contributing factors to the deterioration of habitat conditions. Under the No Action Alternative, impacts to wildlife habitat would continue as described in detail in Appendices B1 and B2 of the RHA, Section 5.4. The RHAs determined that under current grazing management, RHS are not being met for general wildlife species and habitats. Therefore, livestock grazing under the current grazing management system would likely cause habitat conditions in the allotments to decline in quality from the current conditions and to continue to not meet RHS, including big game and

other wildlife habitat not meeting the life cycle requirements as defined by the RHS in Appendix M, Standard 4. Under the No Action Alternative, there would also be no new range improvements proposed, including PJ removal, native seedings, multiple spring protection projects, willow plantings, and noxious weed treatments, that could help achieve RHS for wildlife habitat. Overall, as described in Appendices B1 and B2 of the RHA, Section 5.4, wildlife habitat conditions do not meet many of the life cycle requirements of wildlife per the RHS indicators and would likely not be able to progress towards achieving standards under this Alternative (Current Management).

3.5.5.2.4 Alternative 4: No Grazing Alternative

The No Grazing Alternative as described under Section 2.5, would allow the allotments to recover as a result of extended rest from livestock grazing and to move towards achieving RHS currently not being met for wildlife habitat, as described in Appendices B1 and B2 of the RHA, Section 5.4. Under this Alternative, impacts to general wildlife habitats would no longer occur from livestock grazing. No disturbance, displacement, injury, or mortality of wildlife species would occur which would be attributed to livestock grazing. Direct competition for space and forage with big game and other wildlife would cease in the absence of livestock removal. The vegetation that would have been removed by livestock grazing would be utilized by all wildlife. Where recovery is achievable, springs and associated riparian habitats would likely recover from livestock grazing impacts over the 10 year time frame and the No Grazing Alternative would allow for restoration of upland and riparian vegetation, soil stabilization, improved water quality, and result in springs moving towards or achieving PFC. Over time, the biotic integrity of plant communities would be improved and maintained, which would improve general habitat conditions throughout the allotments. The degree of improvement in habitat conditions would be dependent on drought relief and maintaining the wild horse herd at or below AML. Under the No Grazing Alternative, there would be no new range improvements authorized in this EA, but riparian areas would still likely recover at a faster rate in the absence of disturbance from livestock. Under the No Grazing Alternative, wildlife species, including pronghorn and mule deer habitat would continue to experience negative impacts caused by wild horses, particularly where horses congregate at limited water sources. PJ removal would not occur along riparian corridors and sagebrush areas affected by PJ expansion would continue to transition to phase 2/phase 3 PJ cover. Overall, as described in Appendix M, Standard 4, RHS for wildlife species and habitats, including revegetation and improved function of upland and riparian habitat and improved water quality, would be expected to recover to the greatest extent under this Alternative but habitat would still continue to be impacted by wild horses if not managed at or under AML.

3.5.5.2.5 Impacts of Constructing Range Improvements

Proposed Action and Alternative 2:

Proposed range improvement projects were identified as integral components of the Proposed Action Alternative and Alternative 2 due to RHS for wildlife habitats not being met for the allotments. Proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements over the 10 year term permit, including up to 2,400 acres of PJ removal projects, up to 10,000 acres of seeding projects, multiple spring exclosure protection projects, willow planting projects, several hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range

improvements within the allotments that are not functioning would be scheduled to be repaired to functioning condition, including 21 improvements in Section 2.3.1. Impacts from construction and/or maintenance of range improvements may include some temporary short-term impacts to wildlife from the proposed improvements, including temporary habitat disturbance, noise disturbance, temporary displacement of individual wildlife species, injury or mortality via trampling by equipment, erosion/sedimentation and an increase in invasive/noxious plant species. Water troughs that do not have the proper escape ramps installed can cause drowning of certain species of wildlife. Fencing can cause collision and entanglement hazards with wildlife, including big game, resulting in injury or mortality. However, any new fencing would be designed and constructed to meet specifications of BLM H-1741-1, BLM Fencing Standards Manual, which would be designed to be wildlife friendly. Removal of PJ could cause direct, short-term, localized impacts to wildlife species, but this would be conducted primarily in the dormant season (September-February), when most wildlife species would not be active. Herbicide treatments proposed for infestations around riparian areas would follow state and federal regulations and would not be applied near these waters and would be timed during lowest flows.

Seeding treatments would start the process of rehabilitating degraded upland habitats and making them more desirable for wildlife species over time. Additional range improvements as well as maintenance of existing improvements and new water developments would aid in better distribution of water and livestock within the allotments, thereby reducing livestock pressure and competition at critical water sources and adjacent upland habitat for big game and other wildlife species. The removal and/or reduction of PJ should result in an increase in grasses, forbs, and shrubby browse species, thus increasing health and vigor of winter forage for mule deer and pronghorn as well as providing increased forage for other wildlife. Old growth and other trees with obvious signs of wildlife use, such as nest cavities or raptor nests, would be left intact. PJ removal is expected to increase water availability and enhance degraded wet meadows through ground water recharge that would in turn increase springs flows and maintain water flowing during drier years. Improvement in riparian functionality trending towards PFC via exclosure fencing would result in improved habitat for a wide range of wildlife species including mammals, fish, amphibians, reptiles and invertebrates. Overall, the proposed range improvements over time would allow upland and riparian vegetation to progress towards meeting RHS in Appendix M, Standard 4. Although some impacts as described above would occur, PDFs for wildlife outlined in Appendix J, would be implemented to avoid, minimize, and mitigate impacts to wildlife species and their habitats.

3.5.6 Threatened and Endangered Species

3.5.6.1 Affected Environment

Threatened and endangered species are placed on a federal list by the USFWS and receive protection under the Endangered Species Act of 1973, as amended. BLM Manual 6840 – Special Status Species Management, establishes policy for management of species listed or proposed for listing pursuant to the Endangered Species Act, which are found on BLM-administered lands (BLM 2008c).

The only federally listed threatened or endangered, proposed or candidate species occurring within the allotments is the Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*, LCT), which was listed as threatened in 1975. No critical habitat has been designated for the species

(USFWS 1995). A recovery plan was developed by the USFWS in 1995. LCT are native to the Lahontan basin and occur in a variety of cold-water habitats including lakes, rivers, and streams (e.g., Pyramid and Walker lakes); alpine lakes (e.g., Lake Tahoe and Independence Lake); slow meandering rivers (e.g., Humboldt River); mountain rivers (e.g., Carson, Truckee, Walker, and Marys rivers); and small headwater tributary streams (e.g., Donner and Prosser creeks).

LCT tend to prefer sources with cool flowing water that have well-vegetated and stable stream banks, rocky riffle-run areas, and are relatively silt free amongst other habitat preferences (USFWS 1995). LCT are stream spawners that depends on stream flow, elevation, and water temperature. Spawning occurs from April-July, depending on stream flow, elevation, and water temperatures. LCT generally spawn in riffle areas over gravel substrate. They are opportunistic feeders, typically terrestrial and aquatic insects (USFWS 1995).

In general, major impacts that have led to the decline of LCT habitat and abundance include population isolation, reduction and alteration of stream discharge, alteration of stream channels and morphology, reduction of lake levels and concentrated chemical components in natural lakes, introductions of non-native fish species. These alterations are typically associated with agricultural use, livestock and wild horse grazing, mining, and urban development (USFWS 1995).

The total length of Edwards Creek is 17.5 mi, 14.4 mi of which are on BLM land and 3.1 mi that occur on private land. LCT are not native to the Edwards Creek Basin but were first documented in 1957 during a NDOW stream survey and it is surmised that they were stocked in the 1930s from Truckee River LCT stock (NDOW 2002). Outstocking of this population at Edwards Creek into Willow Creek and upper Big Den Creek on the west slope of the Desatoya range occurred in the late 1980s and early 2000s under a cooperative agreement with the BLM. The headwaters of Edwards Creek appear to maintain the best habitat, including critical spawning areas. The creek has several road crossings and road encroachment, which has caused erosion and sedimentation issues.

Lower sections of Edwards Creek are often ephemeral in nature and can cease to flow during drought periods. Depending on drought conditions, Edwards Creek may go dry from the fork of Topia Creek down to the spring in T. 18 N., R. 38 E, S4, SWSE (private land), which maintains the population in the lower reaches. LCT have also been found in Topia Creek during high precipitation years (BLM 1992). Along Edwards Creek there are six exclosures totaling 5.5 miles of protected stream reach. Approximately 90% of the portion of Edwards Creek that lies on public land is fenced in order to protect the riparian vegetation and associated habitat for LCT (BLM 2003). However, these exclosures have been in varying states of disrepair since the early 2000s and were identified for repair or reconstruction in the 2012 Desatoaya MHP. The Edwards Creek Riparian Restoration Project, located on Smith Creek Ranch, Inc. private land, was designed, in part, to improve and restore stream habitat for the LCT along approximately 2.3 miles of Edwards Creek. Riparian functionality and the quality of LCT habitat are inextricably linked.

In July 2013, Edwards Creek Headwaters (Lentic) rated as PFC and remained at PFC during another assessment conducted in September 2018. The site Edwards Creek Inside Exclosures (Lotic) was rated as FAR, upward trend in July 2013 and had increased in rating to PFC in

October 2018. In addition, the site Edwards Creek Outside Exclosures (Lotic) declined in trend, rating FAR, upward in July 2013 to a FAR, not apparent rating in October 2018 (RHA Appendix B1, Map 3). Reasons for this rating included livestock and wild horse use, trampling and trailing, and road encroachment. Additionally, Habitat Condition Index (HCI) ratings in areas evaluated were deemed in poor condition most recently. Overall, habitat for LCT in Edwards Creek is marginal and recent NDOW monitoring is showing a significant decline in the LCT population due mainly to drought, but grazing pressure has been a more recent issue. The most recent surveys available from the NDOW recorded only a few LCT during sampling efforts on Edwards Creek in the last several years. Additional information on RHS for threatened and endangered species and habitat conditions can be found in Appendix B1 Section 5.5 of the RHA.

3.5.6.2 Environmental Consequences to Threatened and Endangered Species

3.5.6.2.1 Proposed Action: Outcome-based Grazing Alternative

The Proposed Action OBG Alternative as described in Section 2.2, would continue the current authorized use of 10,733 AUMs on the allotments and would be adjusted to a seasonal/deferred grazing system. Livestock grazing management would be designed to provide periodic growing season rest or deferment for key forage species while allowing for the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions. Livestock use dates and numbers for each pasture would be determined on an annual basis and would be based on monitoring data and objectives, current climatic conditions and the expected vegetative stages of key forage species. This Alternative would allow for grazing management which would require meeting the annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix O, including a reduction in AUMs the following year if the indicators/thresholds are exceeded. This Alternative would adhere to Terms and Conditions outlined in Section 2.2.3 and Appendix G.

Threatened and Endangered Species (T&ES) habitat conditions and trends are discussed in detail in Appendix B1 of the RHA, Section 5.5. As described in Section 3.5.3 Riparian Zones/Wetlands, riparian conditions and therefore stream habitat for LCT would be expected to improve over time under this Alternative based on meeting the monitoring goals and objectives and move triggers. The flexibility built into a seasonal/deferred grazing system in Table 5 and 6 should allow for the biotic integrity of plant communities within key wildlife habitats throughout the allotments to improve over time. This would be achieved based on meeting monitoring goals and objectives as described in Section 2.1.3 and following the Monitoring Plan in Appendix F for adherence to pasture move triggers when monitoring shows livestock grazing has reached thresholds for indicators and objectives. The Proposed Action OBG Alternative should allow for recovery of riparian vegetation at springs and stream banks, reduce sedimentation inputs to surface water, and allow for improvements in habitat conditions for T&ES.

To assist in achieving standards for these T&ES habitats, proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional proposed improvements, including PJ removal, seeding projects, multiple spring protection projects, willow plantings, hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range improvements within the allotments that are not

functioning would be scheduled to repaired to functioning condition to help disperse livestock use. These range improvements would aid in protections and habitat improvements as well as improving availability of water and thereby reducing livestock pressure and competition at key areas for LCT on Edwards Creek. Reducing impacts to riparian habitats by eliminating loafing and concentration of livestock in riparian areas and wet meadows would allow these areas to improve and make progress towards achieving PFC. The proposed Upper Edwards Creek temporary gather area pasture (630 acres) would serve to better protect LCT habitat and facilitate movement of livestock between summer use areas. During the time that livestock utilize the riparian pasture, the permittee and BLM would monitor the use and once indicators/thresholds are reached, cattle would be moved to a new use area. The current fencing exclosures along Edwards Creek would not be removed until it is determined to be meeting monitoring goals and objectives for LCT, including streambank alteration, streambank stability and cover, utilization, herbaceous and woody height objectives.

In general, livestock grazing can affect stream bank erosion and stability. Streamside vegetation is most affected by grazing because riparian zones are usually grazed more heavily than are upland terrestrial zones. The most apparent livestock impacts on LCT habitat are the reduction of shade, ground cover and vegetation composition and terrestrial food supply, increased stream temperature, changes in water quality, and the addition of erosion and sedimentation through bank degradation. Livestock have a propensity to congregate in riparian habitats and frequently wade through streams during hot weather and can cause direct mortality due to trampling of redds during fish spawning periods. Due to the very limited existing population in Edwards and lower Topia Creeks, existing PCF status of Edwards Creek reaches, the new proposed temporary gather pasture on upper Edwards Creek and repair and maintenance on the existing exclosures on Edwards Creek, LCT habitat conditions would be expected to improve under this Alternative. This is provided that wild horse numbers are maintained at or below the AML and relief of drought conditions. Overall, RHS for T&ES habitats, including revegetation and improved function of riparian habitat and improved water quality would be expected under this Alternative.

3.5.6.2.2 Alternative 2: Prescriptive Rotation

Under Alternative 2 as described under Section 2.3, livestock grazing would continue the current authorized use of 10,733 AUMs on the allotments but would have strict use area and movement dates. This alternative would rotate the grazing schedule every other year and reduce AUMs initially based on 21 non-functioning existing range improvements in Section 2.2.2 that are needed to provide off-site water and reduce grazing pressure on riparian/meadow areas. There would be AUMs attached to each water source, which results in an initial reduction of 2,100 AUMs. However, as each water source is repaired to functioning condition, AUMs would be released back to the following years annual use. This alternative would be different from the OBGA due to the strict dates and locations for movement of livestock. This Alternative would also allow for grazing management which would require meeting the same annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix F. This Alternative would adhere to Terms and Conditions outlined in Section 2.3.3 and Appendix G. Impacts to wildlife under Alternative 2 would be similar to the Proposed Action Alternative, although impacts may be lessened initially with the repair of key range improvements and reduction of AUMs until water sources are functioning on the allotments. However, this Alternative would not provide the

flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions or plant phenology, which would be more suitable for achieving desired habitat conditions.

3.5.6.2.3 Alternative 3: No Action Alternative (Current Management)

Under the No Action Alternative as described under Section 2.4, current livestock management as permitted by the DMEMP, combined with severe drought, has not allowed for improvement in habitat conditions for LCT within Edwards Creek. Under the No Action Alternative, impacts to T&ES habitat would continue as described in detail in Appendix B1 of the RHA, Section 5.5. Livestock grazing may contribute to decreased quality of LCT habitat including, trampling of redds, increased stream temperature due to loss of cover vegetation, increased sedimentation due to streambank and upland erosion, and increased channel width and undercut bank habitat loss due to bank shearing and trampling. Excessive wild horse use and extreme drought conditions have been contributing factors to the deterioration of habitat conditions. The RHA determined that under current grazing management, RHS are not being met for T&ES habitat. Therefore, livestock grazing under the current grazing management system would likely cause habitat conditions in the allotments to decline in quality from the current conditions and to continue to not meet RHS, including LCT habitat not meeting the life cycle requirements as defined by the RHS indicators in Appendix M, Standard 5. In addition, under the No Action Alternative, there would also be no new range improvements for Edwards Creek to help meet RHS, including a new gathering pasture, hardened crossings, culvert replacement and willow plantings. Overall, as described in Appendix B1 of the RHA, Section 5.5, T&ES habitat conditions do not currently meet many of the life cycle requirements of Special Status Species per the RHS indicators and LCT habitat would not be able to progress towards achieving standards under this Alternative (Current Management).

3.5.6.2.4 Alternative 4: No Grazing Alternative

The No Grazing Alternative as described under Section 2.5, would allow the allotments to recover as a result of extended rest from livestock grazing and to move towards achieving RHS currently not being met for T&ES habitat, as described in the Appendix B1 of the RHA, Section 5.5. Edwards Creek would likely recover from livestock grazing impacts over the 10-year timeframe, and the No Grazing Alternative would allow for restoration of upland and riparian vegetation, soil stabilization, improved water quality, and result in achieving PFC. The degree of improvement in habitat conditions would be dependent on drought relief and maintaining the wild horse herd at or below AML. Drought would still likely be a factor on how long it would take to meet RHS. Under the No Grazing Alternative, there would be no new range improvements for Edwards Creek, including new fencing, culverts, gates, cattleguards, PJ removal and willow plantings. Overall, as described in Appendix M, Standard 5, the No Grazing Alternative would result in revegetation of riparian areas, improved function of upland and riparian habitat, decrease in soil erosion and compaction, and improved water quality, and LCT habitat at Edwards Creek would be expected to recover to the greatest extent under this Alternative but habitat would still continue to be impacted by wild horses if not managed at or under AML.

3.5.6.2.5 Impacts of Constructing Range Improvements

Proposed Action and Alternative 2:

Proposed range improvement projects were identified as integral components of the Proposed Action Alternative and Alternative 2 due to RHS for T&ES habitats not being met for the allotments. Proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements over the 10 year term permit, including up to 2,400 acres of PJ removal projects, up to 10,000 acres of seeding projects, multiple spring exclosure protection projects, willow planting projects, several hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range improvements within the allotments that are not functioning would be scheduled to be repaired to functioning condition, including 21 improvements in Section 2.3.4. The proposed temporary gather pasture fencing, willow plantings, culvert replacement and several hardened crossings on Edwards Creek would allow for better livestock management and additional protection for T&ES habitat to allow for recovery of LCT habitat, including spawning habitat. Although some temporary short-term impacts may occur from these activities, including habitat disturbance, sedimentation and erosion, increased turbidity and an increase in invasive/noxious plant species, the range improvement over time would allow riparian vegetation to progress towards meeting the Appendix B1 RHA Standard 5.

The removal and/or reduction of PJ should result in an increase in water availability to enhance degraded wet meadows through ground water recharge that would in turn increase spring flows. Increasing overall watershed health is expected to increase and maintain water flowing within Edwards and Topia Creeks, thus increasing flow for LCT, especially during drought when water ceases to flow in the lower sections of Edwards Creek towards the valley. In addition, herbicide treatments proposed for infestations around riparian areas of Edwards and Topia Creeks would follow state and federal regulations and would not be applied in close proximity to these waters and would be timed during lowest flows. Improvement in riparian functionality trending towards PFC through exclosure fencing would result in improved habitat conditions for LCT. Additional range improvements as well as maintenance of existing improvements, pasture fencing, and new water developments described in Section 2.1.2 and Appendix I would aid in better distribution of water and livestock use within the allotments, thereby reducing livestock pressure and degradation at Edwards Creek. Overall, the proposed range improvements over time would allow upland and riparian vegetation to progress towards meeting RHS in Appendix M, Standard 5. Although some impacts as described above would occur, PDFs for wildlife outlined in Appendix J, would be implemented to avoid, minimize, and mitigate impacts to T&ES and their habitats.

3.5.7 Sensitive Species (Animals and Plants)

3.5.7.1 Affected Environment

Per the BLM Special Status Species manual 6840, BLM special status species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood, and need, for future listing under the ESA. Bureau sensitive species lists are reviewed, and updated every five years, by each State Director (BLM 2008a). Additionally, all federal candidates, proposed, and delisted species in the five years following delisting are designated as Bureau sensitive species (BLM 2008a). Many of these species as well as other wildlife species of concern are also discussed in the NDOW WAPT (WAPT 2013). Within the CCDO, 138 species were designated as BLM sensitive by the Nevada BLM State Director in

2017. The Nevada BLM Sensitive Species List contains a complete list of species and associated habitats that have the potential to be found in or near the allotment for the CCDO. These sensitive species include birds, reptiles, amphibians, mammals, fish, invertebrates, and plants. A few of the important special status animal species that occur or have the potential to occur on the allotments include the GRSG, desert bighorn sheep (*Ovis canadensis*), pygmy rabbit (*Brachylagus idahoensis*), American pika (*Ochotona princeps*) multiple bat species, dark kangaroo mouse (*Microdipodops megacephalus*), Great Basin collared lizard (*Crotaphytus bicinctores)*, long-nosed leopard lizard (Gambelia wislizenii), and desert horned lizard (*Phrynosoma platyrhinos*). Several of these species are described in further detail below and a complete list of sensitive animal species can be found in Appendix D of the RHA. Monitoring data results described in the General Wildlife Section would be the same or similar effects on sensitive animal species in the allotments. Additional information on RHS for sensitive species and habitat conditions can be found in the Edwards Creek and Porter Canyon Allotment Appendices B1 and B2 Section 5.5 of the RHA.

Sensitive Animals

Mammals

Desert Bighorn Sheep (*Ovis canadensis nelsoni*) - There are approximately 23,591 acres of occupied year-round, crucial summer, and migratory desert bighorn sheep habitat on the allotments. Approximately 9,513 acres of that is designated as crucial summer habitat. All desert sheep habitat is located on the west end of the allotments in the Desatoya Mountains, (Appendix B2; Map 14) largely within the Desatoya WSA. The crucial summer habitat is located in the highest elevation areas typically within high elevation sagebrush communities. Key habitats for desert bighorn include sagebrush communities, grasslands and meadows, riparian areas and springs. They prefer rough, rocky, and steep terrain, require freestanding water in summer months or during drought, and mainly eat grasses, forbs and shrubs. They occupy a variety of plant communities including alpine meadow to shrub-grasslands depending on the season, however, forage, water, and escape terrain are the most important components of their habitat.

In many instances, livestock and wild horses compete directly with bighorns for forage, water, and space. Past and current grazing by livestock and wild horses has reduced the quality of desert bighorn habitat particularly in easily accessible areas. Over the past four years wildfires have burned 8,900 acres of mainly PJ woodlands within Unit 184 that overlaps the allotments. This habitat conversion would enable the desert bighorn sheep herd to thrive in these newly created early successional stage plant communities. Above average precipitation was received in fall 2018 and continued into spring 2019. This increased moisture allowed for excellent range conditions going into the summer 2019 for bighorn herds (NDOW 2019). It is important that bighorn sheep habitats are managed to ensure land use objectives are achieved and that habitats are maintained in good to excellent ecological condition.

Pygmy Rabbit (*Brachylagus idahoensis*) - The global status for the pygmy rabbit is “apparently secure” (G4). In Nevada, it is rated as vulnerable (S3). Habitat generally consists of dense stands of big sagebrush growing in deep loose soils. Big sagebrush is the primary food source in the winter. Native bunch grasses such as wheatgrass and bluegrass and forbs are highly preferred during the spring and summer. The loss and decline in habitat conditions

resulting from fire, grazing, and invasion of exotic annuals such as cheatgrass, are key factors contributing to the decline in pygmy rabbit populations (NatureServe 2015). Shrub cover is necessary for protection during dispersal and cheatgrass monocultures may provide a barrier to dispersal. PJ encroachment decreases understory species and, in turn, decreases suitable pygmy rabbit habitat (NDOW 2013). Pygmy rabbit habitat within the allotments show a deficiency in key grass species. Recorded sightings of pygmy rabbits have been documented within the Porter Canyon allotment.

Bats - There are 16 species of bats designated as sensitive in the CCDO. Of these 16 species, at least eight species are known to occur or have the potential to occur within the allotments. These species include western red bat (*Lasiurus blossevillii*), silver-haired bat (*Lasionycteris noctivagans*), Brazilian free-tailed bat (*Tadarida brasiliensis*), hoary bat (Lasiurus cinereus), pallid bat (*Antrozous pallidus*), little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), and western small-footed bat (*Myotis ciliolabrum*). Little population information is known for most bat species within the area; therefore, most trends are unknown.

Bats have specific needs for roosting, nesting, and foraging. Roosting habitats include crevices in rock cliffs and rimrock, abandoned mines, abandoned structures, and in trees with loose bark such as junipers. There are no known abandoned mine lands located within the allotments. Foraging habitats include open grasslands, shrub-steppe, riparian areas, open water sources including water troughs, and in and around trees (BLM 2012b). In general, the long-term persistence of North American bat species is threatened by the loss of clean, open water, modification of destruction of roosting and foraging habitat, and disturbance or destruction of hibernacula for hibernating species. Chemicals in the environment that affect bats or their prey are also threats. Bats may be minimally affected by livestock grazing, but the decline in plant community health, especially riparian areas, could negatively affect foraging conditions. In addition, hazards associated with livestock watering troughs are also known to cause bat injury and/or mortality if not properly mitigated.

Birds

GRSG - GRSG occur on the allotments which are part of the Desatoya Population Management Unit (PMU). The far eastern side of the Porter Canyon Allotment contains a portion of the Reese River PMU. Based on the 2015 ARMPA, GRSG Priority Habitat Management Area (PHMA), General Habitat Management Area (GHMA), and Other Habitat Management Area (OHMA) acres that occur on public lands within the ECPA are reflected in the table below (Appendix B1; Map 9). According to the NDOW 2018 database, four known leks occur on the Edwards Creek allotment, including the Edwards Creek (inactive), Cedar Creek (inactive), North Topia (pending) and South Topia (unknown) (Appendix B1; Map 10). In the Porter Canyon Allotment, four known active leks occur, including the Haypress (active), Haypress #2 (active), New Pass (active) and Smith Creek (active) (RHA Appendix B1, Map 10). No known leks occur on the Carson Allotment.

Table 9: GRSG Habitat within the Allotments

Allotment	PHMA Acres	GHMA Acres	OHMA Acres	Total GRSG Habitat Acres
Carson	1,860	1,368	4	3,232
Edwards Creek	8,589	16,923	12,777	38,289

Porter	71,325	30,729	12,854	114,908

GRSG nesting and brood-rearing habitats are a concern due to the lack of grasses and degraded meadows within the Desatoya Mountains. GRSG populations have been declining in the Desatoya Mountains. Lack of grasses in nesting habitat is documented as a factor leading to nest predation and in turn decreased nesting success that can lead to decreases in population abundance (Connelly et al. 2000). Barbed wire fencing also poses a hazard to GRSG particularly near nesting and brood rearing habitats. This would be substantially mitigated by placing markers on the top wire of the fence (NRCS 2012). Electric transmission lines through the allotments also continue to limit the use of habitats along those lines by GRSG. Additionally, PJ expansion has been identified range wide as a primary contributor to loss of GRSG habitat and these problems were addressed in the DMHP. PJ expansion remains a concern, particularly relating to GRSG habitat, but also along riparian areas, which contributes to the loss of key woody and herbaceous riparian vegetation. Habitat restoration projects were identified in the DMHP, which mostly entailed PJ removal and spring and meadow improvements within key sage-grouse habitat. A great deal of projects have been completed to date to improve GRSG habitat in the project area.

Monitoring sites throughout the allotments show a grass/shrub imbalance in all plant communities and a deficiency of key perennial grasses and forbs. Areas within the lower elevations show a deficiency in key grass species, which has reduced the value of the habitat for GRSG. Ensuring that livestock do not congregate within four miles of active leks from March 1 to May 15 would improve GRSG reproduction and nesting. Additional information on RHS for GRSG and habitat conditions within the allotments, including lek and seasonal habitat suitability can be found in the Appendices B1 and B2 Section 5.5 of the RHA.

Raptors - Multiple species of raptors exist within the allotment and several are BLM designated sensitive species. Current diversity exists because of the proximity of multiple habitat types that provide nesting, foraging, and roosting sites. Northern goshawks *(Accipiter gentlis)* have documented nests in aspen/cottonwood stands in riparian areas associated with Edwards Creek (BLM 2012b) and numerous sightings have been recorded. Western burrowing owl *(Athene cunicularia)* and short-eared owl (*Asio flammeus*) habitat exists in the Intermountain Cold Desert Scrub and Sagebrush habitats and flammulated owl (*Psiloscops flammeolus)* habitat is associated with open pine forests. Bald and golden eagle (*Aquila chrysaetos*), ferruginous hawk and Peregrine falcon (*Falco peregrinus*), are associated with Cliffs and Canyons as well as other habitats and forage throughout the allotments. There are known ferruginous hawk nests as well as one historic golden eagle nest located in the Shoshone Mountains within the Porter Canyon allotment. Swainson's hawk (*Buteo swainsoni*) would most likely be associated with the riparian habitats for nesting. Raptor populations are dependent on the available prey base, which is directly related to plant community health.

Other birds - Brewer's sparrow (*Spizella breweri*) and sage sparrow (*Artemisiospiza nevadensis*) are typically associated with Sagebrush and Intermountain Cold Desert Scrub habitats. Lewis' woodpecker (*Melanerpes lewis*) is a cavity nester that uses dead trees, including pinyon trees, for nesting and is associated with Lower Montane Woodland habitats. Loggerhead shrike *(Lanius ludovicianu)* may be found throughout the habitats of the allotments but is typically found in open country with scattered shrubs and trees. Pinyon jay

(Gymnorhinus cyanocephalus) are strongly associated with PJ woodlands. Sage thrasher *(Oreoscoptes montanus)* are primarily associated with Sagebrush habitats but may also be associated with Intermountain Cold Desert Scrub. Mountain quail (*Oreortyx pictus*) have been documented in the Desatoya Mountains and can occupy a variety of habitats. The birds typically live in high elevation habitats ranging from forested to open grasslands. Additional sensitive bird species known to the allotments or have overlapping ranges include Great Basin willow flycatcher (*Empidonax traillii adastus*), Virginia's warbler (*Leiothlypis virginiae*), green-tailed towhee (*Pipilo chlorurus*), black rosy-finch (*Leucosticte atrata*), Western snowy plover (*Charadrius nivosus nivosus*), and long-billed curlew (*Numenius americanus*). Bird populations in general, are dependent on nesting and foraging conditions, which are directly related to plant community health. A list of Birds of Conservation Concern for Region 9 that occur within the allotments is listed in Appendix D of the RHAs.

Sensitive Plants

There is one known BLM sensitive plant species, Beatley buckwheat (*Eriogonum beatleyae*), that has been identified at two locations on the allotments. According to the Nevada Natural Heritage Program (NNHP), this species is ranked G2Q, which means that globally, this species is imperiled, but the taxonomy is questionable. In Nevada, this species is described as vulnerable (S3). The Nevada Native Plant Society (NNPS) has dropped this species from consideration. Little is known about Beatley buckwheat except that it is associated with "dry, open to exposed, barren, basic, clay or rocky clay soils or crumbling outcrops on slopes and knolls of weathering rhyolitic or andesitic volcanic deposits, mostly on southerly to westerly aspects, in the sagebrush, pinyon-juniper, mountain mahogany, and mountain sagebrush zones, with *Atriplex confertifolia* or *Artemisia arbuscula*, etc." (NNHP 2020). It grows on weathered ridgelines and slopes of gravel or clay soils with juniper at elevations ranging from 5,600 to 7,800 feet and flowers from May to August. Potential threats include livestock grazing and trampling and mining activities (NatureServe 2015). Its desirability as a forage plant is not described.

One population was identified in 1994 on the Edwards Creek allotment (Carson pasture) near Highway 50, northwest of New Pass Summit. The population size is unknown. This location is inside the winter use area associated with the Porter Canyon allotment within an area that likely receives light use by cattle. In 2005, another population of six plants was identified approximately 0.4 mile southwest of White House Well and Corral on the Porter Canyon allotment within the winter use area. This area has been subject to heavy to severe grazing use and severe drought. There is no current information on this population.

Reese River phacelia is known to occur along Highway 50 near the northern portion of both allotments. It is likely that this species also occurs within the allotments. Further surveys are needed to document any occurrences.

In addition, the following species are found in the area and may be present in the allotments.

Lahontan beardtongue (*Penstemon palmeri macranthus*)
Lahontan milkvetch (*Astragalus porrectus*)
Nevada suncup (*Camissonia nevadaensis*)
Lemmon buckwheat (*Eriogonum lemmonii*)
Sand cholla (*Grusonia pulchella*)

Further surveys would be needed to document any occurrences within the allotments.

3.5.7.2 Environmental Consequences to Sensitive Species (Animals and Plants)

3.5.7.2.1 Proposed Action: Outcome-based Grazing Alternative

Sensitive Animals

The Proposed Action OBG Alternative as described in Section 2.2, would continue the current authorized use of 10,733 AUMs on the allotments and would be adjusted to a seasonal/deferred grazing system. Livestock grazing management would be designed to provide periodic growing season rest or deferment for key forage species while allowing for the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions. Livestock use dates and numbers for each pasture would be determined on an annual basis and would be based on monitoring data and objectives, current climatic conditions, and the expected vegetative stages of key forage species. This Alternative would allow for grazing management which would require meeting the annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix O, including a reduction in AUMs the following year if the indicators/thresholds are exceeded. This Alternative would adhere to Terms and Conditions outlined in Section 2.2.3 and Appendix G.

Sensitive species habitat conditions and trends are discussed in detail in the Appendices B1 and B2 of the RHA, Section 5.5, and based on the evaluation, found the allotments not to be achieving RHS for special status species animal habitats that are necessary for healthy, productive and diverse habitat. The effects of the proposed action on BLM sensitive animal species would be the same or very similar to those described for General Wildlife in Section 3.5.5 and Migratory Birds Section 3.5.8 and are directly related to rangeland health conditions. Under the OBG Alternative, general improvement in habitat conditions for all wildlife species, including BLM sensitive species, should occur over time. It is likely that adaptive management would be applied to adjust cattle numbers and duration of use to meet stated goals and objectives based on monitoring results. (As described earlier in this document, OBG allows BLM managers and livestock operators the ability to make management decisions based on experience, knowledge of local conditions and current years climate, and an established set of resource and operational objectives.) In addition, improvement in habitat conditions is contingent on maintaining wild horse numbers at or below AML and drought relief.

Mammals (Desert Bighorn Sheep, Pygmy Rabbit, Bats):

Interactions with desert bighorn sheep and livestock would most likely occur at water sources in or near steep rocky areas. The allotments have a good amount of natural water available and repairing additional range improvements would decrease any competition even more.

Studies show that grazing can be compatible with pygmy rabbit if grazing occurs at levels that leave sagebrush plants intact and soils not overly compacted (NDOW 2013). Given the rest/rotation grazing system schedule and monitoring in place for this Alternative, it would be expected that desired sagebrush and soil conditions would be achieved for pygmy rabbit over time.

Livestock grazing is not likely to impact roosting or maternity sites of bats. However, bats utilize plant communities that are healthy enough to support a large population of prey (Bradley et al. 2006) and food availability determines bat species distribution and habitat use. Healthy functioning riparian communities with available water and vigorous vegetation provide favorable foraging habitat for bats by supporting large flying insect populations. Healthy upland habitats are also used for foraging by bats. Livestock grazing can degrade both riparian and upland habitats making them less suitable for bats. Properly functioning, exclosure fencing around springs and water troughs can provide a benefit to bats species by providing more food sources and available water.

Birds (GRSG, Raptors, Other Birds):

Direct impacts to sensitive ground nesting and upland birds would vary depending on species behavioral, habitat, and life history characteristics. The greater impact to these species is likely to come from over grazing which can results in the loss, degradation, or fragmentation of high-quality sagebrush shrubland and may ultimately reduce prey habitat and degrade the vegetation structure for nesting and roosting.

Ensuring that livestock do not congregate within four miles of active leks from March 1 to May 15 would facilitate GRSG reproduction and nesting of GRSG. The proposed GRSG habitat improvement projects for seeding and PJ removal would substantially improve habitat conditions for all species associated with those treatment areas, including GRSG. PJ removal from encroached sagebrush habitats should increase available habitat over time thus increasing survival rates and helping to maintain or increase abundance of sage-grouse.

The degraded seeded areas would be enhanced with desirable species and reduction of annual invasive species in the understory providing suitable seasonal habitats for GRSG. Seeding treatments would start the process of rehabilitating these areas and make them more suitable for GRSG to use over time. GRSG habitats would not be entirely restored during this ten-year permit but progress would be made toward improving GRSG habitat into marginal and in some areas potentially suitable seasonal habitats. This Alternative should ensure the allotments would be meeting or making significant progress towards meeting habitat objectives for GRSG outlined in Table 2-2 of the GRSG ARMPA.

Sage-grouse lekking, nesting, and brood rearing take place in close proximity to areas that are dominated by sagebrush with greater perennial forbs and higher richness of plant species. Important factors include sagebrush overstory, herbaceous understory, and the presence of plentiful insects that provide a high-protein diet for broods (Connelly 2000). These areas include mountain meadows, springs, and riparian areas where forbs and insect populations are typically greatest (Myers and Resh 2002).

The flexibility built into a seasonal/deferred grazing system in Table 5 and 6 should allow for the biotic integrity of plant communities within key wildlife habitats throughout the allotments to improve over time. This would be achieved based on meeting monitoring goals and objectives as described in Section 2.1.3 and following the Monitoring Plan in Appendix F for adherence to pasture move triggers when monitoring shows livestock grazing has reached thresholds for indicators and objectives. The prescribed allowable use levels and pasture rotation system would help to diminish the direct competition for forage and water with

sensitive species. To assist in achieving standards for these sensitive species habitats, proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements, including PJ removal, seeding projects, multiple spring protection projects, willow plantings, hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range improvements within the allotments that are not functioning would be scheduled to repaired to functioning condition to help disperse livestock. These range improvements would aid in protections and habitat improvements as well as improving availability of water and thereby reducing livestock pressure and competition at key water sources for sensitive species. Reducing impacts to riparian habitats by eliminating loafing and concentration of livestock in riparian areas and wet meadows would allow these areas to improve and make progress towards achieving PFC. This is provided that wild horse numbers are maintained at or below the AML and relief from drought conditions. Overall, RHS for sensitive species animal habitats, including revegetation and improved function of upland and riparian habitat and improved water quality would be expected under this Alternative.

Sensitive Plants

The population near New Pass Summit is unlikely to be affected by grazing use prescribed in this alternative since it is located in a winter use area that likely receives slight to light use by cattle. The population located near White House well could be affected due to its proximity to the water development and holding area. Due to the location heavy use by cattle could be expected regardless of utilization standards.

3.5.7.2.2 Alternative 2: Prescriptive Rotation

Sensitive Animals

Under Alternative 2 as described under Section 2.3, livestock grazing would continue the current authorized use of 10,733 AUMs on the allotments but would have strict use area and movement dates. This alternative would rotate the grazing schedule every other year and reduce AUMs initially based on 21 non-functioning existing range improvements in Section 2.3.4 that are needed to provide off-site water and reduce grazing pressure on riparian/meadow areas. There would be AUMs attached to each water source, which results in an initial reduction of 2,100 AUMs. However, as each water source is repaired to functioning condition, AUMs would be released back to the following years annual use. This alternative would be different from the OBGA due to the strict dates and locations for movement of livestock. This Alternative would also allow for grazing management which would require meeting the same annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix O. This Alternative would adhere to Terms and Conditions outlined in Section 2.3.3 and Appendix G. Impacts to wildlife under Alternative 2 would be similar to the Proposed Action Alternative, although impacts may be lessened initially with the repair of key range improvements and reduction of AUMs until water sources are functioning on the allotments. However, this Alternative would not provide the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in yearly climatic conditions or plant phenology, which would be more suitable for achieving desired habitat conditions.

Sensitive Plants

Alternative 2 is a prescriptive cattle rotation throughout the allotments. Use of prescriptions could be designed to protect sensitive species by limiting grazing during important phenological stages of sensitive plant development. The advantage would be in the certainty of the timing of grazing BLM could coordinate with permittee to exclude cattle from sensitive plant areas although this could still be accomplished in the proposed action. The disadvantage is that this alternative would require more intense herd management in the sense that ranch staff would need to spend more labor hours moving cattle through the increased number of rotations and pastures. With a lack of on-the-ground management, for whatever reason, there would be the potential for cattle to remain longer in areas with sensitive plants which could allow a greater degree of impacts to plants and habitat.

3.5.7.2.3 Alternative 3: No Action Alternative (Current Management)

Sensitive Animals

Under the No Action Alternative as described under Section 2.4, current livestock management would continue to be permitted as directed by the DMEMP, has not allowed for improvement in habitat conditions for BLM sensitive animal species. Under the No Action Alternative, impacts to sensitive animal species habitats would continue as described in detail in the Appendices B1 and B2 of the RHA, Section 5.5. The RHAs determined that under current grazing management, RHS are not being met for Special Status Species animal habitat. Therefore, continuing management under the Terms and Conditions of the current grazing management would cause habitat conditions in the allotments to decline in quality from the current conditions and to continue to not meet RHS, including desert bighorn sheep and GRSG habitat not meeting the life cycle requirements as defined by the RHS indicators in Appendix M, Standard 5. In general, impacts to BLM sensitive animal species and habitats would be similar to those described for General Wildlife in Section 3.5.5. Under the No Action Alternative, there would also be no range improvements proposed, including PJ removal, native seedings, multiple spring protection projects, willow plantings, and noxious weed treatments, which are critical to meeting RHS for sensitive species animal habitats. Overall, as described in Appendices B1 and B2 of the RHA, Section 5.5, Special Status Species animal habitat conditions do not meet many of the life cycle requirements of Special Status Species per the RHS indicators and would not be able to progress towards achieving standards under this Alternative (Current Management).

Sensitive Plants

Under Alternative 4, current livestock management would continue. While current management has protections in place for general vegetation management, strategies for conserving sensitive plants are lacking. The proposed alternative specifically addresses sensitive species management that addresses impacts to sensitive plant species and habitat.

3.5.7.2.4 Alternative 4: No Grazing Alternative

Sensitive Animals

The No Grazing Alternative as described under Section 2.5 would allow the allotments to recover as a result of extended rest from livestock grazing and to move towards achieving RHS currently not being met for Special Status Species animal habitat, as described in the Appendices B1 and B2 of the RHA, Section 5.5. In general, impacts to BLM sensitive animal

species and habitats would be similar to those described for General Wildlife in Section 3.5.5. Under the No Grazing Alternative, sensitive wildlife species, including GRSG and desert bighorn sheep habitat would continue to experience negative impacts caused by wild horses, particularly where horses congregate at limited water sources. Overall, as described in Appendix M, Standard 5, RHS for Special Status Species animal habitats, including revegetation and improved function of upland and riparian habitat and improved water quality, would be expected to recover to the greatest extent under this Alternative but habitat would still continue to be impacted by wild horses if not managed at or under AML.

Sensitive Plants

Under this alternative there would be no effects on Beatley buckwheat from cattle grazing as grazing would not be permitted. The lack of any grazing management plan would allow continued unmitigated impacts from wild horse use to sensitive plants and habitat.

3.5.7.2.5 Impacts of Constructing Range Improvements

Proposed Action and Alternative 2:

Sensitive Animals

Proposed range improvement projects were identified as integral components of the Proposed Action Alternative and Alternative 2 due to RHS for Special Status Species habitats not being met for the allotments. Proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements over the 10 year term permit, including up to 2,400 acres of PJ removal projects, up to 10,000 acres of seeding projects, multiple spring exclosure protection projects, willow planting projects, several hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range improvements within the allotments that are not functioning would be scheduled to be repaired to functioning condition, including 21 improvements in Section 2.1.2. Impacts from construction and/or maintenance of range improvements would be similar or the same as those described in General Wildlife Section 3.5.5. PJ removal from encroached sagebrush habitats should increase available habitat over time thus increasing survival rates and helping to maintain or increase abundance of sage-grouse. Any new wire fencing could pose a hazard to GRSG particularly near nesting and brood rearing habitats. This would be substantially mitigated by placing markers on the top wire of the fences (NRCS 2012). Overall, there would be little to no impact to GRSG habitat with any of the proposed range improvement projects due to seasonal restrictions and required design features implemented. The newly proposed improvements and maintenance of existing range improvements over time would allow upland and riparian vegetation to progress towards meeting RHS for Special Status Species animal habitats in Appendix M, Standard 5. Although some impacts as described would occur, PDFs for wildlife outlined in Appendix J, would be implemented to avoid, minimize, and mitigate impacts to sensitive species and their habitats.

Proposed Action and Alternative 2:

Sensitive Plants

A 50-foot buffer would be created for all sensitive species encountered within a proposed improvement area. The buffer would ensure that no construction-related impacts as well as cattle and horse impacts to the plants or habitat would be avoided.

3.5.8 Migratory Birds

3.5.8.1 Affected Environment

The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 *et. seq*.) protects migratory birds and their nests. A list of MBTA protected birds is found in 50 C.F.R. 10.13. The list of birds protected under this regulation is extensive and the project site has potential to support many of these species, including BLM sensitive species, and their nests. On January 11, 2001, President Clinton signed Executive Order 13186 (Land Bird Strategic Project) placing emphasis on conservation and management of migratory birds. Management for these species is based on Instruction Memorandum (IM) IM 2008-050 dated December 18, 2007 (BLM 2007).

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The USFWS list of Birds of Conservation Concern (BCC) for 2008 is the most recent effort to carry out this mandate. The allotments fall in the Great Basin Region 9. Of the 28 species listed for the region, 19 species occur or could potentially occur within the allotments based on habitat (Appendices B1, B2, Appendix C). Distribution of these species varies by year-round resident, summer breeding, winter and migratory species. The NDOW Wildlife Action Plan (WAPT 2013) has detailed information on many of these birds of conservation concern, including habitat requirements, trends, distribution, and conservation needs.

Those bird species not mentioned above as BCC or sensitive species that occur within the allotments include red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), Northern flicker (*Colaptes auratus*), Northern harrier (*Circus hudsonius)*, prairie falcon (*Falco mexicanus*), and green-tailed towhee (*Pipilo chlorurus*). Numerous species of migratory and non-migratory birds, including raptors, utilize habitat such as trees, shrubs, cliffs, and other upland vegetation within the allotments for shelter, nesting, and foraging. Desert shrub habitats provide nesting structure, protection from predators, and thermal cover for passerines as well as foraging habitat for raptors. Rock outcroppings/crevices provide nesting, roosting, protection from predators for some bird species and rocky ledges provide a nesting substrate, and protection from predators for several raptor species. Generally, migratory bird species occur in higher concentrations in riparian areas. Multiple red-tailed hawk and Cooper's hawk nests have been documented in the allotments, but recent status is unknown. Populations of these migratory birds are dependent on nesting and foraging conditions, which are directly related to plant community health. Typically, the breeding season is when these species are most sensitive to disturbance, which generally occurs from March 1-August 31, depending on the species.

In general, monitoring data within the allotments show declining occurrence or absence of perennial grass species and a transition to shrub and invasive grass or forb dominated states. Although riparian habitats are small in proportion to the uplands, riparian health is very

important to migratory bird species dependent on these habitats. These riparian areas are essential habitat for bird species of the arid and semiarid west and provide important stopping points for neotropical migratory birds passing through the desert. Based on the proper functioning condition status of many of the springs in the allotments, it can be expected that this is directly impacting the health of migratory bird habitat and contributing to the decline in bird species that rely on these critical resources. Additional information on RHS for migratory bird species and habitat conditions can be found in Appendices B1 and B2, Section 5.4.6 of the RHA.

3.5.8.2 Environmental Consequences to Migratory Birds

3.5.8.2.1 Proposed Action: Outcome-based Grazing Alternative

The Proposed Action OBG Alternative as described in Section 2.2, would have similar effects on migratory birds to those described for General Wildlife in Section 3.5.5. Migratory bird habitat conditions and trends are discussed in detail in Appendices B1 and B2 of the RHA, Section 5.4 and RHS indicators defined in Appendix M, Standards 4 and 5. The Proposed Action would impact approximately 194,579 acres of public lands, which includes habitat for many migratory birds and Birds of Conservation Concern. In addition to impacts described in General Wildlife Section 3.5.5, livestock grazing has the potential to alter bird behavior, habitat and productivity. Grazing of shrubs, forbs and grasses, combined with the potential spread of noxious weeds reduces the overall amount of high-quality habitat available for many avian species. In addition, disturbance of nesting birds by livestock could occur, including trampling of nests, during the nesting period (April 1 – July 31) for most ground nesting birds. Under this Alternative, general improvement in habitat conditions for migratory bird species, would be expected to occur over time. Overall, RHS for animal habitats, including revegetation and improved function of upland and riparian habitat and improved water quality would be expected under this Alternative.

3.5.8.2.2 Alternative 2: Prescriptive Rotation

Under Alternative 2 as described under Section 2.3, livestock grazing would continue the current authorized use of 10,733 AUMs on the allotments but would have strict use area and movement dates. This alternative would rotate the grazing schedule every other year and reduce AUMs initially based on 21 non-functioning existing range improvements in Section 2.3.4 that are needed to provide off-site water and reduce grazing pressure on riparian/meadow areas. There would be AUMs attached to each water source, which results in an initial reduction of 2,100 AUMs. However, as each water source is repaired to functioning condition, AUMs would be released back to the following years annual use. This alternative would be different from the OBGA due to the strict dates and locations for movement of livestock. This Alternative would also allow for grazing management which would require meeting the same annual livestock indicators and monitoring goals and objectives (short and long term), as outlined in Section 2.1.3 and Appendix O. This Alternative would adhere to Terms and Conditions outlined in Section 2.3.3 and Appendix G. Impacts to wildlife under Alternative 2 would be similar to the Proposed Action Alternative, although impacts may be lessened initially with the repair of key range improvements and reduction of AUMs until water sources are functioning on the allotments. However, this Alternative would not provide the flexibility to adjust seasonal timing and/or rotation for use areas in response to variations in

yearly climatic conditions or plant phenology, which would be more suitable for achieving desired habitat conditions.

3.5.8.2.3 Alternative 3: No Action Alternative (Current Management)

Under the No Action Alternative as described under Section 2.4, current livestock management as permitted by the DMEMP, has not allowed for improvement in habitat conditions for migratory birds. Various areas of the allotments show a decline in habitat conditions for most wildlife species, including migratory birds. Under the No Action Alternative, impacts to migratory bird habitat would continue as described in detail in the Appendices B1 and B2 of the RHA, Section 5.4. The RHA determined that under current grazing management, RHS are not being met for migratory bird habitat. Therefore, grazing under the current grazing management system would cause habitat conditions in the allotments to decline in quality from the current conditions and to continue to not meet RHS, including habitat for priority Birds of Conservation Concern not meeting the life cycle requirements as defined by the RHS indicators in Appendix M, Standards 4 and 5. In general, impacts to migratory bird species and habitats would be similar to those described for General Wildlife in Section 3.5.5. Under the No Action Alternative, there would also be no new range improvements proposed, including PJ removal, native seedings, multiple spring protection projects, willow plantings, and noxious weed treatments that could help achieve RHS for migratory bird habitat. Overall, as described in Appendices B1 and B2 of the RHA, Section 5.4.6, migratory bird habitat conditions do not meet many of the life cycle requirements of migratory birds per the RHS indicators and would likely not be able to progress towards achieving standards under this Alternative (Current Management).

3.5.8.2.4 Alternative 4: No Grazing Alternative

The No Grazing Alternative as described under Section 2.5 would allow the allotments to recover as a result of extended rest from livestock grazing and to move towards achieving RHS currently not being met for migratory birds, as described in the Appendices B1 and B2 of the RHA, Section 5.4. In general, impacts to BLM migratory birds and habitats would be similar to those described for General Wildlife in Section 3.5.5. Overall, as described in Appendix M, Standards 4 and 5, RHS for migratory bird species and habitats, including revegetation and improved function of upland and riparian habitat and improved water quality, would be expected to recover to the greatest extent under this Alternative but habitat would still continue to be impacted by wild horses if not managed at or under AML.

3.5.8.2.5 Impacts of Constructing Range Improvements

Proposed Action and Alternative 2:

Proposed range improvement projects were identified as integral components of the Proposed Action Alternative and Alternative 2 due to RHS for animal habitats not being met for the allotments. Proposed range improvements as described in Section 2.1.2 and Appendix I, include several additional improvements over the 10-year term permit, including up to 2,400 acres of PJ removal projects, up to 10,000 acres of seeding projects, multiple spring exclosure protection projects, willow planting projects, several hardened creek crossings and bottomless culverts and noxious weed monitoring and treatments. In addition, existing range improvements within the allotments that are not functioning would be scheduled to be repaired to functioning condition including 21 improvements in Section 2.3.1. Impacts from

construction and/or maintenance of range improvements would be similar or the same as those described in General Wildlife Section 3.5.5. The newly proposed and maintenance of existing range improvement over time would allow upland and riparian vegetation to progress towards meeting migratory bird RHS in Appendix M, Standards 4 and 5. Although some impacts as described would occur, PDFs for wildlife/migratory birds outlined in Appendix J, would be implemented to avoid, minimize, and mitigate impacts to migratory bird species and their habitats.

3.5.9 Wild Horses

3.5.9.1 Affected Environment

The Desatoya HMA is centered around a portion of the Desatoya Mountains and elevations range from approximately 5,032 feet to 9,973 feet atop Desatoya Peak. Habitats vary from salt desert shrub to alpine. Permanent water is available in three perennial creeks (Edwards, Smith, and Topia) and numerous springs and seeps. The HMA includes a portion of the Desatoya WSA. Detailed information about the history of the HMA and the wild horse herd is provided in the Desatoya Herd Management Area Plan/Capture Plan Update and EA No. NV-030-03-022 (BLM 2003). The HMA contains approximately 161,700 acres of public and private land within the Battle Mountain and Carson City District offices. Four grazing allotments (South Smith Creek 23%, Porter Canyon 81%, Clan Alpine 3%, and Edwards Creek 24%) occur within the HMA. There are no burros in this HMA. Generally, wild horses use the rolling hills and ridges at the higher elevations during the spring, summer, and fall before moving to the low rolling hills and valleys in both the Edwards Creek and Smith Creek Valleys. Some horses are known to spend the entire season at the higher elevations. Horses can move freely between allotments along the high elevation ridges.

As stated in Section 3.2 General Setting, wild horse presence is a key and significant factor on the allotments. The AML for the Desatoya HMA ranges from 127 to 180 horses. Since horse herds generally double every four to five years, the herd frequently exceeds AML. Population surveys on the ECPA indicate that from 2000 through 2019 the wild horse population has been consistently above the high range of AML. The HMA was most recently gathered in December 2019, when 431 horses were removed and 24 were returned to the range, including 10 mares treated with porcine zona pellucida (PZP) fertility control vaccine, to leave an estimated 127 horses in the HMA. Wild horse use was a significant management concern expressed in the DMEMP and in the DMHP. The effects of wild horse use, particularly on springs, riparian areas, and meadows on these allotments have been issues for decades.

3.5.9.2 Environmental Consequences to Wild Horses and Burros

3.5.9.2.1 Alternative 1: Proposed Action and Alternatives 2-4

The proposed action and the various alternatives would have no significant effects on the wild horse population on the allotments. Cattle do compete directly with wild horses for forage, water, and space, but the wild horse herd frequently exceeds AML in spite of this competition.

3.5.9.2.2 Impacts of Constructing Range Improvements

Proposed Action and Alternative 2- Implementation of the new range improvements could temporarily disturb or displace any wild horses present in those locations. These disturbances would be localized and short-term and would not be expected to affect the broader herd population in the long term. Wild horses in the Desatoya HMA are typically accustomed to

some level of human activity and noise due to vegetation treatments, ranching activities, research in the Edwards Creek and Porter Canyon allotments, and the increasing popularity of recreation in the Desatoya Mountains.

The proposed exclosures and holding pastures would block access to forage and water sources inside. However, the development of these water sources would involve piping and collecting the water outside of the exclosures, which would benefit wild horses. The small sizes of the riparian exclosures and holding pastures would have a negligible effect on horse movement and not detract from their natural free-roaming behavior. The construction process itself would temporarily displace wild horses. Likewise, the human activities associated with vegetation treatments would also slightly displace horses in the short term and this displacement would cease upon completion of the treatments. However, wild horses would benefit in the long term because removal of PJ would improve forage species productivity, quality, and diversity, as well as improve water availability.

Weed treatments would slightly expose wild horses to herbicides. High grass consumption could expose horses to a higher level of herbicide exposure than would be experienced through browsing of forbs and shrubs because herbicides leave greater residue on grasses than on other plants. Reducing noxious weed cover would provide a benefit to wild horses, which tend to avoid consuming most noxious weeds species due to their chemical and mechanical defense mechanisms. Eliminating or reducing noxious weed populations would remove pressure on resources needed to allow native forage species to re-establish, thus increasing the forage available to horses.

3.5.10 Wilderness/Wilderness Study Areas

3.5.10.1 Affected Environment

The Desatoya Mountains WSA lies along the boundaries of Churchill and Lander counties and includes about 51,262 acres of BLM lands and about 120 acres of private inholdings. Approximately 13,000 acres of the WSA overlap with the Edwards Creek Allotment, and approximately 5,628 acres overlap with the Porter Canyon Allotment (Appendix L, Map 13). Appendices B1 and B2 describe current rangeland health conditions within the allotments and WSA.

3.5.10.2 Environmental Consequences to Wilderness Study Areas

3.5.10.2.1 Proposed Action: Outcome-based Grazing

The proposed action would alter grazing practices from current conditions in order to achieve, or make significant progress towards achieving, rangeland health standards. The proposed action is anticipated to improve and enhance wilderness characteristics in the Desatoya Mountains WSA, as described in Appendix J. Existing range improvements would be maintained per BLM Manual 6330 (BLM 2012a).

3.5.10.2.2 Alternative 2: Prescriptive Rotation

Under Alternative 2, the effect on wilderness characteristics would be similar to the Proposed Action. The proposed improvements and goals and objectives would be the same, Appendix J discusses the benefit of these improvements to wilderness characteristics. Livestock management within this alternative would likely improve resource conditions and make progress towards meeting rangeland health.

3.5.10.2.3 Alternative 3: No Action Alternative (Current Management)

Under Alternative 3, there would be potential effects on the WSA under current management. There would be continued use of cattle in the WSA, and existing range improvements would continue to be used and maintained. Wilderness characteristics would continue to degrade due to unrestricted livestock access to the spring sources and riparian areas. Improvement in rangeland health conditions would not be expected. New structures would not be anticipated; however, existing structures or features would be maintained as currently allowed.

3.5.10.2.4 Alternative 4: No Grazing Alternative

Under the No Grazing Alternative, livestock grazing would not be authorized on the ECPA. Elimination of livestock grazing would be expected to improve rangeland health conditions, which would have a positive effect on wilderness characteristics, as long as wild horse numbers remain at or below AML.

3.5.10.2.5 Impacts of Constructing Range Improvements

Proposed Action and Alternative 2:

Wilderness characteristics:

Size: A roadless area of contiguous public lands that "has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition."

No effect

Naturalness: An area that "generally appears to have been affected primarily by the forces of nature, with the imprints of man's work substantially unnoticeable."

Effected due to the temporary impact in areas with range improvements, fences, and vegetation treatment. These actions would have an impact on naturalness temporarily, however, would improve and enhance wilderness characteristics long-term. These impacts would include visual observation of the "imprint of man's work" (BLM 2012a) with the range improvements, construction, maintenance, and vegetation treatment.

Outstanding opportunities: An area that "has outstanding opportunities for solitude or a primitive and unconfined type of recreation."

Effected due to the temporary impact in areas with range improvements, fences, and vegetation treatment. These actions would have an impact on outstanding opportunities temporarily, however, would improve and enhance wilderness characteristics long-term. These impacts would include visual observation of the "imprint of man's work" (BLM 2012a) with the range improvements, construction, maintenance, and vegetation treatment. The temporary effect on unconfined type of recreation would primarily be in the form of physical obstacles such as fences.

Supplemental values: An area that may contain "ecological, geological, or other features of scientific, educational, scenic, or historical value." Threatened, endangered, and candidate species (such as sage grouse) should be considered supplemental values.

The Desatoya Mountains Wilderness Study Area description (Appendix P) identifies two supplemental values that are competing resources, PJ and sagebrush-greasewood. The sagebrush supports the GRSG habitat. PJ also now affects the GRSG habitat and must be managed per the ARMPA (BLM 2015). PJ is currently invading/encroaching on sagebrush

dominated ecological sites. Refer to the Sensitive Species (Animals and Plants) section in this EA for more detailed description of GRSG habitat.

3.5.11 Visual Resources Management

3.5.11.1 Affected Environment

The assignment of VRM objectives for the CCD in previous land use plans was not complete and did not extend to the more remote portions of the District. Consequently, except for the Desatoya Mountains WSA, VRM objectives for the Edwards Creek allotment have not been assigned and are considered to be unclassified. Proposed classifications have been made in the 2014 Draft Resource Management Plan and Environmental Impact Statement for the CCD. The agency preferred alternative (Alternative E) shows a buffer area of VRM Class II around the WSA with the remainder of the area within the Edwards Creek allotment being VRM Class III.

On the Porter Canyon allotment, lands outside of the WSA are designated as VRM Class IV; however, the 2011 Visual Resource Inventory (VRI) for the Battle Mountain District shows the Desatoya Mountains area as VRI Class II. Much of Smith Creek Valley within the Porter Canyon allotment has a VRI Class II rating along with areas of VRI Class III. Changes in the VRM objectives may be made based on this inventory. Until then, and for the purposes of this assessment, the VRM objective for the area outside of the WSA on the Edwards Creek Allotment will be regarded as Class III. VRM Class objectives are as follows:

1. Class I Objective. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

2. Class II Objective. The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

3. Class III Objective. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

4. Class IV Objectives. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements (BLM 2012c).

3.5.11.2 Environmental Consequences to Visual Resources

3.5.11.2.1 Proposed Action: Outcome-based Grazing Alternative

All of the actions proposed in this alternative would be consistent with VRM objectives for the allotments, including the Desatoya Mountains WSA. Proposed structural improvements are very limited and consist of fencing, which may be a combination of brush barrier, pipe rail or standard BLM 4-wire fencing. The protection and enhancement of riparian conditions associated with this fencing would enhance the visual quality of the treated area. The fencing would be a minor change to the landscape and would be consistent with VRM Class II as well. Proposed PJ removal from within 300 feet of springs and streams would also be consistent with VRM objectives including those described under VRM Class I for the WSA (the use of heavy equipment would not be allowed in the WSA) and would allow for improved riparian and adjacent upland conditions. While treatments are in progress, there would be some localized disruption in visual quality until completion. Treatments along with temporary fencing associated with the GRSG habitat improvement projects, would also briefly disrupt visual quality, but improved habitat conditions would enhance the visual quality of successfully treated areas. Maintenance of existing range improvements including fences, spring developments, water developments and habitat protection exclosures would allow for proper livestock management and protection of scenic landscapes. Improvements that are in a state of disrepair can reduce the visual quality in localized areas. Properly maintained improvements diminish visual disturbance. The proposed changes in grazing management should, over time, result in improved rangeland health conditions which in turn would improve the visual character of the various plant communities. This improvement is also dependent on maintaining the wild horse population at or below AML and relief from current drought conditions.

3.5.11.2.2 Alternative 2: Prescriptive Rotation

Same as Proposed Action

3.5.11.2.3 Alternative 3: No Action Alternative (Current Management)

There are no additional range improvements or habitat improvement projects proposed with this alternative that may affect visual resources. Visual resources can be affected by improper grazing use and the resulting decline in plant community health. Under current management, as directed by the DMEMP, rangeland health of many plant communities throughout the allotments has declined. The most notable declines are in the salt desert scrub communities represented by monitoring sites SCV01 and SCV02. Grass/shrub imbalances are noted throughout the allotments. Excessive wild horse use and extreme drought conditions have been contributing factors. This decline in rangeland health has reduced scenic values in many areas. Heavy use by both livestock and wild horses could continue, which would reduce scenic quality within those areas. The decline in rangeland health conditions within the WSA may result in not meeting VRM Class I objectives.

3.5.11.2.4 Alternative 4: No Grazing Alternative

Under the No Grazing Alternative livestock grazing would not be authorized on the ECPA. As such, there would be no effects on visual resources due to livestock grazing. This alternative would be in conformance with Visual Resource Management guidelines and policy. Over time, plant communities would improve, which would improve scenic quality. This is also dependent on maintaining the wild horse herd at or below AML and drought relief. Heavy use

by wild horses would still be expected in key, unprotected areas. No new range improvements would be constructed. It is unlikely that salt desert scrub communities and many of the lower elevation sagebrush communities would show much improvement in scenic quality without reseeding treatments which are not part of this alternative.

3.5.11.2.5 Impacts of Constructing Range Improvements

Proposed Action: The potential impacts of constructing range improvements have been disclosed in the Proposed Action in Section 3.5.11.2.1.

Alternative 2: The potential impacts of constructing range improvements are similar to those disclosed in the Proposed Action in Section 3.5.11.2.1.

3.5.12 Livestock Grazing

3.5.12.1 Affected Environment

Appendices B1 and B2, Sections 3.1 and 4.2 describe current and historical livestock grazing on the EPA and PCA. Additionally, the RHAs and SDD (Appendix B) present detailed data on the RHA's results. Currently, the ECPA are not achieving 4 of the 5 Standards for Rangeland Health with wild horses, historic and current grazing by livestock, and the introduction of non-native plants identified as a significant causal factor in the failure to achieve these standards.

Generally, major plant communities across the allotments show a tendency for shrub dominance with a limited herbaceous understory. The transition into this state was likely due to heavy livestock and wild horse grazing that occurred throughout the west in the early 20th century (pre-Taylor Grazing Act). Altered natural disturbance regimes (fire cycles, etc.) and climate conditions have also played a role in this transition. Over the past 100 years, livestock grazing has been reduced to current levels. Current grazing management is focused on improving conditions to meet or make progress towards meeting the standards for rangeland health and/or Table 2-2 Habitat Standards (Appendix D) while providing for multiple use and sustained yield along with watershed function and health.

3.5.12.2 Environmental Consequences to Livestock Grazing

3.5.12.2.1 Proposed Action: Outcome-Based Grazing Alternative

Livestock use dates for each pasture would be determined on an annual basis and would be based on monitoring data and objectives, current climatic conditions, and the expected vegetative stages of key forage species. Livestock numbers may also vary annually under the use of adaptive management and flexibility, however total permitted AUMs would not exceed 10,733 during the grazing year. This alternative would allow the permittee more flexibility in response to annual climatic conditions and livestock management would be based upon the phenology of the key forage species each year. This alternative incorporates responses to abnormally wet and dry years and allows the permittee to adjust the use periods, rotation, and cattle numbers based on those climatic conditions. Key forage species enter vegetative states on different dates annually based on that current year's climate. OBGA would allow the permittee to respond to yearly changes in resource conditions quickly and appropriately without being bound by strict pasture rotation dates on the permit. The permittee can use the annual livestock indicators and the growth stages and conditions of key forage species to trigger moving cattle to a new use area. For example, if the cattle are in one use area and they have reached that area's annual indicator, and the forage in next use area in the rotation has

reached a growth stage where it is capable of withstanding grazing pressure, the permittee has the flexibility to move the cattle as opposed to having to wait for the dates specified in their permit. This would assist in limiting utilization of key forage species, maintaining healthy perennial vegetation, and supporting a viable ranching operation.

Achievement of goals and objectives (Section 2.1.3) would ensure that progress towards meeting the RAC Standards would continue while still allowing for the flexibility within the permit and seasons of use. Appendix O further discusses those objectives, the areas for which they are applied, timing of monitoring, and the permittee's management response. The permittee would utilize a series of tools discussed in the Proposed Action to move livestock. To ensure objectives are being met, increased monitoring (Appendix F), communication, and collaboration would be required by the BLM and permittee. The permittee would also have to increase active management and herding of cattle to ensure that utilization levels are not exceeded and cattle are moved once the levels are reached. If monitoring results indicate that progress is not being made towards meeting the goals and objectives, then BLM and the permittee would be proactive in choosing a management strategy the following growing season when completing the annual operating plan to ensure progress would be made. This would include a reduction in AUMS and/or changes in duration of grazing pastures/use areas. Additionally, Section 2.3.2 defines other management actions that could occur. These changes must be agreed on by the permittee and BLM during the annual operating meeting prior to the next season of grazing or a grazing authorization for that season would not be issued.

Decreasing AUMs initially based on those 21 non-functioning existing water sources would be an incentive for the permittee to repair those critical water sources. This may be an upfront financial impact on the permittee, but over time, resource conditions and forage value would increase due to cattle being able to obtain water away from critical riparian and wetland habitat for LCT and GRSG.

Authorizing the permit under OBGA would increase rangeland management flexibility to maintain and improve rangeland health through collaboration and cooperation with the permittee. Under OBGA, the permittee would have more flexibility to apply knowledge, experience, and stewardship to livestock grazing management across the allotments and more quickly adapt to climatic and phenology responses to meet resource objectives. Improved livestock grazing management flexibility would result in improved rangeland conditions as the goals and objectives are achieved through the collaboration and cooperation between the BLM and permittee. Since OBGA requires annual operating meetings, cooperative monitoring, and annual monitoring for goal and objective achievement between the BLM and permittee, it ensures that there is constant communication and discussion of the condition of the resources related to livestock management actions. When compared to he more prescriptive alternative, this alternative would give the best opportunity for BLM and the permittee to work together and implement grazing based on conservation performance and ecological outcomes rather than hardline metrics.

3.5.12.2.2 Alternative 2: Prescriptive Rotation

This alternative was created to give a more prescriptive approach to livestock management on the three allotments and create a rotational deferred grazing system. This alternative would employ herd management techniques to move cattle throughout the use areas, rotate its

grazing schedule every other year, and reduce AUMs initially based on 21 non-functioning existing range improvements that are needed to provide off-site water and reduce grazing pressure on riparian/wetland areas. These off-site water sources are also essential to improving habitat conditions in GRSG and LCT habitat. The proposed improvements and goals and objectives would remain the same for this alternative.

Adjusting the rotation to every other year allows the spring and summer pastures to be grazed early one year, then later the next year. This would allow the vegetation to grow and set seed every other year before any grazing pressure. This rotational deferred grazing system allows key forage plants an opportunity to maintain and gain vigor, store carbohydrates, and set seed when compared to continuous year-round grazing which grazes the same areas at the same time of year every year (Burkhardt and Sanders 2012; Holechek et al. 2004). This alternative would have increased intensive management of herding, water, and supplements to move cattle between use areas within the dates identified in Tables 7 and 8. This would require extra time and expense by the permittee, but as long as annual livestock indicators are monitored and progress is being made towards meeting goals and objectives, AUMs would not be reduced and the permittee would not have to reduce livestock numbers. Reducing numbers would be a financial burden on the permittee and their livestock operation. Additionally, increased monitoring would need to occur to determine if those annual indicators are not exceeded and progress is being made towards achieving the objectives (Section 2.1.3).

Decreasing AUMs initially based on those 21 non-functioning existing water sources would be an incentive for the permittee to repair those critical water sources. This may be an upfront financial impact on the permittee, but over time, resource conditions and forage value would increase due to cattle being able to obtain water away from critical riparian and wetland habitat for LCT and GRSG.

Overall, Alternative 2 would improve resource conditions but would not allow the flexibility as the OBGA would. The permittee would not have flexibility to apply knowledge, experience, and stewardship to livestock grazing management across the allotments and more quickly adapt to climatic and phenology responses to meet resource objectives and would have to follow the hardline metrics within the grazing schedule. This alternative would be better than Alternative 3 due to the change in use dates within the pastures, the alternating rotation, and utilizing the goals and objectives to trigger movements of cattle. This alternative would require intensive management and herding which could be beneficial to resource conditions as cattle would likely not overutilize key forage species as long cattle are able to be moved to new pastures/use areas within the time constraints of the grazing schedule.

3.5.12.2.3 Alternative 3: No Action Alternative (Current Management)

Under this alternative, management would continue as directed by the DMEMP. This DMEMP has not specified certain annual livestock indicators and goals objectives. Without these it is difficult to ensure that once these indicators are reached cattle would be moved to a new use area. Additionally, the DMEMP has the cattle on a two-year rotation with no flexibility built into the season of use. In combination with the lack of annual indicators and current rotation schedule areas of the allotments have not been allowed to fully improve in vegetative diversity and vigor of plant communities. Cattle are remaining in certain use areas too long and heavy utilization has been observed in advance of rotation dates.

No proposed projects would be constructed. GRSG and LCT habitat improvement would not move forward. Development of range improvements could be completed only after being analyzed in an additional site-specific environmental analysis at a later date. Existing improvements could be repaired at some future date under this Alternative. Under this alternative it would be more difficult to meet the Standards for Rangeland Health and GRSG objectives (Appendix D).

3.5.12.2.4 Alternative 4: No Grazing Alternative

Under the No Grazing alternative, no livestock grazing would be authorized in the Edwards Creek, Porter Canyon, and Carson Allotments over the next 10 years. The primary impact from this alternative would likely be to put the permittee out of the livestock business unless the permittee's cattle could be moved to private land or another allotment. Section 2.6 explains the impacts of the cattle on the Smith Creek Ranch headquarters. No new range improvements would be implemented. GRSG and LCT habitat improvement would not occur.

3.5.12.2.5 Impacts of Constructing Range Improvements

Proposed Action:

The construction of new range improvements includes PJ tree removal around springs and streams, willow plantings, noxious weed treatments, multiple spring and stream exclosure fencing and developments, and seedings for GRSG habitat. Specific projects are described in Appendix I and Project Design Features are described in Appendix J. Impacts of PJ removal is analyzed in Section 3.7 of the 2012 Desatoya Mountains EA (BLM 2012b) and will not be discussed further in this section.

The proposed spring improvements would exclude livestock from riparian areas and associated vegetation around the springs on approximately 229 acres, which is about 0.12% of the allotment. The Edwards Creek Gathering Pasture is approximately 630 acres and about .3% of the allotment. Riparian areas generally contain very high-quality forage when compared to the uplands. However, these riparian sites have been highly degraded from livestock and wild horses and the benefit of fencing off the spring sources in order to allow recovery of these sites outweighs the loss of any forage that may be present within the exclosure areas. Water would be available outside of the exclosures either in a trough or as runoff from the springs and as these riparian systems improve, the quality and quantity of available water would likely increase (see Sections 3.5.3 for further discussion of the impact of the proposed range improvements on riparian/wetland areas). For the Upper Edwards Creek Gather Pasture, cattle would only be allowed in the area when moving between the Edwards Creek and Porter Canyon allotments. Water would be available outside of the exclosure in a trough at the upper end and as stream run off below the pasture. Excluding livestock from this area would assist in improving LCT habitat and overall stream and riparian function. Maintenance of the spring improvements, if assigned to the permittee, would add an increased workload and potential cost for the permittee.

Willow planting would involve use of small hand equipment resulting in only small areas of direct impacts to the soil surface. Soil would be removed and loosened to dig a hole, however, soil would be replaced with the planting of each willow. Livestock grazing would need to be excluded from the areas where willow plantings occur until willows are well established.

Noxious weed treatments would occur in riparian zones and associated terrestrial areas to control noxious weed infestations that inhibit native upland and riparian communities' growth and occurrence. Reducing the presence of noxious weed would improve those plant communities and increase key forage plants for livestock. These treatments would also improve overall resources conditions and assist in making progress towards meeting Rangeland Health.

Successful GRSG habitat improvement projects in Edwards Creek Valley and Smith Creek Valley would result in increased perennial grass and forb densities in those treatment areas. Successful reseeding projects would improve vegetative diversity along with basal and canopy cover, which would improve the Biotic Integrity within the treated areas. This would also improve forage for livestock in these valleys where many of the perennial grasses have been depleted.

Proposed maintenance of existing range improvements under the Proposed Action and Alternative 2 would increase water source availability away from the riparian wetland areas. This would improve distribution of livestock and wild horses throughout the allotment and assist in improving overall rangeland health.

Alternative 2: Impacts would the same as described in the Proposed Action.

3.5.13 Socioeconomics

3.5.13.1 Affected Environment

Common to All alternatives

Changes in how an allotment is grazed can cause positive or negative impacts on the social and economic circumstances of the permittees and on the local community and economy. The social networks of rural communities are often closely connected with ranching life, and the economic well-being of ranchers is of central importance to some rural towns. In addition, what might appear to an outside observer to be a small change in ranch-level economic conditions could mean a rancher can pay for college tuition for a child, participate in professional organization meetings, and/or fund their future retirement.

Promoting jobs on working landscapes and serving the American family is part of the mission of the BLM. Accordingly, providing analysis and planning support for the long-term economic success of permittees who are using public resources to enhance the security of the U.S. food supply—at the same time as they contribute to the social and economic vibrance of rural communities—is central to how the BLM approaches grazing economics. Economic success contributes to social well-being from the level of the ranch up through the local community and the regional economy.

For many public land grazing permittees, "the lifestyle and social fulfillment" they and their families experience are "major reasons for ranch purchase." (Rimbey et al. 2007). For a rancher to continue to enjoy these benefits from holding a public lands grazing permit, it is crucial that their allotment provide to them sufficient revenues in the long run to cover the costs of continued operation on the allotment. In a competitive international business such as the cattle industry, this requires allotment management that allows for sustained forage yields

and optimized livestock weight gain. This, in turn depends on managing herds for a healthy rangeland landscape.

Table 13 below shows the estimated annual number of workers, worker compensation, and output supported by the beef cattle and other grazing livestock sectors in 2018.

Table 10: 2018 Grazing Livestock Sectors

IMPLAN Industry Sector Description	Employment	Employee Compensation	Output
Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	158	$641,046	$32,262,917
Animal production, except cattle and poultry and eggs	200	$3,135,263	$40,544,758
Totals	358	$3,776,309	$72,807,674
(Implan, 2020)			

3.5.13.2 Environmental Consequences to Socioeconomics

Common to All Alternatives

The figures in Table 14 below show the estimated economic impacts that would occur with a $100,000 increase in sales from the livestock industry in the study area, which includes Churchill and Lander counties in Nevada. County boundaries are used for socioeconomic analysis due to the availability of socioeconomic data being delineated by county boundaries. These figures are common to all alternatives.

Estimates are included for both the cattle industry alone and all grazing livestock, including cattle, based on a $100,000 influx of revenue in each case. In the model for all grazing livestock, 44.3 percent of incoming revenues, or $44,313, was allocated to the cattle industry with 55.7 percent, or $55,687, of incoming revenues going to all other grazing livestock sectors combined. These figures were chosen based on overall economic data for the region as reported by IMPLAN. IMPLAN software uses data from many sources, including the U.S. Department of Commerce, the Bureau of Labor Statistics, Census Bureau and others. Dairy, poultry, and egg production are not included in the economic model. These estimates were generated using IMPLAN regional economic impacts software. A reduction in sales from these industrial sectors would result in a similar but opposite economic response within the four-county economic study area. The definitions of the three types of impacts to employment, labor income, value added, and total economic output are as follows:

- Direct impacts measure the economic impact of operating expenditures made by one or more economic enterprises within the study area (and within the specific industry or industries included in the study) on labor, materials, supplies, and productive capital.
- Indirect impacts measure the purchases of goods and services and the hiring of labor to meet demand for inputs (factors of production) that are purchased within the study area in support of the economic activities accounted for in the direct impacts described above.

- Induced impacts measure the economic impacts that occur as a result of household purchases of goods and services by employees of the economic enterprise(s) accounted for in direct impacts.

Table 11: Estimated Economic Impacts That Would Occur With a $100,000 Increase in Sales From The Livestock Industry

Impact Summaries	Edwards Porter Grazing (does not include dairy, poultry, or eggs)			
Beef Cattle Alone				
Impact Type	**Employment**	**Labor Income**	**Total Value Added**	**Output**
Direct Effect	0.5	-$7,723	$17,056	$100,000
Indirect Effect	0.2	$2,595	$10,324	$32,969
Induced Effect	0.0	-$634	-$1,426	-$2,515
Total Effect	0.7	-$5,762	$25,955	$130,454
Multipliers	1.42	0.75	1.52	1.30
All Grazing Livestock (including cattle)				
Impact Type	**Employment**	**Labor Income**	**Total Value Added**	**Output**
Direct Effect	0.5	-$4,418	$25,871	$100,000
Indirect Effect	0.2	$3,165	$9,279	$25,365
Induced Effect	0.0	-$253	-$573	-$1,005
Total Effect	0.6	-$1,507	$34,578	$124,360
Multipliers	1.35	0.34	1.34	1.24
(Implan 2020)				

With impact analyses, a person can apply determined multipliers to whatever element they are seeking to quantify. A negative impact indicates that the specific item (e.g. the direct effect on labor income for all livestock in the table) is being subsidized by spending from outside of the study area. Multipliers exist in the IMPLAN Model to describe rates of changes for several different variables:

- Output - Output is the base Multiplier from which all other Multipliers are derived. The Output Multiplier describes the total Output generated as a result of 1 dollar of Output in the target Industry. Thus, if an Output Multiplier is 2.25, that means that for every dollar of production in this Industry, $2.25 of activity is generated in the local economy: the original dollar and an additional $1.25.
- Employment - Employment Multipliers describe the total jobs generated as a result of 1 job in the target Industry. Thus, if an Employment Multiplier is 2.33, that means that every Direct Job supports 2.33 jobs in the total economy: the original job and 1.33 additional jobs.
- Labor Income - Labor Income Multipliers describe the dollars of Labor Income generated as a result of one dollar of Labor Income in the target Industry. A Labor Income Multiplier of 2.2 indicates that for every dollar of Direct Labor Income in this Industry another $1.20 of Labor Income is generated in the local economy.
- Value Added - Value Added Multipliers describe the total dollars of Value Added generated as a result of one dollar of Value Added in the target Industry. A Value Added

Multiplier of 2.3 indicates that for every dollar of Direct Value Added in this Industry another $1.30 of Value Added is generated in the local economy.

3.5.14 Cumulative Impacts

3.5.14.1 Cumulative Impacts Overview

"*Cumulative impact* is the impact on the environment which results from the incremental impact of the action when added to other past, present, and RFFAs regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Part 1508.7).

Geographic Scope

The geographic scope of the cumulative effects study area is the combined ECPA.

Timeframe of Effects

Direct and indirect effects associated with livestock grazing and range improvements would occur over a 10-year period, which is the lifespan of the new term livestock grazing permit.

3.5.14.2 Past, Present, and Reasonably Foreseeable Future Actions

Past actions considered are those whose impacts to one or more of the affected resources have persisted to present day. Present actions are those occurring at the time of this evaluation and during implementation of the Proposed Action. RFFAs constitute those actions that are known or could reasonably be anticipated to occur within the analysis area for each resource, within a 10-year time period.

On the basis of aerial photographic data, current GIS records and analysis, the following past and present actions have been identified within the cumulative assessment area: Agricultural Development, Livestock Grazing, Transportation Access, Wildfire, Vegetation Treatment and Other Enhancement Projects, Dispersed Recreational Activities, Mining and Energy Development, Wild Horse Management, and Land Use Authorization.

Agricultural Development – The cultivation of hay crops, such as alfalfa and native grasses, occurs on 225 acres of private land within the assessment area. Another 200 acres is used as pastureland. On some parcels, this level of production is supported by substantial irrigation facilities and associated utilities.

Livestock Grazing – Livestock grazing has had a long history in the region and on the ECPA dating back to the late 1800s. Today, it is one of the dominant uses in the cumulative impact assessment area. In order to support grazing of the ECA and PCA, a variety of range improvement projects have been implemented through the years. These include spring exclosures, cattle guards, wells, vegetative treatments, spring developments, and water pipelines. Past livestock grazing activities had affected the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants. The present-day implementation of livestock grazing systems and projects has reduced past impacts and improved vegetation understory conditions in the higher elevation areas. In the lower elevations the primary understory plants are absent and a change in livestock management would likely not improve the understory conditions. Proposed future seeding projects may assist in improving the understory component in the lower elevations.

Transportation Access – On the ECA and PCA, past and present actions within the assessment area are supported by a transportation system which includes county, paved, graded roads and two-track routes, and in the case of WSA access, existing primitive routes These transportation routes are used for public access and federal, state, and local government managing agencies. Motorized travel would be limited to primitive routes open to motorized travel determined by Congress.

Wildfire – Within the last 10 years there have been 2 wildfires on the allotments for a total of 252 acres. The larger fire was in the higher elevations up in the WSA, the other fire was lower elevation near the ranch headquarters. The lower elevation fire (about 37 acres) is likely cheatgrass dominated with little natural recovery of native vegetation.

Vegetation Treatment and Other Enhancement Projects – In terms of PJ removal there have been 14,516 acres of lop-and-scatter removal and 1,385 acres of mastication, followed by 479 acres of seeding treatments within some of those removal areas. Approximately 10 riparian enhancement projects have been implemented in the last 10 years through the DMHP. These projects have included fencing riparian areas, mowing and herbicide of rabbit brush, and installation of troughs and pipelines. Since the implementation of these projects, habitat conditions have been improving.

Dispersed Recreational Activities – Dispersed recreation occurs within the assessment area and includes wildlife viewing, rock hounding, hunting, off-highway vehicle use, camping and WSA access. There are currently no Special Recreation Permits in the area. All these actions could continue throughout the allotment in future years.

Mining and Energy Development – There currently is prospecting throughout the allotments, primarily in the mountains. There is not any active mining and no mineral material sites or large-scale mines within the allotments.

Wild Horse Management – In 1971 the Wild Free-Roaming Horse and Burro Act was signed into law. The BLM's goal is to manage healthy WH&B populations on healthy rangelands. The BLM prescribes management for the horse herds in the Desatoya HMA to assure WH&B populations are in balance with other uses of the public lands and that a thriving natural ecological balance is achieved and maintained.

The AML for the Desatoya HMA ranges from 127 to 180 horses. Since horse herds generally double every four to five years, the herd frequently exceeds AML. Population surveys on the ECPA indicate that from 2000 through 2019 the wild horse population has been consistently above the high range of AML. The HMA was most recently gathered in December 2019, when 431 horses were removed and 24 were returned to the range, including 10 mares treated with porcine zona pellucida (PZP) fertility control vaccine, to leave an estimated 127 horses in the HMA. Wild horse use was a significant management concern expressed in the DMEMP and in the DMHP. The effects of wild horse use, particularly on springs, riparian areas, and meadows on these allotments have been issues for decades.

Land Use Authorization – There are communications sites and rights-of-way for power lines, routes/roads, and solar and geothermal energy sites present within the boundaries of the allotments. As long as current road access is not impeded, there should be no impact to existing authorizations.

3.5.14.3 Cumulative Impacts to Affected Resources

3.5.14.3.1 Soils and Vegetation

The soils and vegetation conditions that existed in the ECPA prior to livestock grazing can be reconstructed in a general sense based upon historic descriptions, relict areas, and responses of individual species to grazing use. The ecological sites described in the RHAs (Appendices B1, B2) are a representation of what soils and vegetation are present in the area. Over time historic grazing practices, wildfires, wild horse use, recreation, mining, and transportation began to impact reference sites. Currently, livestock and wild horse use are the primary actions described above which have impacted soils and vegetation. Historic grazing and increased wild horse numbers have resulted in removal of native vegetation over time and led to some deviation of vegetation from the reference state. Soil loss has also increased in areas where protective vegetation has been removed. However, other actions such as vegetation treatments and enhancement projects, as well as active cattle management, have improved soils and vegetation from negative impacts that have been observed in the past.

RFFAs from livestock grazing and wild horse management, agricultural development, wildfire, vegetation treatments and enhancement projects, dispersed recreation and transportation, mining, and energy projects would continue to impact soils and vegetation within the assessment area. Impacts from livestock grazing and wild horse use would be expected to reduce under some of the alternatives. Future planned vegetation treatments and enhancement projects would be expected to continue improvement of soils and vegetation at those sites and surrounding areas. Dispersed recreation, transportation, and energy development could be expected to continue throughout the allotment in the future which could potentially impact local soils and vegetation through removal.

Proposed Action: Outcome-Based Grazing Alternative

The cumulative impacts to soils and vegetation under the Proposed Action would be beneficial as a result of proposed vegetation treatments and the seasonal/deferred rotation schedule and should result in improved vegetative cover with healthier plant communities over time. Overall, grazing pressure would be reduced compared to current grazing management; the implemented monitoring plan would allow for flexibility of management actions to meet goals and objectives. The degree of improvement is dependent on essential monitoring, drought relief, and maintaining the wild horse herd at or below AML. Projects proposed in the DMHP would also continue and help improve soil/site stability, hydrologic function, and biotic integrity within treated areas. Existing habitat protection exclosures would continue to provide needed protection of those key areas. The grazing schedule would also allow for congregated areas to have periods of less use. This would further reduce grazing pressure and allow for recovery of soils and vegetation.

Alternative 2: Prescriptive Rotation

The cumulative impacts to wetland-riparian areas under Alternative 2 would be similar to those described under the Proposed Action. However, improvement to conditions for soils and vegetation could be slightly less than under the Proposed Action as grazing would be not be flexible and management would follow strict dates for pasture rotation. Overall, grazing pressure would be reduced compared to current grazing management, as cattle numbers would

be less than currently permitted until range improvements are maintained and become functioning. The grazing schedule would also allow for congregated areas to have periods of less use. This would further reduce grazing pressure and allow for recovery of riparian vegetation, likely increasing water availability at spring and stream sources and improving standards for rangeland health. The degree of improvement is also dependent on essential monitoring, drought relief, and maintaining the wild horse herd at or below AML.

Alternative 3: No Action Alternative (Current Management)

The cumulative impacts to soils and vegetation under Alternative 3 would be a continuation of current negative impacts. Under current livestock grazing management, standards for rangeland health are in non-attainment, and the soil standard would likely continue to not be met as described by current conditions and impacts in the RHAs (Appendices B1, B2). Soil loss and vegetation removal would continue, especially in and around congregation areas and water sources. Newly proposed vegetation treatments and enhancement projects, such as seeding and PJ removal projects and noxious weed treatments, would not be implemented. Without these treatments, low elevation sagebrush and salt-desert shrub communities would likely not improve. The soil compaction effects from wild horse and livestock trailing would also continue.

Alternative 4: No Grazing Alternative

The cumulative impacts to soils and vegetation under Alternative 4 would be beneficial for recovery of range resources as livestock grazing would not be permitted, but there would be no newly proposed vegetation treatments or enhancement projects (RIPs) which would likely reduce vegetation vigor and productivity as well as decrease soil stability and hydrologic function within these areas. Vegetation would recover and soil stability would increase in high impact areas where cattle congregate, but likely remain the same elsewhere. Areas in the salt desert scrub and lower elevation sagebrush communities that are deficient or lacking in key herbaceous species may not recover without reseeding treatments. Standards for rangeland health would likely improve over time, however, there would still be some impacts seen from wild horse use, especially to soils and vegetation in and around water sources that would remain unprotected.

3.5.14.3.2 Riparian Zones/Wetlands

Since launching the Riparian-Wetland Initiative, the BLM has provided management focus on achieving the goal and mandate that 75 percent or more riparian and wetland areas are in proper functioning condition. Livestock and wild horse use are two of the primary factors that can negatively impact wetlands and riparian areas, although localized P-J encroachment and recreation also impact water resources as well. As riparian areas decline, riparian vegetation is less capable of dissipating energy and filtering sediment, which can also lead to declines in water quality. Typically, erosion increases, and water storage capacity is reduced as well. In the ECPA, about half of the stream reaches and most of the springs are not properly functioning. Current and past grazing and wild horse use in the allotment has contributed to impacts seen at springs and streams throughout the allotment and continues to impede improvements in wetland-riparian conditions. Past and present recreational activities and transportation have had some impact, mainly where routes either cross, or are adjacent to, water sources causing increased sedimentation and, in some cases, affecting flow of surface

waters. Past and present vegetation treatments and riparian enhancement projects have reduced impacts in targeted areas, which has improved some springs and streams from past negative conditions.

RFFAs from livestock grazing and wild horse management, agricultural development, wildfire, vegetation treatments and enhancement projects, dispersed recreation and transportation, mining, and energy projects, would continue to impact wetlands and riparian areas within the assessment area. Impacts from livestock grazing and wild horse use would be expected to reduce under some of the alternatives. Future planned vegetation treatments and enhancement projects would be expected to continue improvement of springs and streams at those sites and adjacent uplands. Dispersed recreation, transportation, and energy development could be expected to continue throughout the allotment in the future which could potentially impact nearby water quantity or quality of riparian-wetland areas.

Proposed Action: Outcome-based Grazing Alternative

The cumulative impacts to wetland-riparian areas under the Proposed Action would be beneficial as a result of the proposed construction of protective fences, implementation of range improvements, and seasonal/deferred rotation schedule. Some sites could experience temporary, short term impacts if water developments malfunction. However, flow conditions at sites may be improved as troughs are relocated and range improvements are installed, which leaves more water at the source. In addition, flow conditions may improve as PJ is removed and protective fencing is installed, allowing for more water availability to the springs and reduced grazing impacts at water sources. Under this circumstance, riparian vegetation could increase in vigor or expand in coverage. In addition, the proposed seasonal/deferred rotation schedule would reduce congregated grazing in the riparian areas, further contributing to improved riparian conditions.

Alternative 2: Prescriptive Rotation

The cumulative impacts to wetland-riparian areas under Alternative 2 would be similar to those described under the Proposed Action. However, improved conditions to riparian-wetland areas could be slightly less than under the Proposed Action as grazing would not be flexible and management would follow strict dates for pasture rotation. Overall, grazing pressure would be reduced compared to current grazing management, as cattle numbers would be less than currently permitted until range improvements are maintained and become functioning. The grazing schedule would also allow for congregated areas to have periods of less use. This would further reduce grazing pressure and allow for recovery of riparian vegetation, likely increasing water availability at spring and stream sources and improving standards for rangeland health.

Alternative 3: No Action Alternative (Current Management)

The cumulative impacts to wetland-riparian areas under Alternative 3 would be a continuation of current negative impacts. Under current livestock grazing management, standards for rangeland health are in non-attainment and the riparian standard would likely continue to not be met as described by current conditions and impacts in the RHAs (Appendices B1, B2). Range improvements would also not be implemented and therefore protective fencing and

structures necessary to protect important riparian and water resources and provide periodic rest for vegetative resources would not be constructed.

Alternative 4: No Grazing Alternative

The cumulative impacts to wetland-riparian areas under Alternative 4 would be beneficial for recovery of water resources as livestock grazing would not be permitted, but there would be no newly proposed vegetation treatments or enhancement projects (RIPs) which would likely reduce functioning condition of those proposed springs and streams. Standards for rangeland health may improve over time in some areas, however there would still be impacts to water sources from wild horse and wildlife use that would likely cause further decline in these areas.

3.5.14.3.3 Invasive, Non-native Species and Noxious Weeds

Proposed Action: Outcome-based Grazing Alternative

The proposed action along with past, present and RFFAs should help reduce or limit the cheatgrass infestation, however, this could be negated by the occurrence of wildfires that would increase cheatgrass presence in burned areas. The proposed action could also reduce and over time eradicate noxious weeds which can harm livestock, wildlife, and ecosystem function. Removal of known Whitetop and Water hemlock infestations along Topia and Edwards Creek should allow native riparian plants to colonize areas adjacent to the waterway and restore a healthy connection between groundwater, overland flow, and the waterways. Noxious weed control would also aid in preventing these species from spreading to other areas causing a larger and even more difficult to control infestation. Continued ground disturbing activities such as livestock concentration areas, off-road vehicle use, mineral exploration and development, and sand and gravel operations would continue to provide infestation opportunity for cheatgrass and other invasive plants in these disturbed areas.

Alternative 2: Prescriptive Rotation

Cumulative effects are similar to those described under the Proposed Action.

Alternative 3: No Action Alternative (Current Management)

Current management along with past, present and RFFAs would likely not inhibit the expansion and densities of invasive plants within the allotments.

Alternative 4: No Grazing Alternative

No Grazing alternative along with past, present, and RFFAs should, over time, result in improved vegetative cover and healthier plant communities where key plant species remain. Improved plant communities should help reduce the spread and concentration of invasive cheatgrass and halogeton. This improvement could be negated by increased wild horse usage and/or the occurrence of wildfires that would greatly increase cheatgrass presence and cover. Continued ground disturbing activities such as off-road vehicle use, mineral exploration and development, and sand and gravel operations would continue to provide infestation opportunity for cheatgrass and other invasive plants in disturbed areas.

3.5.14.3.4 General Wildlife and Migratory Birds

Proposed Action: Outcome-based Grazing Alternative

The Proposed Action along with past, present and RFFAs should result in improved vegetative cover and healthier plant communities over time and could have beneficial impacts to wildlife and migratory bird habitats through implementation and maintenance of range improvements, while other past, present, and RFFAs may have detrimental impacts to habitats in those areas (e.g., transportation access, wildfire, recreation, mining, and realty actions). The degree of improvement is dependent on drought relief and maintaining the wild horse herd at or below AML. Furthermore, the Proposed Action Alternative should allow key habitats to progress towards achieving RAC Standards within the allotments as monitoring objectives are reached. Therefore, the Proposed Action, along with range improvements, would have beneficial or at least minimal negative cumulative impacts to wildlife and migratory bird habitats, when combined with the impacts from other past, present, and RFFAs within the allotments.

Alternative 2: Prescriptive Rotation

Cumulative impacts would be similar to the Proposed Action, however, the Prescriptive Rotation Alternative would most likely allow quicker progress initially on key habitats towards achieving or maintaining RAC Standards within the allotment based on short-term and long-term monitoring objectives.

Alternative 3: No Action Alternative (Current Management)

The No Action Alternative, along with past, present and RFFAs would continue the decline in vegetative cover, diversity and vigor of plant communities and would therefore likely continue to have a negative cumulative effect on wildlife and migratory bird habitats throughout the allotments. The No Action Alternative would most likely not progress all the key habitats (primarily the springs and meadows) towards achieving or maintaining RAC Standards for wildlife and migratory bird habitats within the allotments. This is offset somewhat by the projects planned under the DMHP and the existing habitat protection exclosures but newly proposed improvements would not be implemented and in those areas available for livestock and wild horse grazing and other ongoing activities, continued habitat degradation would be expected. Therefore, this Alternative would likely have adverse cumulative impacts to wildlife and migratory bird habitats, when combined with the impacts from other past, present, and RFFAs within the allotments.

Alternative 4: No Grazing Alternative

The No Grazing Alternative along with past, present, and RFFAs would be expected to result in improved vegetative cover and healthier plant communities and generally be beneficial to wildlife and migratory habitats, and it is likely that key habitats within the allotments would make significant progress towards or would achieve RAC Standards. Projects proposed in the DMHP would continue but newly proposed range improvements would not be implemented. The degree of improvement in habitat conditions is dependent on drought relief and maintaining the wild horse herd at or below AML. Continued and future transportation access, recreation, mining, and realty actions would continue to negatively affect wildlife and migratory bird habitats in those affected areas but would be limited. Therefore, the No Grazing Alternative would likely have beneficial cumulative impacts to wildlife and migratory bird habitats when combined with the impacts from other past, present, and RFFAs within the allotments.

3.5.14.3.5 Threatened or Endangered Species

Proposed Action: Outcome-based Grazing Alternative

The Proposed Action along with past, present, and RFFAs should result in overall improvement in T&ES habitats (e.g., implementation and repair of range improvements), while other past, present, and RFFAs could have detrimental impacts to T&ES habitats (e.g., recreational camping along Edwards Creek). Furthermore, the Proposed Action Alternative, including range improvements, should allow key habitats to progress towards achieving RAC Standards within the allotments based on reaching monitoring objectives. Therefore, the Proposed Action, along with range improvements, would likely have beneficial or at least minimal negative impacts to T&ES habitats, when combined with the impacts from other past, present, and RFFAs within the allotments. Persistent drought conditions would likely continue to impact LCT populations and associated habitat.

Alternative 2: Prescriptive Rotation

Cumulative impacts would be similar to the Proposed Action; however, the Prescriptive Rotation Alternative would most likely allow quicker progress initially on key habitats achieving or maintaining RAC Standards for T&ES habitat within the allotment based on reaching monitoring short-term and long-term objectives.

Alternative 3: No Action Alternative (Current Management)

The No Action Alternative, along with past, present and RFFAs would continue the decline in vegetative cover, diversity and vigor of plant communities and would therefore likely continue to have a negative cumulative effect on T&ES habitats throughout the allotments. The No Action Alternative would most likely not progress all the key habitats (primarily the springs and meadows associated with Edwards and Topia Creeks) towards achieving or maintaining RAC Standards for T&ES habitats within the allotments. This is offset somewhat by the projects planned under the DMHP and the existing habitat protection exclosures but newly proposed improvements would not be implemented and in those areas available for livestock and wild horse grazing and other ongoing activities, continued habitat degradation would be expected. Therefore, this Alternative would likely have adverse cumulative impacts to T&ES habitats, when combined with the impacts from other past, present, and RFFAs within the allotments.

Alternative 4: No Grazing Alternative

The No Grazing alternative along with past, present, and RFFAs should result in positive cumulative effects to LCT habitat and would likely make significant progress towards or would achieve RAC Standards for T&ES habitats. Projects proposed in the DMHP would continue but newly proposed range improvements would not be implemented. The degree of improvement in habitat conditions is dependent on drought relief and maintaining the wild horse herd at or below AML. Continued and future activities, including transportation and recreation along Edwards Creek, would continue to negatively affect T&ES habitats in those affected areas but would be limited. Therefore, the No Grazing Alternative would likely have beneficial cumulative impacts to T&ES habitats, when combined with the impacts from other past, present, and RFFAs within the allotments.

3.5.14.3.6 Sensitive Species (Animals and Plants)

Proposed Action: Outcome-based Grazing Alternative

Animals

The Proposed Action along with past, present and RFFAs should result in improved vegetative cover and healthier plant communities over time and could have beneficial impacts to sensitive animal species habitats through implementation and maintenance of range improvements, while other past, present, and RFFAs may have detrimental impacts to habitats in those areas (e.g., transportation access, wildfire, recreation, mining, and realty actions). The degree of improvement is dependent on drought relief and maintaining the wild horse herd at or below AML. Furthermore, the Proposed Action Alternative should allow key habitats to progress towards achieving RAC Standards within the allotments as monitoring objectives are reached. Therefore, the Proposed Action, along with range improvements, would have beneficial or at least minimal negative cumulative impacts to sensitive animal species habitats when combined with the impacts from other past, present, and RFFAs within the allotments.

Plants

The Proposed Action along with past, present, and RFFAs could negatively affect the population near White House well. The area is also used by wild horses and off-highway vehicles which would negatively affect this population.

Alternative 2: Prescriptive Rotation

Animals

Cumulative impacts would be similar to the Proposed Action however, the Prescriptive Rotation Alternative would most likely allow quicker progress initially on key habitats towards achieving or maintaining RAC Standards within the allotment based on short-term and long-term monitoring objectives.

Plants

Would allow a greater flexibility of grazing management strategies that benefit sensitive plant species and habitat. However, this alternative relies more heavily on on-the-ground management to be successful. There are numerous situations which could interfere or prevent on-the-ground management which in turn would diminish the effectiveness of precision prescriptions and sensitive plants and habitat could be impacted in ways not anticipated under this alternative when considering all past, present and RFFAs.

Alternative 3: No Action Alternative (Current Management)

Animals

The No Action Alternative, along with past, present and RFFAs would continue the decline in vegetative cover, diversity and vigor of plant communities and would therefore likely continue to have a negative cumulative effect on sensitive animal species habitats throughout the allotments. The No Action Alternative would most likely not progress all the key habitats (primarily the springs and meadows) towards achieving or maintaining RAC Standards for sensitive animal habitats within the allotments. This is offset somewhat by the projects

planned under the DMHP and the existing habitat protection exclosures but newly proposed improvements would not be implemented and in those areas available for livestock and wild horse grazing and other ongoing activities, continued habitat degradation would be expected. Therefore, this Alternative would likely have adverse cumulative impacts to sensitive animal species habitats, when combined with the impacts from other past, present, and RFFAs within the allotments.

Plants

These grazing alternatives would have similar effects on Beatley buckwheat as described under Alternative 1.

Alternative 4: No Grazing Alternative

Animals

The No Grazing Alternative along with past, present, and RFFAs would be expected to result in improved vegetative cover and healthier plant communities and generally be beneficial to sensitive animal species habitats, and it is likely that key habitats within the allotments would make significant progress towards or would achieve RAC Standards. Projects proposed in the DMHP would continue but newly proposed range improvements would not be implemented. The degree of improvement in habitat conditions is dependent on drought relief and maintaining the wild horse herd at or below AML. Continued and future transportation access, recreation, mining, and realty actions would continue to negatively affect sensitive animal habitats in those affected areas but would be limited. Therefore, the No Grazing Alternative would likely have beneficial cumulative impacts to sensitive animal species habitats, when combined with the impacts from other past, present, and RFFAs within the allotments.

Plants

Effects from wild horse use and off-road vehicle use would negatively affect the population located near White House well.

3.5.14.3.7 Wild Horses

Proposed Action and Alternative 2:

Cumulative impacts of the proposed action and all alternatives include the continued increase in the Desatoya herd population by approximately 20 percent annually, with the exception of periodic removals that would temporarily reduce the population. The effects of the Proposed Action and Alternative 2, including the benefits provided by the proposed range improvements, would improve rangeland health to be better able to support population growth under favorable environmental conditions.

Alternative 3: No Action Alternative (Current Management)

Under the No Action Alternative, management of the grazing allotments would be unchanged and would not be expected to result in new impacts on wild horse management. Frequency of wild horse gathers, and removals could even increase because of the inability to move livestock quickly in response to changing conditions before utilization thresholds are exceeded.

Alternative 4: No Grazing Alternative

The No Grazing Alterative would have some degree of a beneficial cumulative effect for wild horses, as competition with livestock for forage and water resources would be eliminated. However, maintenance and construction of range improvements would also not proceed and thus distribution of wild horse use would not improve. Preferred grazing areas would continue to receive heavy use and associated wetlands would not be protected from continuing degradation.

3.5.14.3.8 Wilderness Study Area

Proposed Action and Alternative 2:

The proposed action, along with past, present, and RFFAs would continue to be consistent with BLM Manual 6330 (BLM 2012a). It is expected that all forms of recreation would continue to grow in and around the WSA based on past and present trends. It is expected that non-motorized recreation would focus inside the WSA, while motorized recreation would focus outside the WSA. Short-term impacts to non-motorized recreation within the WSA could decrease from the proposed action.

Alternative 3: No Action Alternative (Current Management)

The cumulative impacts under this alternative would be a continuation of current impacts and trends. Impacts would be expected to diminish the wilderness characteristics. The No Action Alternative could potentially jeopardize the WSA's eligibility for recommendation by Congress as Wilderness due to the diminished wilderness characteristics.

Alternative 4: No Grazing Alternative

The cumulative impacts under this alternative would be beneficial as there would be no livestock grazing. Vegetation would recover and soil stability would increase. This alternative could potentially increase the WSA's eligibility for recommendation by Congress as Wilderness due to the increased wilderness characteristics.

3.5.14.3.9 Visual Resources

Proposed Action: Outcome-based Grazing Alternative and Alternative 2

The proposed action, along with past, present, and RFFAs would continue to be consistent with established VRM objectives. Habitat improvement projects planned in the DMHP would continue which were determined to have no effect on VRM objectives. Other activities such as mineral exploration, sand and gravel operations, and electric transmission lines would continue to have negative effects on visual quality, but such future operations would be consistent with established VRM objectives. Unauthorized off-highway vehicle use and off highway vehicle races have impaired and would continue to impair visual quality in some areas. Wild horse and cattle trailing would continue which can negatively affect scenic value. However, the proposed action would not contribute to any further decline in visual quality from other past, present, or RFFAs.

Alternative 3: No Action Alternative (Current Management)

Current management along with past, present, and RFFAs would continue the decline in vegetative cover and diversity of plant communities and would have a negative cumulative

effect on visual resources within the allotments. Habitat improvement projects planned in the DMHP would continue, which were determined to have no effect on VRM objectives. Other activities such as mineral exploration, sand and gravel operations, and electric transmission lines would continue to have negative effects on visual quality, but such future operations would be consistent with established VRM objectives. Unauthorized off-highway vehicle use and off highway vehicle races would continue to impair visual quality in some areas. Wild horse and cattle trailing would continue which can negatively affect scenic value.

Alternative 4: No Grazing Alternative

The No Grazing Alternative along with past, present, and RFFAs would continue to be consistent with established VRM objectives. Habitat improvement projects planned in the DMHP would continue, which were determined to have no effect on VRM objectives. Other activities such as mineral exploration, sand and gravel operations, and electric transmission lines would continue to have negative effects on visual quality, but future operations would be consistent with established VRM objectives. Unauthorized off-highway vehicle use and off highway vehicle races would continue to impair visual quality in some areas. Wild horse trailing would continue which can negatively affect scenic value. The No Grazing Alternative would not contribute to any further decline in visual quality from other past, present or RFFAs.

3.5.14.3.10 Livestock Grazing

Proposed Action: Outcome-based Grazing Alternative and Alternative 2

The proposed action along with past, present, and RFFAs should result in improved vegetative cover and healthier plant communities over time, which would improve the diversity of plant communities within the allotments. The degree of improvement is dependent on monitoring, drought relief, maintaining the wild horse herd at or below AML, and controlling/confining off road vehicle use and off highway vehicle races. Continued/future mineral exploration and development and sand and gravel operations, which have been limited on these allotments, would likely have adverse effects on plant communities in localized areas until proper reclamation has been completed. Projects proposed in the DMHP would continue. Adhering to the prescribed allowable use levels should permit treated areas (i.e., PJ removal) to regain appropriate vegetative diversity and cover. Existing habitat protection exclosures would continue to provide needed protection of those key areas.

Alternative 3: No Action Alternative (Current Management)

Current management along with past, present, and RFFAs would authorize livestock grazing in some areas that are not meeting standards. Alternative 3 could result in continuing degradation to the watershed as no changes to allotment management would occur. This is offset somewhat by the projects planned under the DMHP and the existing habitat protection exclosures.

Upland sites not meeting standards for rangeland health as a result of current livestock and wild horse grazing or PJ encroachment would continue to decline in productivity and upland health. Annual grasses and non-native grasses, along with noxious weeds, could increase especially during times of drought. Riparian sites not meeting standards would remain static or continue in a downward trend. Riparian plant community succession and streambank

stabilization would be interrupted or impeded leading to degradation and potential loss of functioning riparian areas.

Alternative 4: No Grazing Alternative

The No Grazing alternative when combined with the effects from past, present, and RFFAs could result in economic harm to the permittee and the surrounding area. The vegetative communities could show improvement over time as long as wild horses are maintained at or below AML. It is unlikely that removing livestock use would reverse the degraded conditions in the salt desert scrub and many of the lower elevation sagebrush communities without reseeding efforts. Projects proposed in the DMHP could continue. Existing habitat protection exclosures would remain. Continued/future off road use, off highway vehicle races, mineral exploration and development, and sand and gravel operations, which have been limited on these allotments, would likely have adverse effects on meeting the Standards for Rangeland Health and/or Table 2-2 Habitat Standards.

3.5.14.3.11 Socioeconomics

Cumulative and compounding social and economic impacts to the region could occur should the number of allotments experiencing reduced AUMs due to any of multiple possible causes (drought, rangeland fire, large-scale mining or construction projects impacting vegetation, or other reasons for reduced land health or reduced availability of forage) cross a critical threshold. What that threshold might be depends on how widespread compromised range conditions are during a specific time period. If a critical number of ranch operations begin competing for alternate sources of feed, including private rangeland or pastures, hay, and feedlot capacity, the compounding demands could cause ripple effects within the region. Prices for alternate feed could increase while the market for excess livestock could be depressed, leading to reduced market prices for cull cows, bulls, steers, heifers, and feeder calves. Social structures could be stressed, and the well-being of community members compromised if economic effects were to reach families and businesses in wider circles within the region. Compounded effects could also occur under widespread increases in grazing, although these would be less likely to create any negative consequences.

4.0 PERSONS, GROUPS, AND AGENCIES CONSULTED

4.1 Preparers/Reviewers

Table 4. 1 Preparers/Reviewers

Name	Title	Project Expertise
Jake Vialpando	Acting Stillwater Field Manager	Authorized Officer
Stacy Sylvester	Rangeland Management Specialists/Project Lead	Livestock Management/Vegetation
Cassandra Rivas	Natural Resource Specialist	Ecology, Data Analysis
Christine McCollum	Archaeologist	Cultural Resources; Native American Religious Concerns; Paleontology
Dave Schroeder	Environmental Compliance Specialist	Wastes, Hazardous or Solid; Geothermal Resources
Dean Tonenna	Botanist	Vegetation; Sensitive Species Plants

Name	Title	Project Expertise
Elizabeth Freniere	Rangeland Management Specialist	Livestock Management/Wild Horse and Burros
Jason Wright	Archaeologist	Visual Resources
Julie A. Suhr Pierce, Ph.D.	Great Basin Socioeconomic Specialist	Environmental Justice and Socioeconomics
Keith Barker	Fire Ecologist	Fire Management, Vegetation
Ken Depaoli	Geologist/Project Manager	Geology; Mineral Materials
Mark Mazza	Rangeland Management Specialist/Weeds Coordinator	Invasive and Non-native Species, and Noxious Weeds
Melanie Cota	Wildlife Biologist	Migratory Birds; Threatened or Endangered Species; Sensitive Species Animals; General Wildlife
Melanie Hornsby	Planning and Environmental Coordinator / Military Liaison	Environmental Justice; Socioeconomics; NEPA Compliance
Michelle Stropky	Hydrologist	Air Quality; Water Quality, Surface/Ground; Soils
Paul Amar	Outdoor Recreation Planner	Recreation; Travel Management; Wilderness; Lands with Wilderness Characteristics
Valerie Baxter	Realty Specialist	Land Use Authorization; Access

4.2 Persons, Groups, or Agencies Consulted

Table 4. 2 Persons, Groups, or Agencies Consulted

Smith Creek Ranch Company LTD.; Permittee – Edwards Creek, Carson, and Porter Canyon Allotments
Nevada State Grazing Board District N-3
U.S. Fish and Wildlife Service
Nevada Department of Wildlife
Fallon Paiute-Shoshone Tribe
Yomba Shoshone Tribe

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